

FINAL REPORT

- 1. Name, Signature:** Alexander Startsev, UNIDO International Expert
- 2. UNIDO project:** № 120444, «Capacity Building for ArmCTCN»
(Armenian Climate Technology Center and Network)

3. Location: home based location

4. Duration: January - July 2018

5. Main duties:

Regarding Output 1: Strategic positioning of ArmCTCN (Expert`s Mission Final Report have submitted in December 2017)

- Inception and fact-finding mission report with operational and strategic findings and recommendations for ArmCTCN structure and specifications were achieved during a five-day mission to Yerevan, Armenia (7 working days in total) and subsequent home based work.

Regarding Output 2: Lessons learned from UNIDO CPCs/ITPOs and national consultation for the creation of ArmCTCN

- Overall mission and mandate;
- Affiliation: definitions of roles of local institutions;
- Statute: relevant documentation about funding, legal issues, databases, etc.;
- Requirements for membership (staff, network, consortium, stakeholders, partnerships, etc.);
- Outline of ArmCTCN operational processes (including technology transfer, capacity building, training, dissemination, knowledge management, other).

Regarding Output 3: Technology Roadmap for prioritised climate technologies

- Support a technology Roadmap for technologies prioritisation;
- Identify financial structure and sustainability of the ArmCTCN;
- Providing support to the internationalisation of local technologies, industries and companies;

6. Duties context

6.1. Lessons learned from UNIDO CPCs/ITPOs and national consultation for the creation of ArmCTCN

All requested topics: overall mission and mandate, affiliation, statute, requirements for membership and outline of ArmCTCN operational processes were presented in the ArmCTCN Concept Note and ArmCTCN Consortium Memorandum (prepared in January, 2018, followed by a prolonged phase of consultations and harmonization, and, finally, signed on 30.05.2018)

In the course of this work, the expert used data containing a set of strategic and operational recommendations for the creation of ArmCTCN, based on and using the experiences from the UNIDO CPCs/ITPOs and key findings from stakeholders' consultations.

During the preparation of ArmCTCN Concept Note and ArmCTCN Consortium Memorandum, the international expert participated in skype-conferences, involving the discussion and coordination of the following issues:

- organisational chart of ArmCTCN activities based on more than 15 years experience of NWICPC St.Petersburg;
- organisation of special working groups, including the Inter-ministerial Coordination Council and Inter-ministerial Council Working Group, Scientific and Technical Expert Group (STEG);
- Financial mechanism of ArmCTCN;
- Development perspectives and future of ArmCTCN;
- Activity experience of currently functioning ITPOs (particularly, financially sustainable ITPO in Moscow) and possible ITPO models applicable for ArmCTCN. A promising solution is the development of Green ITPO model which could serve as a framework for the activities of ArmCTCN;
- ITPO functions and scope of activities at ArmCTCN;
- definition of benefits that ArmCTCN can gain from ITPOs experience;
- Streams of ArmCTCN activities.

More detailed information is presented in the ArmCTCN Concept Note and ArmCTCN Consortium Memorandum (see Annexes).

6.2. Technology Roadmap for prioritised climate technologies

In collaboration with the Armenian ArmCTCN team, UNIDO Country Representative in Armenia and the national CTCN were considered 6 + 14 climate technologies (while 2-3 key climate technologies were requested for identification), which the ArmCTCN will focus on to kick-start its initial operation.

Regarding the considered and suggested technologies, the international expert's mission involved the following issues:

- definition of a particularly important measure based on the development of the regional monitoring systems based on Geo-Information Modeling System (GIMS) -Technology (tools: air-space monitoring, drone technical performances, etc.) in combination with mathematical modeling methods involving new interdisciplinary sciences: bio-, energo-, photo-, eco-informatics, etc.; first experience – start up project: Diagnostic of the Sevan lake's hydro dynamical system with the GIMS-Technology use;
- strengthening of the regional monitoring systems based on GIMS-Technology using Artificial Neural Network (Artificial Intelligence) – Russian innovative technology;
- discussion of the possibility for the implementation of well-established Russian technologies CAVITA (the relating described descriptions and presentations were presented to the Armenian ArmCTCN team) in the agricultural sector of Armenia (particularly, in respect of the adaptation to climate changes and mitigation of their adverse consequences);

- presentation of the experience of St.Petersburg “Komsomolskaya Pravda” plant on plastic processing and waste conversion into useful products to the Armenian ArmCTCN team, including detailed presentations, assortment of products manufactures from secondary plastics; the parties exchanged the letters of intention confirming a mutual interest in; a representative of Armenian ArmCTCN team visited the plant and acquainted wit the production during the visit to St.Petersburg;
- detailed description of NWICPC experience in the development and promotion of a promising reagent-free process for wastewater purification and ground water desalination based on the hydrowave method developed in Russia (involving detailed presentation, testing data and chemical analyses data from different laboratories, particularly in respect of the agricultural sector and enterprises of different branches in Armenia;
- based on eco-industrial park concept developed by NWICPC for the Peter the Great St.Petersburg Polytechnic University, Inter-university platform for the facilitation of UNIDO Program of Eco-Industrial Parks development was proposed for the implementation in the interests of ArmCTCN and Consortium: this platform provides a new vision and approach to re-industrialisation in the Republic of Armenia, particularly Industry 4.0 program (advanced plants, digital economy, artificial intelligence, smart city).

In the course of cooperation with the Armenian ArmCTCN team criteria for enhancing gender benefits and co-benefits were developed and included in the assessment and identification of relevant technologies.

In collaboration with the national CTCN Coordinator and UNIDO Country Representative in Armenia, the International Senior Expert carried out the design and formulation of a technology Roadmap based on the prioritised climate technologies. The objective of the roadmap defined the Government’s, TTA’s and ArmCTCN’s further engagement and support for technology transfer covering both export and import, required enabling conditions, technology dissemination and implementation in Armenia.

As a result, the prepared Roadmap has an initial timespan of 10 years and includes key milestones /deliverables during this period. Gender and co-benefits are included in the technology roadmap.

Assessment and definition the financial structure and sustainability of the ArmCTCN

In collaboration with the national CTCN Coordinator and UNIDO Country Representative in Armenia, the International Senior Expert were assessed and defined the financial scheme of the ArmCTCN. The activity have produced a set of recommended actions to be undertaken by the Government of Armenia and TTA to facilitate the constitution of ArmCTCN, its long-term financial sustainability and operations.

Detailed Financial mechanisms of ArmCTCN as ITPO for climate

- 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 make the preliminary technical assessment of the pilot projects, and provide the brokering services by linking it to financial schemes.

Typical sources of initial capital investment

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

Guidelines and recommendations based on experiences from the CPCs/ITPOs and findings for ArmCTCN

The analysis of the initial organization phase and financial support attraction for **NWICPC, St.Petersburg** indicates the following essential issues.

At the initial step (1998-2000) preceding NWICPC establishment the financial support was provided by the project initiator – industrial Interferrum Metal (Ship breaking Yard in St.Petersburg). During this step the established Centre became a legal entity (NGO as an autonomous non-profit organization). The relating Cleaner Production Department of UNIDO provided a set of office equipment for NWICPC.

Then the relating UNIDO department suggested the Centre experts the participation in a pilot project performed by UNIDO on POPs inventory within the frames of preparations for the Stockholm Convention on Persistent Organic Pollutants (POPs). The scheduled activities on this project were launched in 2001 as soon as donors for NWICPC were found with the aid of the relating UNIDO department.

The financial donor support continued for 5 years (the activities were performed in two steps 3 + 2 years). Subsequently, NWICPC became a self-supported project. The Centre searched customers among industrial enterprises and performed consulting activities, involving already prepared own experts, simultaneously participating in programmes initiated by UNIDO including Chemical Leasing, RECPnet (UNIDO – UNEP), UNIDO projects for other countries.

The experience of UNIDO Centre in Russia (Moscow) particularly includes the following.

The United Nations Industrial Development Organization Centre for International Industrial Cooperation in the Russian Federation (hereinafter – **UNIDO Centre**) was established in 1989 within the framework of the Agreement between UNIDO and the Government of the USSR. The Agreement was renewed in 1992 with the Government of the Russian Federation. UNIDO Centre in Russia officially representing UNIDO in Russia is neither legal entity or non-resident.

The Agreement stipulates general legal aspects of the Centre's status, objectives, activities and priority tasks. All financial matters, including project budget, are set forth in the respective Trust Fund Agreement between the parties signed in December 2008.

ITPO Russia. Through the support of the UNIDO Centre, SMEs in Russia can enhance their knowledge and experience on how to establish cooperation with foreign partners in other countries. The UNIDO Centre is closely linked with the UNIDO worldwide Investment and Technology Promotion Network (ITPO Network). This results in an increased number of investment and cooperation projects under promotion, negotiation and implementation.

Services of ITPO Russia

- Access to investment information, government and private business institutions and contacts in other countries through the UNIDO worldwide network Direct communication with and access to entrepreneurs worldwide

- Participation at UNIDO-sponsored and/or organized investment and technology promotion events
- Upgrading skills of local staff of investment-related institutions by using UNIDO investment promotion methodologies and tools, e.g. project identification, screening, evaluation and promotion, building of strategic business alliances, etc.

Main partners of ITPO Russia

- Ministry of Natural Resources and Environmental Protection, Russian Federation
- Ministry of Natural Resources and Environmental Protection, Republic of Tatarstan
- Global Environment Facility (GEF)
- Russian Energy Agency
- European Bank for Reconstruction and Development (EBRD)
- Moscow Region

ITPO Russia (Moscow) involves three experts and a supervisor (simultaneously director of **UNIDO Centre in Russia**). ITPO Russia (Moscow) gains profit for the preparation, execution and promotion of technological projects according to customers' requests. ITPO projects are processed according to a standard procedure. The main documents include a Trust Fund Agreement signed with the project donor and standard Project Document. For the provided services ITPO Russia receives payments in the amount coordinated with project customers.

What can be suggested to ArmCTCN, based on experiences from the NCPCs/ITPOs

At the beginning (e.g. for the first two years) ArmCTCN will be based on UNIDO projects' support. During this phase ArmCTCN will not register as a legal entity according to Armenian legislation. But later it should have its financial mechanism to get some service fee from innovative and climate technology projects.

The main goal of ArmCTCN will involve **providing professional support to enterprises for partnership and business opportunities in innovative and climate technology promotion**

During several discussions it was agreed that green ITPO model (**ITPO for climate**) 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.

In 2015 **UNIDO ITPO** provided for ITPO network a simplified procedure of preparation, coordination and promotion of small projects (up to and including US\$100,000 incl. psc.)

New Project Document Formulation & Approval Process as per UNIDO/DGB/(P).130:

The programme and project formulation and approval function, dated 4 July 2014, sets out the procedures for project formulation and approval within the new ERP system.

For IP projects the following will be proposed for Executive Board approval:

An item type for IP projects will be created and a grant will be issued to it.

Proposed new Workflow for IP Projects (up to and including US\$100,000 incl. psc.)

According to the new Guidelines, the maximum amount for fast-track approval is set at US\$100,000, whereas the current threshold for IP projects is €100,000 –amount to be discussed with Management)

The workflow for IP projects would be as follows:

-Within the ERP system, the submitting ITPO Head as Project Manager (PM) will prepare the project document according to the new template in the system and submit it to obtain the clearance of the ITPO Coordinator and the approval of the Director, PTC/BIT;

-For projects with a value up to and including US\$100,000 (incl. 5% psc.) or the local equivalent thereof and after approval of the Director, PTC/BIT, the ITPO Head as PM has the delegation of authority to implement the project in line with all ERP requirements. Training for this specific purpose should be provided to ITPO staff.

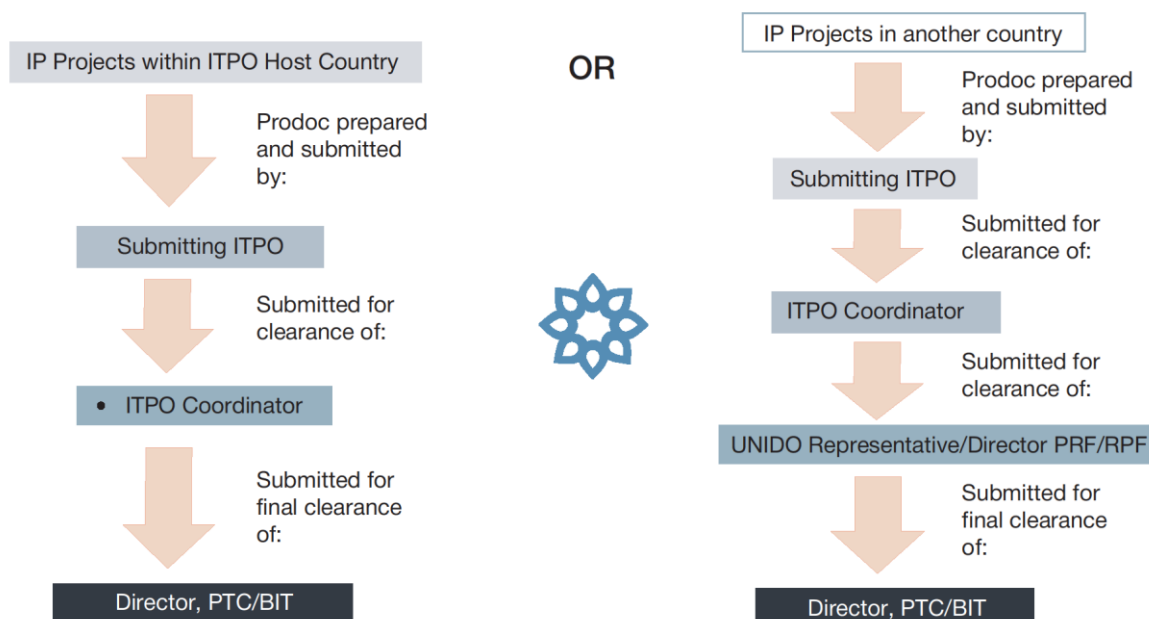
- If the project involves activities in a country other than the ITPO host country, the ITPO will submit the project document for clearance to the ITPO Coordinator, and the workflow will forward it to the UNIDO Representative in the concerned country or, in the absence of a UNIDO Representative, to the Director, Regional Programmes and Field Representation Branch (PRF/RPF). Following his/her e-signature, the workflow will return the project document to the ITPO Coordinator for onward submission for final clearance of the Director, PTC/BIT.

- As per current practice, approval authority below the amount of US\$/€100,000 is not required by Headquarters, but delegated to the ITPO Heads.

The preparation and coordination of the new Workflow for IP Projects is illustrated in the following scheme:

Summary of proposed new Workflow for IP Projects

(up to including US\$100,000 incl. psc.)



For the first two years, based on the program support from UNIDO, ArmCTCN as a climate ITPO will get a useful experience of activities and cooperation with partners, including the members of already established Consortium. From the other hand, potential partners of ArmCTCN, including industrial enterprises and universities, can find certain preferences and convenience for themselves in working according to ITPO for climate program. ArmCTCN will have a certain profit for the provided services. According to small projects up to and including US\$100,000 (incl. 5% psc.) ArmCTCN can gain at least from 5 to 7% of each project cost.) This approach can subsequently promote ArmCTCN to self-financing state.

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:

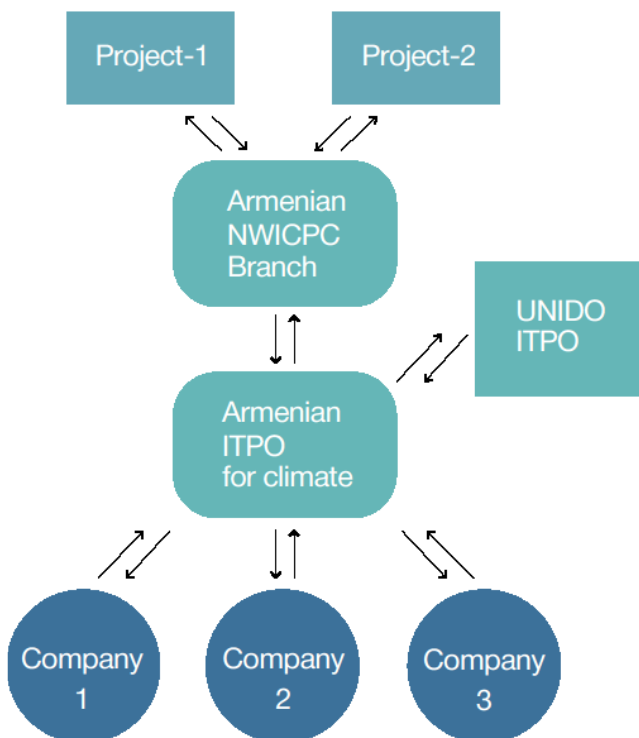
- the professional staff related to UNIDO;
- trained activities dealt with by ITPO,
- the presence of Governmental support;
- at least one or two stable source (donors) targeting investment promotion in the field of climate technologies.

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.

1. 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.
2. 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.
3. 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.

Prospects for enhancing the financial stability of ArmCTCN as ITPO for climate based on the development of digital technologies



The background for supposed cooperation of ArmCTCN with partners using digital technologies is based on IP Projects procedures.

New approaches in activities can arise if temporarily available funds appear in the ArmCTCN budget.

ArmCTCN can spend such temporarily available funds for the development of the friendly enterprise Armenian NWICPC Branch. This company implements digital economy approaches, including artificial neural network technologies. Using these innovations, Arm. NWICPC Branch organizes at least two commercial projects with a guaranteed annual profit at least 15 – 17% and even more.

This organization approach will support ArmCTCN to subsequently take a sustainable position at the market of attraction investments and promotion innovative and climate technologies, retaining financial independence and sustainability.

Relevant funding structures for the ArmCTCN and available funding mechanisms (national and international) have identified. Engagement with the private sector is a key element within the funding structure. Finally, ArmCTCN's role for the internationalisation of Armenian technologies and Organisations was defined.

The activity of the International Senior Expert also included presentation and technical dialogue at a final stakeholders meeting to present the proposed constitution and financial structure of the ArmCTCN involving national and local authorities.

7. Delivered Reports (in the attachment)

- Mission Final Report (December 2017)
- ArmCTCN Concept Note
- ArmCTCN Consortium Memorandum
- ArmCTCN draft Roadmap
- Technology Needs Assessment (Annex-I)
- Timeline and key milestones of the Road map (Annex-II)