Closure and Data Collection Report for CTCN Technical Assistance

1. Basic information

Title of response plan	Guidance and Support for Promotion of Technologies for Climate Change Mitigation and Adaptation
Country / countries	Armenia
NDE focal point and organisation	Mikael Abovyan, Head of Board, TechnologyTransferAssociationmikael.abovyan@gmail.com, 4-8 Avan-Arinj,Yerevan,0022,Republic of Armenia
Proponent focal point and organisation	Technology Transfer Association
Sector(s) addressed	Institutional Capacity Building for implementation of Technology Action Plans for Mitigation and Adaptation Technologies; Energy, industry, Waste Management, Land Use
Technologies supported	This TA supported development of the Concept Note and the Road Map for the creation of ArmCTCN and identification of key sectors for technology transfer.
Implementation period and total duration	TA Response Plan was signed by NDE in June 2017. Implementation of the TA started in October 2017 for 6 months, completed in March 2018.
Total budget for implementation	Instruction: In addition to financial value of the technical assistance, please also include if any pro bono or in-kind support has been provided by both the implementer and/or the national counterparts. USD42,000-US50,000(from SAP ID 120444-Joint UNEP-UNIDO Programme to host and manage the Climate Technology Centre and Network (CTCN); UNIDO Country Office – in-kind contribution, Staff and venue for meetings, project office Armenia DNE- TTA, Staff in-kind contribution
Designer of the response plan	Armenia Technology Transfer Association - TTA
Implementer of response plan	Armenia Technology Transfer Association – TTA Supported by UNIDO Office in Armenia

2. Summary of all activities, outputs and products that contribute to the expected impact of the technical assistance.

Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	***Background:*** a. The need and expediency of the establishment of the Armenian Climate Technology Center (ArmCTCN) is set out in the Third National Communication on Climate Change developed and submitted to UNFCCC Secretariat in 2015. b. Armenia submitted its Intended Nationally Determined Contribution (INDC) in September 2015, where technology transfer is outlined as a contribution to the INDC, and the establishment of climate technology knowledge platform (working title "ArmCTCN") is listed as a mechanism to ensure an "open and transparent system of technology introduction and transfer". c. A proposal to establish a "Centre for Climate

	Technologies" was also included in Armenia's Technology Needs Assessment developed in 2017, and priority sectors and technologies for adaptation and mitigation have been identified in the Technology Action Plan. ***Outputs and achieved results:*** **<u>Output 1:Strategic positioning of ArmCTCN.</u>** ➢ 5-dayinception and fact-finding mission of Mr. Alexander Startsev, UNIDO international expert, General Director of North-Western International Cleaner Production and Environmental Management Centre (NWICPC) was held on 29 October – 04 November 2017 to meet with relevant stakeholders and assess local competencies/expertise to develop ArmCTCN structure and specifications. Meetings and consultations were organised with main stakeholders, Deputy Ministers of Economic Development and Investment, Agriculture, Investment Promotion Agency, Environmental Monitoring and Information Center of the Ministry of Nature Protection, Universities, NGOs private sector representatives, development partners. ➢ Kick off Workshop "Strengthening National Capacities For ArmCTCN" was organised on 2 November, 2017, 14:00-17:00 in the UN House with participation of more than 30 people from the Government, NGOs and private sector. UNIDO International expert made two presentations: • Main functions and strategic directions of the ArmCTCN • Information about North-Western International Cleaner Production Centre (St. Petersburg) and its activities: business model, technologies, strategies The presentations demonstrate the Expert's view on the directions and prospects of ArmCTCN project development meeting the interests of Armenia, sub-region expected as the project extension area as well as in the global scale involving UNIDO programme support. Furthermore, three Video-Films were demonstrated about technologies in: • Municipal Solid Waste management (St. Peterburg's experience during 4 years). • Chemical Leasing business models (Pilot UNIDO project in Russia, Mexico and Egypt) // a video on UNIDO Chemical Leasing activities: UNIDO Cleaner Production Programme, one step ahead makes difference. • Technology of Virtual Reality (St. Peterburg State Polytechnic University production) ***Key findings of the Mission of UNIDO International Expert*** (a) In Armenia there are all necessary preconditions, there is already a great experience and most importantly has matured the idea of implementing ArmCTCN. It is very important that there is a human capacity, able to implement this project. Government officials are looking forward for the creation of ArmCTCN and ready to support.

	(b) The financial side of ensuring ArmCTCN in the first stage looks understandable. This may be the founding contributions by consortium participants (in this case ArmCTCN will assume the functions of the Coordinator of the Consortium). As ArmCTCN will be involved in the promotion of specific technologies, appear interested organizations and companies, which will attract finance. It should be noted that one of the main obstacles to the effective development of any project is the interdepartmental disconnection (an ancient bureaucratic disease and should be treated calmly and with understanding). ***Conclusion:*** After conducting close consultations with Governmental officials, R&Ds, NGOs, business communities, as well useful advise from CTCN headquarters , the below conclusions can be made after this first fact-finding mission: a. Government of the Republic of Armenia demonstrated its full support and readiness to assist in this initial stage of the ArmCTCN establishment; b. R&D and private sector are ready to discuss and consider their concrete roles and responsibilities in the establishment of the consortium; c. However, the technologies produced by national Research & Development that the TTA has worked with to date are not specifically targeting climate change technologies, and TTA does not have expertise to carry out assessments of technology in terms of its impacts on climate and environment. d. Moreover, the TTA has limited external network for promoting technologies created by its members domestically and internationally, as well as limited capacity to identify potential technology demands (nationally and abroad), outreach to stakeholders, preparation of convincing funding proposals, legal issues and forming alliances/pools. e. From the fundamental science background notions, these limitations seem like “the tip of the iceberg”, while a more deep and essential problem is considered to be a growing ideological crisis (involving climatic, environmental, economic, geopolitics and other aspects). The economic growth based on technical progress exhausted itself as a primary goal, and issues relating to life sustainability in the biosphere (also involving climate sustainability) gain a permanently increasing attention. f. A new challenge for science has emerged. How to preserve the achieved level of technical progress? How to avoid an ecological collapse and the associated global social chaos and a worldwide decline of living standards? g. To solve that task novel approaches seem necessary that would replace the historical confrontation between science and biosphere. Such approaches are apparently taking their time to show up. In the meantime environmental problems continue to be addressed along the conventional scheme - struggle with

	industrial pollution. "Struggle with pollution" capitalizes all the conceptual depth of human interactions with the global environment. h. Modern humanity owes to science not only all of its achievements; science is equally responsible for the ever growing fragility of our world. Our civilization will stand a chance of escaping the approaching ecological collapse if and only if the fundamental science does allocate some of its huge internal resources to focus on the problems of stability (not growth!) of the biosphere, human society and global environment. One specific task in this endeavour would be to study the ecological peculiarities of Homo sapiens as a big animal species, one of the many in the biosphere. i. A major white spot in modern science relates to the question of how nature works when undisturbed by humans: how natural ecosystems - forests, bogs, oceans - sustain themselves. How did it so happen that life in these ecosystems never discontinued and their environment remained suitable for life for hundred millions of years? It is namely this stability and persistence that make natural ecosystems distinct from all, without exception, anthropogenic bio systems including our global civilization. Reflecting on the above challenges, CTCN technical assistance will support a technology transfer platform under the TTA, identification and development of roadmap for most prioritized climate technologies and identification of suitable financial schemes to ensure on-going operations of the technology transfer and discussion platform. Thus, ArmCTCN project is facing a more complex and essential goal relating to the new paradigm based on maintaining “health” of natural ecosystems that requires a significant reduction of anthropogenic impact onto the environment, i.e. the decrease of resource use and consumption. In these conditions, state regulation should involve coordinated approaches and solutions meeting the interests of the government, nature users, local authorities and people generally providing a balance between the industrial/municipal/household impacts with the ecological threshold of the environment. A novel approach to the use of natural resources is required on the basis of performing industrial/municipal/household activities within the frames of so called “biosphere sustainability gap” and necessity in maintaining the biotic regulation as a priority objective of XXI century. And in this context one of the particularly important measure is the development of the regional climate monitoring systems based on GIMS-Technology (tools: air-space monitoring, drone technical performances, spectrometric measurements in real time, etc.) in combination with mathematical modelling methods involving new interdisciplinary sciences: bio-, energy- , photo-, eco-informatics, etc. The perspective development of the

	regional climate monitoring systems based on GIMS-Technology seems in combination with the artificial intelligence (based on artificial neuro nets), promoted by NWICPC (St. Petersburg). **<u>Output 2: Lessons learned from UNIDO CPCs/ITPOs and national consultation for the creation of ArmCTCN:</u>** Based on fact-finding mission results and accumulated experience by UNIDO in establishing and managing CPC and ITPO offices worldwide, draft Concept Note of ArmCTCN was developed and circulated for discussion and comments. The Concept Note (attached as **Annex 3** to this report) identifies overall mission and mandate of ArmCTCN, presents its structure, affiliated bodies, financial mechanisms. It also presents criteria of membership to Consortium and to the Network. As innovative approach, it was suggested to combine CPC and ITPO functions and create ArmCTCN as ***"green ITPO",*** and Technology Transfer Association will assume functions of ***ArmCTCN Secretariat.*** Particularly, it was suggested that ArmCTCN would: a. Serve as an institutional platform for providing technical and expert assistance on identification and transfer of climate technologies and their application in different sectors including an analysis of their economic viability; b. Serve as a platform for transfer of new knowledge on the environment and climate change, information exchange and educational/training activities involving universities, R&D and qualified experts; c. Serve as an institutional mechanism to overcome barriers for the introduction of innovative technologies for climate change mitigation and adaptation, including strengthening the system of legal protection of intellectual property right. d. Initiate the organization of a Consortium involving partners in Armenia (universities, Technology Transfer Association, NGOs, R&Ds); e. Initiate the organization of a Web-portal as a permanent virtual playground for sharing new knowledge, R&Ds on climate changes and best available climate technologies; f. Develop a Climate Technology "Roadmap". It will promote continuous selection and implementation of modern and accessible technologies in Armenia, on the examples of several selected mitigation and adaptation projects, including those identified under TNA programme. g. Serve as a national technological mechanism (ArmCTCN) for cooperation and experience exchange with the international Climate Technology Centre and Network (CTCN) ensuring an open and transparent system of technology transfer of the Republic of Armenia. ***What benefits can get ArmCTCN using the ITPOs experience:*** ArmCTCN could be guided by the principles and rules of the ITPOs:

	a. ArmCTCN through the mechanism of ITPOs small projects (up to and including US $100,000 incl. psc) becomes an attractive framework for other organizations. During several discussions it was agreed that green ITPO model (ITPO for climate) could serve as a framework for the activities of ArmCTCN and attract a number of potential investors. Within the respective expert community, ArmCTCN will select 2 – 3 experts specializing in the investment cycles relating to the promotion of climate technologies from the project identification to the assessment of its efficiency and effectiveness. In doing so, climate ITPO will offer a full package of up-to-date information on screened and validated investment opportunities, including manufacturing facilities, and technology supply sources. ITPO also provide first-hand knowledge (expert`s support) on how to do business relating to the implementation of climate technologies in local environments, including legal and economic aspects. Another focus of AmCTCN will be to create a pool of specialists and experts in engineering, high tech, innovations, demanded in the different fields of industry, living in Armenia and abroad. ArmCTCN could also facilitate the return of earlier departed from Armenia scientists and specialists, or representatives of Diaspora. Bringing Armenian scholars and professionals from abroad will be associated with the transfer of appropriate technologies for the development of Armenian industry and help in the development of these technologies, production lines and even whole plants. ***ArmCTCN role in operating the ITPO Delegate program for investment and climate technology promotion:*** Within this special program, ArmCTCN as a climate ITPO provide reimbursable assistance (consulting) services to potential experts from transboundary countries and Asian countries to give them hands-on training in target climate investment promotion techniques so that delegates are able to promote portfolios of screened investment and technology opportunities from their own countries. Thereafter, a number of ArmCTCN-trained experts act as focal points between their countries and potential foreign partners (in the field: climate technology transfer, investment support, business-to-business according to main UNIDO trends – ISID, GI, RECP, Circular Economy, incl. Green Economy, etc.). **<u>Output 3: Technology Roadmap for prioritized climate technologies.</u>** Technology Roadmap for prioritized climate technologies was developed under this TA and discussed with stakeholders (attached as **Annex 4** to this report). As mentioned above, current technical assistance is based on the results and findings

	of the TNA (Technical Needs Assessment). A TNA report assessed prioritized technologies for climate change mitigation and climate change adaptation in selected sectors. For *climate change adaptation,* the most prioritized sectors were **agriculture and water.** For *climate change mitigation*, most prioritized was the **energy sector.** In the framework of this technical assistance, the TNA list of suggested technologies was reviewed again, and 4 sectors were selected for ArmCTCN as priority sectors for both mitigation and adaptation: ***energy, industry, waste management and land use.*** 2 groups of projects were identified: a. internal, from TNA list, already assessed and discussed; b. external, subject to create partnership with R&Ds, Universities and companies from the region, (i.e. St. Petersburg Plastic Processing Plant). Following milestone actions and steps were suggested for the Technology Roadmap: 1. Preparation of ArmCTCN website (TOR is developed in the framework of this technical assistance) 2. Launching of ArmCTCN 3. Preparation of the application form for technology projects; 4. Development and approval of evaluation criteria of applications 5. Evaluation of first applications; 6. Support in developing Business Plans of selected projects; 7. Support in identifying potential funding sources. Technology Roadmap report includes also suggestion to develop a Concept of the UNIDO eco-industrial parks which will integrate science and industry with social and environmental concerns and promote green industry concept. It is suggested to continue consultations with the Ministry of Finance to release "green" accounts (bonds) for supporting country's needs in climate and clean technology promotion. **Output 4: Define the financial structure and sustainability of the ArmCTCN** **Financial Structure:** In collaboration with the national CTCN Coordinator and UNIDO Country Representative in Armenia, the International Senior Expert assessed and defined the financial scheme of the ArmCTCN. Financial mechanisms of ArmCTCN are defined using CPC and ITPO experience and reflected in the ArmCTCN Concept Note as follows: • ArmCTCN received initial support from CTCN in the form of the Technical Assistance aimed at establishing ArmCTCN platform

	and promoting Climate Change Mitigation and Adaptation Technologies. • A set of actions are recommended to be undertaken by the Government of Armenia and TTA, with technical support of CTCN, UNEP, UNIDO, to promote the constitution of ArmCTCN, and secure financial sustainability and operations of ArmCTCN. • ArmCTCN funding is anticipated from multilateral and bilateral assistance and private sources, as well as co-funding from public sources that will encourage private investors. • ArmCTCN will be supported by financial resources received as fees for technical and expert services rendered to business entities, as well as projects that will be prepared/implemented with participation of ArmCTCN. • Resource mobilization of these projects will be supported by CTCN, UNEP, UNIDO from local and international funds, bilateral and multilateral partners, using financial mechanisms and instruments available under the UNFCCC and Paris Agreement. • Financial management of ArmCTCN will be done by ArmCTCN Secretariat. • ArmCTCN will make the preliminary technical assessment of the pilot projects, and provide brokering services by linking it to financial schemes. • It is suggested to support civil investment climate revolving fund and consider this as one of financial mechanisms for ArmCTCN-supported projects at community level. **Sustainability:** To secure sustainability in the future, ArmCTCN will continue supporting the below mentioned processes within its mandate and mission: • Promote, in collaboration with CTCN / UNIDO / UNEP / UNFCCC, the integration of financial and technological tools (mechanisms) aimed at climate change mitigation and adaptation to climate changes defined by the UNFCCC, Paris Agreement and the INDC of the Republic of Armenia; • Consistently analyse the results and barriers of ArmCTCN activities and develop proposals / projects aimed at development and strengthening of the technological and financial capacities of the Consortium members, with technical support of CTCN, UNEP, UNIDO, UNFCCC. • Consistently develop and strengthen the technological and financial capacities of members of the Consortium; • Support enhancing transparency through the establishment of national Measuring Reporting and Verification (MRV) system; • Creating partnerships with national and international partners for climate technology transfer. Promoting Armenia's position in the field of technology transfer in the region; • Support developing different projects, based on PPP models, including eco-industrial parks, technological engineering

	clusters, etc. ***<u>Main activities undertaken under TA-Response Plan:</u>*** ➢ Inception and fact-finding mission of Mr. Alexander Startsev, UNIDO international expert, 29 October – 04 November 2017 , meetings and consultations with all stakeholders; ➢ Kick off Workshop "Strengthening National Capacities for ArmCTCN" on 2 November, 2017 in the UN House with participation of more than 30 people from the Government, NGOs and private sector. ➢ ArmCTCN Concept Note developed, discussed and finalised with main stakeholders; ➢ After the finalisation of the Concept Note, consultations were held with a number of Universities, Association and NGOs to become Consortium members. As a result 3 MOUs were developed and signed by TTA as ArmCTCNhost institution with: a. Russian-Armenian University, 30 May, 2018 b. "Khazer" Ecological and Cultural NGO, 31 May, 2018 c. National Polytechnic University of Armenia, 5 June 2018 d. MOU with American University of Armenia (AUA) is in a process of negotiations. ➢ Technology Road Map for prioritized technologies developed. ➢ More than 20 meetings of ArmCTCN Working Group with stakeholders and counterparts on different topics, including discussion of ArmCTCN Concept Note, Road Map, were organised in the UN House Conference Hall. UNIDO Country office hosted those meetings and provided logistic, administrative and secretarial support. ➢ Information about ArmCTCN was widely disseminated among target groups. Special presentations and side events on ArmCTCN were organised during the following international events: - ***Digilife Talks 2018*** in the framework of DigiTec Expo 2018, ***7 October, 2018*** - ***Eurasian Week, 22-24 October, 2018***, during the session: "EAEU Digital Consortiums – a Pool of Opportunities for High-Tech Businesses, on 23 October. - Environmental Donor Coordination Group Meeting with the ***NDC Partnership scoping mission***,***15 November 2018, UN House***
Partners organisations	Ministries of Nature Protection, Energy and Natural Resources, Agriculture, Territorial Administration, Economic Development and Investments, Business Armenia, bilateral and multilateral donors.

Beneficiaries	Ministries of Nature Protection, Energy and Natural Resources, Agriculture, Territorial Administration, Universities, R&Ds, NGOs, business associations, target communities.
Methodologies applied to produce outputs and products	Consultations, meetings with key stakeholders
Deviations	Instruction: Please describe any deviations from the response plan against the actual implemented activities, outputs and products. No deviations from the Response Plan. Additional activities mentioned above, i.e. development of partnerships with Universities, signing of MOUs, conducting seminars and ArmCTCN Secretariat meetings, discussing project proposals, development of the TOR for the ArmCTCN Website.
Achieved or anticipated gender benefits from the TA	Criteria for gaining gender benefit will be included in the selection process of technologies. Women will participate in all stakeholder consultations.
Achieved or anticipated co-benefits from the TA	Co-benefits from the TA are already obvious. Awareness about CTCN and technology transfer mechanisms by local and international partners increased, coordination efforts strengthened. Under TA suggested TNA projects were reviewed and updated. One of the financial schemes suggested under this TA, i.e. civil investment revolving fund aimed to address local environmental problems will further consolidate communities and local governance, including women's active participation in decision-making processes. Pool of specialists and technical experts will be created, transparent selection and assessment of innovative ideas will motivate youth for start-ups, challenge skilful specialists from Diaspora to return to Armenia and contribute with their technical capacities; partnership will be established with similar networks, including Eurasian regional networks.
Anticipated follow up activities and next steps	• Develop proposal for the continuation of the TA for institutional strengthening and capacity building of ArmCTCN and submit it to CTCN or other donor funding; • Mobilise resources for creation and maintenance of ArmCTCN web portal; • Prepare list of projects as first applications for CTCN and/or other funding sources; • Become member of door coordination mechanism at country level; • Establish contacts with NDC Partnership Secretariat ; • Enlarge Consortia and network membership, involving local and international R&Ds, private sector. • Prepare Action Plans for the implementation of the signed MOUs with Russian-Armenian University, State Polytechnic University, Khazer NGO; • Finalise and sign MOU with the American University of Armenia.

1. Lessons learnt

	Lessons learnt	Recommendations
Lessons learnt for this TA. Describe essential factors contributing to successful implementation, as well as specific challenges. Recommendations include considerations on what would need to be in place for increasing success of similar efforts (i.e. regulatory, legal, stakeholders, communication, etc.)	This TA bridged 2 processes: INDC and TNA implemented in 2014-2015 and establishment of ArmCTCN for the implementation of the Technology Action Plans in Climate Change Mitigation and Adaptation. However, there is a need to strengthen this chain and consider ArmCTCN as successor of TNA and INDC processes.	• Strengthen multi-sectoral Approach and Government involvement; • Strengthen cooperation with donor community demonstrating economic and environmental benefits of the climate resilient technologies to be used in the priorities sectors.
Lessons learnt related to climate technology transfer Describe opportunities, challenges and barriers for the use and deployment of the technology or technologies supported by the TA. The objective is to identify specific success factors for technology transfer	ArmCTCN will serve as a platform for providing technical assistance on identification and transfer of climate technologies and their implementation in different sectors of economy.	• It is recommended not to Register ArmCTCN as legal entity, TTA will host ArmCTCN. • ArmCTCN will serve as institutional platform for providing technical and expert assistance on identification and transfer of climate technologies and their use in different sectors of economy;
Lessons learnt related the CTCN process for TA	Since ArmCTCN was the first attempt to create similar structure in one of the countries, it was difficult to find international experience in such institutional strengthening projects.	• TTA needs continuation of the TA from CTCN to strengthen the structure, open and maintain ArmCTCN webportal, receive technical expertise in the assessment of the technologies ad projects.

4. Illustration of the TA and photos

For communication purposes, please provide 2-4Power Point slides with illustrations or charts showing the TA process, applied methodology, activities, outputs and achieved results. The illustrations must be copied into the TA Closure report but must also be delivered as power point files. Also, please provide at least five high-resolution pictures in jpg format, capturing technical assistance. The pictures should illustrate how the TA has impacted the lives of the beneficiaries in particular and the communities in general.

5. Information for TA impact description

The information in the table below will be used to produce the CTCN TA Impact Description. The TA Impact description is a 2-page summary document for communication purposes. Please copy information from sections above and technical delivery reports as required.

Challenge: Approx. 500 characters with spaces	The assistance aimed to answer the need for a national platform for:

	- Promoting environmentally sound technologies for climate change mitigation and adaptation, which could be accelerated, diversified and scaled up. - 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.
CTCN Assistance: 2 to 4 bullet points. Approximately 450 characters with spaces	• Conduct in-house consultations with all stakeholders for strategic positioning of ArmCTCN and better coordination with partners. • Develop ArmCTCN Concept Note including its mandate, structure and financial mechanisms; • Based on NCPC and ITPO networks best practices, create ArmCTCN as "green ITPO"; • Develop Technology Roadmap with identification of 2-3 key climate technologies priority.
Anticipated impact:2 to 4 bullet points to summarise anticipated impact. Approximately 250 characters with spaces. As a minimum, please include one of the following: i) Quantity of greenhouse gas emissions reduced, avoided or sequestered; or ii) Number of people with increased capacity to adapt to the impacts of climate variability and change.	By establishing AmCTCN an institutional platform will be created for providing technical and expert assistance on identification and transfer of climate technologies and their application in different sectors. ArmCTCN will facilitate transfer of new knowledge on the climate resilient technologies and practices, share information exchange and bridge Armenia with CTCN and its Consortia and network members.
Linkages and contribution to NDC:2 to 4 bullet points. Approximately 350 characters with spaces	• Armenia's INDC (September 2015) directly describes technology transfer and establishment of ArmCTCN as important mechanisms to support its goal. This technical assistance will directly contribute to the creation of ArmCTCN and Armenia's implementation of INDC targets. • A proposal to establish a "Centre for Climate Technologies" was also included in Armenia's Technology Needs Assessment (TNA) developed in 2017, and priority sectors and technologies for adaptation and mitigation have been identified in the Technology Action Plan, finalised in 2017.
The narrative story: Approximately 1200 characters with spaces	Under the United Nations Framework Convention on Climate Change (UNFCCC), core documents developed at the national level of the Republic of Armenia highlighted importance for the establishment of the Armenia Climate Technology Center and Network (ArmCTCN). Technology Transfer Association with technical assistance of the United Nations Industrial Development Organization (UNIDO), initiated creation of the Armenian Climate Technology Center and Network (ArmCTCN) in May 2017. The project was launched

	in October2017. Technical assistance was provided to strategically position ArmCTCN, support to develop ArmCTCN Concept Note and Technology Roadmap for prioritised technologies, priority sectors have been identified as a result of a number of meetings and consultations with all stakeholders. It also aimed to establish a new platform (ArmCTCN) that can promote climate technologies and can act as a bridge to internationalise local technologies drawing from the worldwide experience accumulated by UNIDO Cleaner Production Centres (CPCs) and Investment and Technology Promotion Offices (ITPOs), as well as provide support to the internationalisation of local technologies, industries and companies. In the Roadmap Energy, Industry, Waste Management and Land Use were identified as priority sectors, and projects from TNA list were put forward for the implementation upon availability of funds. 3 Memorandum of Understanding have been signed with the National Polytechnic University, Armenian-Russian (Slavonic) University, „Khazer" NGO.
Contribution to SDGs: Always include contribution to SDG 13, and to the extent possible, please include contribution to 2other SDGs, describing the contribution with a few sentence for each SDGs concerned. A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/	**SDG 13. Take urgent action to combat climate change and its impacts** - Creation of ArmCTCN with a clear mandate to promote climate change technologies will advance their uptake, hereby contributing to combating climate change and its impacts. **SDG 9. Industry, Innovation and Infrastructure** ArmCTCN will foster innovations and green technologies and their in different sectors of economy; **SDG 11. Sustainable Cities and Communities** ArmCTCN will support initiatives aimed to strengthen civil society and enhance communities' resilience towards different human insecurities. Smart solutions and technological upgrades in municipal governance system will be encouraged and supported, including energy efficiency in construction, waste water treatment, clean transport, etc.

Note: Please see example of a TA Impact Description at the following link:
https://www.ctc-n.org/sites/www.ctc-n.org/files/benin_a_ag_forestry.final_.pdf

Annex 1 (for internal use in donor and UN reporting)

A. Standardised CTCN performance indicators for donorand UN internal reporting
Please add quantitative values for indicators relevant to the particular TA in the list below. Non-relevant indicators should be left blank. Please only fill in the table for activities and outputs conducted or produceddirectly by the CTCN assistance.

CTCN standardised performance indicators	**Quantitative value**	**Qualitative description** *List the various elements corresponding to the quantitative value*
1. Overview		
Number of active person-days (not full duration) of technical assistance provided to counterparts or stakeholders by international experts and consultants	**7 days**	**5-day fact-finding mission, 29.10.2017 – 04.11.2017 Recommendations by international expert**
Number of active person-days (not full duration) of technical assistance provided to counterparts or stakeholders by national experts and consultants	**N/A**	
Number of for external communication and outreach activities conducted to showcase the assistance (news release, newsletters, articles on website, etc.)	**20**	**Articles on websites of the UN Armenia, Universities, social media, TV channels,**
2. Events (other than trainings) held as part of the assistance		
Number of international and multi-country (at regional or sub-regional level) technology and knowledge sharing events	**1**	**Kick-off workshop with participation of Government officials NGOs, private sector and donors.**
Number of participants in the events above		
Number of national technology and knowledge sharing events		
Number of participants in the events above		
Number of public-private events related to technologies		
Number of participants in the events above		
3. Training and capacity building activities conducted during the assistance		
Number of training sessions and capacity strengthening activities		
Number of people who received the training		
Number of men		
Number of women		
Total number of organisations trained		
Number of research organisations, laboratories and universities		
Number of private companies		
Number of cities and local government		
Number of communities		
Number of ministries		
Number of specialised governmental institutions		
Number of non-profit organisations		

Level of satisfaction of participants after the training(from training feedback form). Categories include: From very satisfied, satisfied, partly not satisfied, not satisfied at all		
Percentage of participants that increased their capacities thanks to the training (from training feedback form). Categories include: Significantly, very, moderately, to none.		
Percentage of men		
Percentage of women		
4. Tools, technical reports and information material supported by the assistance		
Total number of tools, technical reports and information material supported by the assistance (excluding mission, progress and internal reports)		
Number of tools strengthened, revised or developed		
Number of technical reports strengthened, revised or created		
Number of other information materials strengthened, revised or created		
5. Policies, laws and regulations supported by the assistance		
Number of policies, strategies, and plans drafted addressing climate change adaptation		
Number of policies, strategies, and plans drafted addressing climate change mitigation		
Number of documents developed to inform other policies, strategies, and plans on climate change adaptation (sectoral strategies, national development plans, etc.)		
Number of documents developed to inform other policies, strategies, and plans on climate change mitigation (sectoral strategies, national development plans, etc.)		
Number of laws, agreements, or regulations drafted addressing climate change adaptation		
Number of laws, agreements, or regulations drafted addressing climate change mitigation		
Number of documents developed to inform laws, agreements, or regulations on climate change adaptation		
Number of documents developed to inform laws, agreements, or regulations on climate change mitigation		
6. Institutional strengthening supported by the assistance		
Number of institutional arrangements in place to coordinate near and long-term national adaptation plans (NAPs)	**15**	**ArmCTCN Working Group meetings with participation of stakeholders**
Number of organisations with increased technical capacity to advance near and long term national adaptation plans (NAPs) which integrate EbA		

Number of organisations with increase awareness and knowledge among countries to better own and drive national adaptation planning processes		
7. Partnerships and cooperation		
Number of private companies directly engaged in the assistance (that partnered with the proponent, the beneficiaries or the CTCN to implement the assistance)	**4**	**"JINJ" "Multi Solar" "FREEEnergy" "Arpi Solar"**
Number of South-South collaboration enabled during or through the assistance, when stakeholders from other countries were involved in the assistance		
Number of North-South collaboration enabled during or through the assistance, when stakeholders from other countries were involved in the assistance		
Number of Triangular collaboration enabled during or through the assistance, when stakeholders from other countries were involved in the assistance		

B. Indicators of anticipated impacts that may occur after the TA is completed

CTCN standardised performance indicators	**Quantitative value** Insert the request value and unit	**Content** List the elements included in the number provided	**Expected timeline** Indicate when the indicator and value are expected to be achieved	**Responsible institution** Indicate the institution(s) that will play leading role in enabling the indicators and anticipated values to be achieved
16. Anticipated finance mobilised				
a) Anticipated amount of public/donor investment mobilised (in USD) from the beneficiary country for climate change activities as a result of the TA		Negotiations started with local companies and R&Ds to become members fo Consortium		
b) Anticipated amount of public/donor investment mobilized (in USD) from international and regional sources for climate change activities as a result of the TA		Bilateral and multilateral donors were interested to support ArmCTCN		
c) Anticipated amount of private investment mobilised (in USD) from the beneficiary country for climate change activities as a result of the TA				
d) Anticipated amount of private investment mobilised (in USD) from international and regional				

sources for climate change activities as a result of the TA				
17. Policies				
a) Anticipated number of policies, strategies, plans, addressing climate change mitigation officially proposed, adopted, or implemented as a result of the TA				
Anticipated number of policies, strategies, plans, addressing climate change adaptation officially proposed, adopted, or implemented as a result of the TA.				
b) Anticipated number of laws, agreements, or regulations addressing climate change mitigation officially proposed, adopted, or implemented as a result of the TA.				
Anticipated number of laws, agreements, or regulations addressing climate change adaptation officially proposed, adopted, or implemented as a result of the TA.				
c) Anticipated laws, policies, regulations, strategies and plans where climate change mitigation will be mainstreamed as a result of the TA				
Anticipated laws, policies, regulations, strategies and plans where climate change adaptation will be mainstreamed as a result of the TA				
18. Anticipated number of public-private partnerships created				
19. Anticipated twinning arrangements created as a result of the TA				
20. Anticipated number of technology projects prepared and implemented to support action on low emission and climate-resilient development	5			
21. Anticipated number of strengthened National Systems of Innovation and technology innovation centres in recipient country				

22. Anticipated Clean Energy Generation Capacity Clean supported by the TA that has achieved financial closure				
23. Anticipated and projected GHG reductions. Quantity of greenhouse gas (GHG) emissions, measured in metric tons of CO2-e, anticipated to be reduced or sequestered as a result of projects supported by the TA				
24. Anticipated clean energy generation capacity supported by the TA that has achieved financial closure				
25. Anticipated and projected greenhouse gas emissions reduced or avoided through 2030, in metric tons of $CO_{2\text{-}e}$, from adopted laws, policies, regulations, or technologies related to clean energy/sustainable landscapes as a result of the TA				
26. Anticipated number of people improving their livelihood as co-benefits as a result of the TA				
27. Anticipated technology types effectively deployed in the country				
28. Anticipated UNFCCC processes implemented as a result of the TA (NAMA, NAPA, NDC, etc.)				
29. Anticipated Technology Needs Assessments (TNA) and technology Action Plans (TAP) as a result of the TA				
30. Anticipated cooperative research, development and demonstration programmes within and between developed and developing country Parties facilitated as a result of the TA				
31. Anticipated improved climate change observation systems and related information management in developing country Parties.				

ArmCTCN: Concept Note

Background and context

Under the United Nations Framework Convention on Climate Change (UN FCCC), core documents developed at the national level of the Republic of Armenia highlighted importance for the establishment of the Armenia Climate Technology Center and Network (ArmCTCN).

a. The need and expediency of the establishment of the Armenian Climate Technology Center (ArmCTCN) is set out in the Third National Communication on Climate Change developed and submitted to UNFCCC Secretariat in 2015.
b. Armenia submitted its Intended Nationally Determined Contribution (INDC) in September 2015, where technology transfer is outlined as a contribution to the INDC, and the establishment of climate technology knowledge platform (working title "ArmCTCN") is listed as a mechanism to ensure an "open and transparent system of technology introduction and transfer".
c. A proposal to establish a "Centre for Climate Technologies" was also included in Armenia's Technology Needs Assessment developed in 2017, and priority sectors and technologies for adaptation and mitigation have been identified in the Technology Action Plan.

ArmCTCN: overall mission and mandate:

The overall ***mission*** of ArmCTCN is to promote environmentally sound technologies for climate change mitigation and adaptation, which could be accelerated, diversified and scaled up.

It will serve as 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.

Particularly, ArmCTCN will:

a. Serve as an *institutional platform* for providing*technical and expert assistance*on identification and transfer of climate technologies and their application in different sectors including an analysis of their economic viability;
b. Serve as a platform for *transfer of new knowledge* on the environment and climate change, information exchange and educational/training activities involving universities, R&D and qualified experts;
c. Serve as an *institutional mechanism* to overcome barriers for the introduction of innovative technologies for climate change mitigation and adaptation, including strengthening the system of legal protection of intellectual property right.

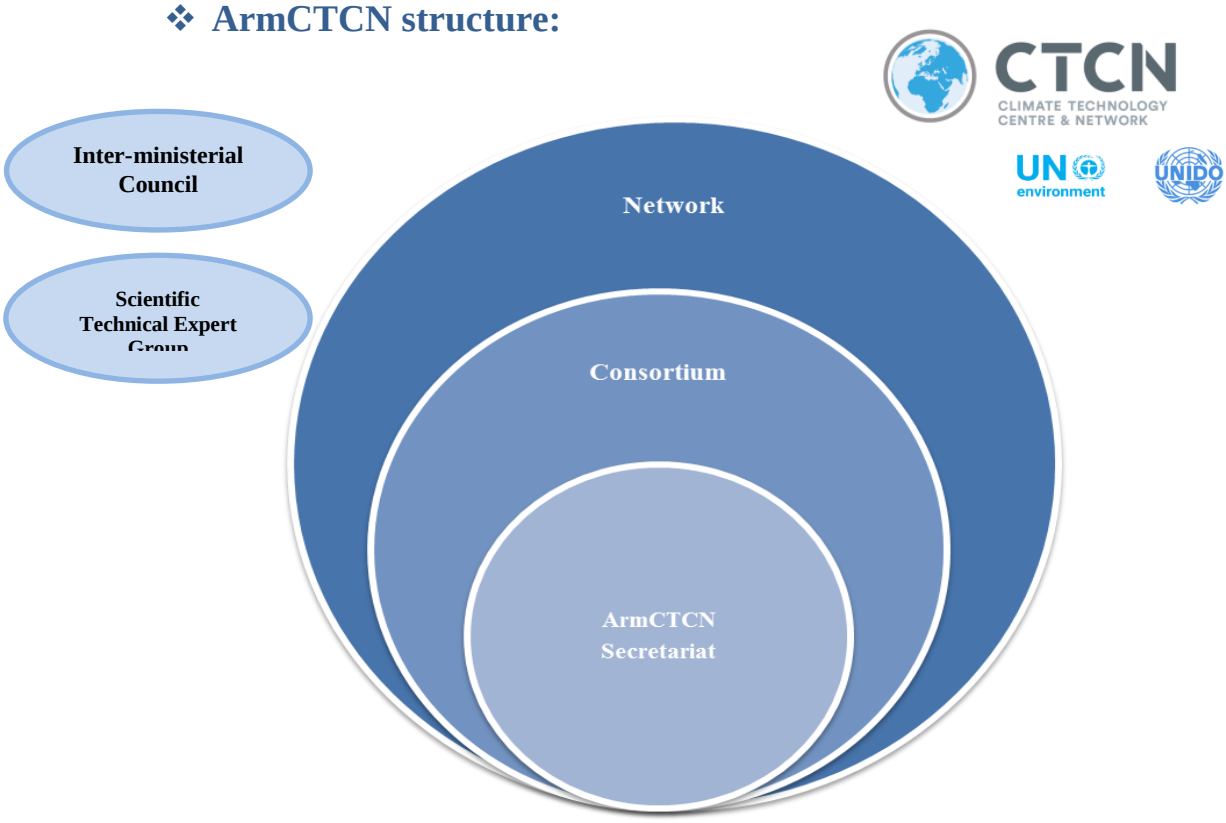
d. Initiate the organization of a *Consortium* involving partners in Armenia (universities, Technology Transfer Association, NGOs, R&Ds);

e. Initiate the organization of a *Web-portal* as a permanent virtual playground for sharing new knowledge, R&Ds on climate changes and best available climate technologies;

f. Develop a *Climate Technology "Roadmap".*It will promote continuous selection and implementation of modern and accessible technologies in Armenia, on the examples of several selected mitigation and adaptation projects, including those identified under TNA programme.

g. Serve as a *national technological mechanism (ArmCTCN)* for cooperation and experience exchange with the international Climate Technology Centre and Network (CTCN) ensuring an open and transparent system of technology transfer of the Republic of Armenia.

❖ ArmCTCN structure:



The ArmCTCN is established through a memorandum between relevant scientific, academic, and other institutions. The Armenian Technology Transfer Association (TTA) will initially host the platform and act as ARMCTCN Secretariat, while development of a web portal will ensure a timely exchange of information on technologies between its members and access to it for all interested parties within Armenia, and globally. It will move forward the technologies that have been prioritized during the TNA process in Armenia, including 6 adaptation and 14 mitigation technologies.
(https://drive.google.com/open?id=1lkn3ri7nK2mTYWStMhjqdeXnEGn3HNNF)

In addition to these (6+14) technologies, ArmCTCN will act as a search engine for and identification of the best new available climate technologies.

ArmCTCN will support to clarify, assess and set priorities in respect of available tools for adaptation and mitigation of climate change using novel information-communication technologies in the field of environmental monitoring.

Inter-ministerial Council:

The Inter-ministerial Coordination Council has been established under the Prime Minister's Decree to comply with the requirements and provisions of the United Nations Framework Convention on Climate Change (UNFCCC).

The Inter-ministerial Council, through its Working Group, supports ArmCTCN as a national capacity building for technology development and transfer.

Inter-ministerial Council Working Group:

The main goal of the Working Group is to provide thematic counselling and support to the Inter-ministerial Council on the implementation of the requirements and provisions of the United Nations Framework Convention on Climate Change.

The Republic of Armenia has Inter-ministerial Climate Change working group. This working body consists of Scientific and Technical Experts, which should simultaneously work and establish a link between ArmCTCN and Inter-ministerial Council.

The main tasks are to provide professional and expert support to the development and implementation processes of the implementation of the commitments undertaken by the Republic of Armenia from the Convention and the protocols adopted in its framework and in the following areas:

- Climate Change Mitigation and Adaptation strategic documentation, projectdevelopment and professional opinion formation
- development of national capabilities in technology development and transfer
- financing and financial mechanisms
- Armenia's effective participation in the bodies acting and forming under the Convention
- information security, the inventory of the greenhouse gas cadastre, the climatic system observations and the intergovernmental panel on Climate Change Experts
- coordination of issues that arise with other environmental conventions
- awareness, education and training

Scientific and Technical Expert Group (STEG):

The STEG will provide:

- objective, strategic scientific and technical advice,
- operational strategies and programs on projects approaches.
- interact with other relevant scientific and technical bodies, particularly with the subsidiary bodies of the UNFCCC

Financial mechanisms of ArmCTCN

- ArmCTCN received initial support from CTCN in the form of the Technical Assistance aimed at establishing ArmCTCN platform and promoting Climate Change Mitigation and Adaptation Technologies.
- ArmCTCN funding will be based on multilateral and private sources, organizations as well as partial public funding that will encourage private investor involvement.
- ArmCTCN will be supported by financial resources received as charges for technical and expert services rendered to business entities.
- Financial management of ArmCTCN will be done by ArmCTCN Secretariat.
- ArmCTCN will further develop INDC financial mechanism and UNFCCC financial instruments.
- ArmCTCN will make the preliminary technical assessment of the pilot projects, and provide the brokering services by linking it to financial schemes.

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

2. **Creating an idea of the "green" accounts 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 mechanism**

Typical sources of initial capital investment

- Private Grants
- Corporate Social Responsibility
- Government Subsidies
- Multilateral Programs
- Non-Governmental Organizations Financing Mechanism
- In-kind Financing

Development perspectives and future of ArmCTCN

- Integrate financial and technological tools (mechanisms) aimed at climate change mitigation and adaptation to climate changes defined by the Paris Agreement and the INDC of the Republic of Armenia;

- Consistently develop and strengthen the technological and financial capacities of members of the Consortium,
- Support enhancing transparency through the establishment of national Measuring Reporting and Verification (MRV) system.
- Creating partnerships with national and international partners for climate technology transfer. Promoting Armenia's position in the field of technology transfer in the region.
- Support developing different projects, based on PPP models, including eco-industrial parks, technological engineering clusters, etc.

Consortium

Consortium is embracing the Armenian stakeholders providing them an opportunity to incubate /accelerate climate technologies by accessing the international and local funds/stakeholders, and carrying out their transfer through the Climate Technology Centre and Network (CTCN).

Consortium member may have his own roster of experts, which provides the implementation of his functions.

- Consortium will act with the participation and technical assistance of UNIDO given its global experience addressing climate change technologies, accumulated technical expertise.
- Coordinator of the Consortium is the Technology Transfer Association (TTA), Armenia. UNIDO will facilitate TTA in providing technical assessments, including transfer and deployment of technologies, industrial and private sector and civil society organizations engagement, etc.
- Secretariat of the Consortium will ensure the documents flows within the Consortium and with external entities.
- Thematic Working Groups will ensure the activity of Consortium in various fields, such as, projects/technologies reviewing, market potential assessment, training/education of Portfolio companies entrepreneurs, etc.
- The Consortium Members Conference could be held in case of necessity of discussion issue concerning the consortium development.

Consortium core activities:

- Serving as a platform for providing technical assistance on identification and transfer of climate technologies and their implementation in different sectors of economy.
- Serving as a platform for information sharing, knowledge transfer, educational/training activities, establishing the links to universities and R&Ds with the industry.
- Finding ways/options to co-finance and facilitate access to international donor organizations.

Membership to Consortium

Consortium members are selected through a consensus process.
Procedure for adding a new member of the Consortium:

- Organization submits completed Membership Application to the Secretariat of the Consortium.
- The Secretariat of the Consortium sends over the Membership Application to Consortium Members for their review, and assigned a Consortium Members' meeting for making decision on the application.
- If in the result of the Consortium Members' meeting, with possible invitation of representative(s) of applicant, none of the Members will have any objection, then a standard Membership Agreement will be signed with the applicant.

  - Membership can be legal entities, such as companies, academic research institutions, educational institutions, NGOs, organizations.
  - Consortium Member should participate, at least, in one of the activities mentioned in ArmCTCN services.
  - The projects / technologies presented by the Members of the Consortium should be considered for incubation / acceleration as a matter of priority.
  - Members should participate at the preparation of internal regulatory documents, such as, Procedure of reviewing the submitted projects/technologies, Assignment of the Consortium's share in Portfolio companies, IP protection, Consortium Structure including the Thematic Working Groups, etc.
  - Members of the network must be open for cooperation. The services and cooperation proposals they offer should not be contrary to the goals and objectives of ArmCTCN.
  - Network members commit themselves to respect each other's copyright.
  - Membership can be withdrawn arbitrarily by Member's will.

Membership to Network

Members of the Network are expected to include a broad variety of different types of institutions ranging from regional climate technology centres and networks to intergovernmental, international, regional and sectoral organisations, partnerships and initiatives that could contribute to technology deployment and transfer. Also included could be research, academic, financial, non-governmental, private-sector and public-sector organisations, and partnerships.

Feasibility criteria of network membership:

- Capacity building and knowledge management capabilities
- Experience with relevant phases of technology development and transfer in developing countries
- Ability to provide objective and neutral support to developing countries and to be responsive to country needs,
- Ability to provide high quality technical assistance and capacity building services.

Providing professional support to enterprises for partnership and business opportunities

During several discussions it was agreed that green ITPO model could serve as a framework for the activities of ArmCTCN. By this time, ArmCTCN will attract a number of potential native investors and possess the information on ready to implementation priority climate technologies.

Within the respective expert community, ArmCTCN will select 2 – 3 experts specializing in the investment cycles relating to the promotion of climate technologies from the project identification to the assessment of its efficiency and effectiveness. In doing so, climate ITPO will offer a full package of up-to-date information on screened and validated investment opportunities, including manufacturing facilities, and technology supply sources. ITPO also provide first-hand knowledge (expert`s support) on how to do business relating to the implementation of climate technologies in local environments, including legal and economic aspects.

ArmCTCN role in operating the ITPO Delegate program for investment and climate technology promotion

Within this special program, ArmCTCN as a **climate ITPO** provide reimbursable assistance (consulting) services to potential experts from transboundary countries and Asian countries to give them hands-on training in target climate investment promotion techniques so that delegates are able to promote portfolios of screened investment and technology opportunities from their own countries. Thereafter, a number of ArmCTCN-trained experts act as focal points between their countries and potential foreign partners (in the field: climate technology transfer, investment support, business-to-business according to main UNIDO trends – ISID, GI, RECP, Circular Economy, incl. Green Economy, etc.).

ITPO functions and scope of activities at ArmCTCN

There are no established frameworks and structural standards in countries where ITPOs are established. Furthermore, no special climate ITPOs are currently developed within the frames of UNIDO. Taking into consideration the importance of climate change mitigation and adaptation objectives, ArmCTCN can become the first ITPO oriented towards the promotion of climate technologies. ArmCTCN as a climate ITPO chooses the most convenient form of work, not necessarily acting as a legal entity.

The main criteria are:

- the professional staff related to UNIDO;
- trained activities dealt with by ITPO,
- the presence of Governmental support;
- at least one or two stable source (donors) targeting investment promotion in the field of climate technologies.

What benefits can get ArmCTCN from ITPOs experience

Since its inception, ArmCTCN as a climate ITPO could be guided by the principles and rules of the ITPOs. First of all, ArmCTCN through the common mechanism of ITPOs small projects becomes an attractive framework for other organizations. These concerns newly created Consortium members, as they are attached to work in UNIDO area and representatives of the Consortium within the framework of the project become UNIDO experts.

- Such an approach may be of interest to all participants in the Consortium without exception. Especially it can be interesting for universities as members of the Consortium.

- Firstly, young scientists and specialists can find a useful and prestigious job in the country and thus they may be encouraged not to look for a work abroad. This is a real measure to prevent the outflow of valuable human resources from Armenia, and the Government may support these efforts on the part of ArmCTCN.

- Secondly, this project could facilitate the return mechanism back into Armenia earlier departed from country scientists and specialists. Bringing Armenian scholars and professionals from abroad will be associated with the transfer of appropriate climate technologies for mitigation and adaptation of the developing of Armenian industry to climate changes. From abroad attracted by the Armenian specialists and scientists will receive high status of UNIDO international experts, worldwide prestigious field of activity relating to climate, quality work in their native country.

Streams of the work of ArmCTCN

- Department for training experts and consultants through collaboration with universities, in which short-and medium-term will be organized refresher courses in the field of eco-dynamics (changes in the “nature-society” system) and climate technologies for climate change adaptation/mitigation;
- R & D sector, including cooperation with the Committee on Science of the Republic of Armenia for the coordination in the execution of development work in the field of advanced climate technologies;
- Technical panel on information storage for advanced climate technologies transfer;
- Virtual playground in conjunction with the web-site for awareness raising and to help Government to develop a policy according to the main UNIDO trends;
- Financial advising sector for investment promotion and cooperation with donors;
- Sector of monitoring and assessment of the effectiveness of those or other proposed climate technologies for mitigation and adaptation.

Expected end-of-project situation:

Sustainable Centre capable of providing the services to the region with the onset of sustainability after 3 years:

- Bring the earnings through implementation of joint project activities with potential clients to a level, which will cover the running costs of the Centre;
- Take a stake in other profit making organizations in the area of the waste management utilizing donor`s fund;
- Acquire production facilities for profit making activities in the areas of waste management and channel the revenues from commercial activities to support the Centre;
- Foster intellectual property (know-how and new technologies) and use it to promote new projects;
- Respond to local needs using TNA-methodology and technology support through its partner organizations (consortium and network).
- Create an innovation venture foundation from the attracted investments and project contributions;
- Ensure state contracts on a permanent basis.

Annex 3 .Technology Roadmap for prioritized climate technologies.

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. "CavitaBiocomplex" 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:

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

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

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

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

10. 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.

Referring to the CTCN Gender Mainstreaming Tool for Response Plan Development, ArmCTCN Roadmap will focus on the country or sector's long-term goals even though the technical assistance may be focused and more short-term.

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. Armenia Cleantechprogramme (GCIP) implemented in 2014-2016 is considered as Success Story in involving women's teams in the national competition and development of women-led clean technologies business profiles.

Timeline and key milestones of the Road map

1-2 years - establishment of the ArmCTCN Consortium and Network
3-5 – Institutional set up with legal status under the auspice of the "Technology Transfer Association"
7-10 – 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.

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.

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	In the framework of ArmCTCN, it is advisable to promote a large-scale

		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 signs, an experimental batches photoluminescent paints, and carried out a trial use of this products.	implementation of photoluminescentmaterials 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.
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,	This project can be illustrative and at the same time serve as an example of the combination of

		based on the INDC's financial mechanism - the Climate Social Revolving Investment Fund.	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 Organizational Technology for the Existing Lusakert Biogas Plant	The program has not lost its importance, but there is no progress. The main obstacle is the insufficient tariff of electricity generated by cogeneration.	It is advisable to refer to 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.

CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Annex II

Technologies Roadmap

		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																						
	Deliverables: Composition of the list of 2-3 pilot projects that uses technologies																						

		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***	
	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***																						

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		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**	
5	***Round 2***: Business Plan / Action Plan development for the **1st** project																						
	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																						

		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 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																						

		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.																						
10	***Round 3***: Identification of potential financing sources for the **2nd** project and sending an application																						
	Deliverables: Getting the approval and first tranche for the 2nd pilot project that implements the technology of																						

		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**	
	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																						