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Review of the Climate Technology Centre and Network (CTCN)

Review Report

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Executive Summary

Introduction and Background

This Danida Review of CTCN was undertaken during February and early March 2018 by a Review Team (RT) led by the Department for Quality Support (TQS) of the Ministry of Foreign Affairs of Denmark (MFA). The review was undertaken at the request of the MFA Department for Multilateral Cooperation, Climate and Gender Equality (MKL), with the overall objective of providing the basis for decisions on future Danish cooperation with CTCN. Ongoing Danish funding of CTCN comprises unearmarked grants of DKK 30 million in 2013 and DKK 11 million in 2016 – and the housing of the CTC core centre in the UN City in Copenhagen represents an in-kind contribution to CTCN. The review builds upon i) the evaluation of the CTCN from February 2016 requested by the European Union and conducted by the UN Environment evaluation office and ii) the Independent Review of the effective implementation of the CTCN, commissioned by the UNFCCC secretariat as requested by the Parties at COP 17. The findings, conclusions, and recommendations contained in this Review Report are those of the Review team, which may not necessarily be shared by the MFA or the CTCN and its stakeholders. Written comments received from CTCN on the draft Review Report have been considered by the RT in this final report.

Key Conclusions

Global context and framework conditions: CTCN operates in a global context defined by the UNFCCC, the Paris Agreement on Climate Change, and the Sustainable Development Goals – this context is highly conducive to CTCN's objectives and services but also demanding in view of its funding and capacity constraints. CTCN's mandate as the operational arm of the UNFCCC Technology Mechanism means that CTCN is obliged to respond to requests from developing country Parties provided they have established national designated entities (NDEs), and the UNFCCC interpretation of climate change adaptation and mitigation is very wide. Funding of CTCN is based on voluntary – rather than assessed (obligatory) - contributions and nearly half of CTCN's funding is earmarked, thus severely affecting its flexibility. The CTC core centre is not a legal entity and thus relies on UN Environment and UNIDO for all recruitment and tendering of staff and consultants as well as receipt of funding and formal/audited financial information. Thus, CTCN is functioning within framework conditions, which do constrain CTCN's possibility to focus/optimize its interventions. In assessing the performance of CTCN and in recommending changes, it is critical to consider these constraints.

The current Danida review is based on - and is in general in agreement with - the findings of i) the evaluation carried out by the UNEP Evaluation Office and published in February 2016 and ii) the Independent Review requested by the COP and carried out by Ernst & Young and published in August 2017.

The UNEP evaluation highlighted the need for a "differentiated private sector strategy" and pointed to the need to clarify what constitutes a "technology transfer project" – what is scope, scale, objective, duration, volume etc.?" Both the evaluation and the review highlighted the issues of underfunding and the fact that CTCN is based on voluntary contributions. In the view of this Danida review, these are critical issues for CTCN, the Advisory Board and UNFCCC/COP to address. In a few instances the recommendations of this review divert to some extent from the independent review e.g. in the view of the role of the NDEs.

It is a concern that a management response to the Independent Review from August 2017 has only been finalised and published on 6 April 2018 [1] after a draft response was discussed at AB11 in March. This puts into question the efficiency and effectiveness of the complex set-up surrounding an operational body like CTCN, which should have a short time line from lessons learned to action.

Relevance: CTCN is relevant in the above-cited global context and with regard to Danish development cooperation priorities. A demand for CTCN TA has been established that is beyond what it is able to fund. Thus, there has been a steady increase in applications until 2016 and the number of contracted projects has been in steady increase until today. However, the number of applications has declined in 2017[2]. Considering the availability of funds, this appears to be acceptable in terms of CTCN's efficiency, although yearly targets are not quite achieved. However, with current funding levels, the implication is that interactions with individual countries and institutions have little continuity[3]. It should be noted that with the current intensity of TA projects and with over 130 developing countries to serve, each country can on average expect a TA project implemented every 5-6 years, which could make it difficult to build routine in TA project identification, design and implementation and to maintain the attention [4]of the NDEs – although it is acknowledged that NDEs participate in regional events and other capacity development activities and benefit from knowledge sharing. The diversity in size and types of projects is high, further diluting the technology transfer and learning process.

Unless funds are increased significantly, it will be difficult for CTCN to function as the intended Global Mechanism, being effective in facilitating the transfer, uptake and scaling of climate technologies, and ensuring learning and impact. It is in this context highly relevant that CTCN has taken initiatives to focus the thematic areas for its interventions, still there is a need to further explore the option of defining an even narrower niche where the CTCN core centre, consortium partners, and network could have a clear comparable advantage, and which corresponds to available budgets.

A critical element is involvement of the private sector, which are currently weak (only 1.7 % of the TA portfolio is in the category of private sector engagement and market creation), despite the private sector's critical role in technology transfer and the fact that 44% of network members are from the private sector. There is a need for addressing the private sector's different roles, i.e. as technology provider, technology user, investor, and possibly potential funder of climate technology transfer solutions.

The preparation of a Vision 2025 paper, the suggested focus on fewer intervention areas in adaptation and mitigation technologies, and the draft Resource Mobilisation Strategy, are important and necessary initiatives, which need to be taken further based on the discussions and direction given by the Advisory Board.

A major point in the Vision paper is the role of the NDEs; they are expected to have a central role in providing expertise on climate technologies and deployment of transformational solutions. While the NDEs may be critical in facilitating TA project identification and preparation, they are not the project owners and do not necessarily possess technical insight in technologies, innovation and sector transformation. The RT finds that the different TA-project templates - and also the draft Vision 2025 paper - put too much emphasis on the role of the NDEs or rather maybe too little attention to the role of the proponents/project owners, who are critical for the future outcome and impact of any project and should be in the centre of technology transfer programmes.

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[1] https://unfccc.int/sites/default/files/resource/inf05.pdf
[2] CTCN informed countries not to be in a position to provide support to more than 1 TA per country.
[3] Although it is noted that information sharing, networking and capacity development support services are offered yearly.
[4] CTCN maintains a database of eligible but not prioritised projects to assist continuation of support processes.

The CTC core centre/secretariat takes a very hands-on approach, appreciated by partners, to project implementation and often supervises detailed steps of the process, performing quality assurance of all the products produced during the TA implementation. However, it could be discussed whether this is the optimal use of secretariat resources given that the implementation is done by specialized and skilled consultants selected through a competitive tendering process. It could be considered to shift the balance of secretariat inputs to the project cycle towards the early stages of design and due diligence (also in the evaluation of tenders for implementation contracts) and the work on ensuring the effective communication of replicable lessons, while less attention may be required in the review and quality assurance of technical reports prepared by the contracted implementer.

Results: The introduction of the closure report in March 2017 is important and makes it possible to see outputs of the support as well as lessons learned and intended impacts. For projects implemented before this time limited information is available on project results. CTCN is considering to making an effort to retroactively assess the results of older projects in the same way as the closure reports, eliciting the key results and lessons of experience. This would be a good effort in order to document results of CTCN's previous activities. Often the individual projects are limited in scope and it is not clear how they are adding to and supporting a specific change process[5].

Monitoring: Development of TA and non-TA Monitoring and Reporting systems has been underway for some time. A report has recently been prepared by consortium partner, DNV with an assessment of M&E systems. The plan is to upgrade all aspects of the system. This appears promising, however the report was not available for the RT, why it is not possible to assess the adjusted but the effective monitoring and reporting on results to the COP, the AB, donors and CTCN stakeholders still needs improvement.

The closure reports and requirements for defining indicators in the response plans will enable CTCN to measure outputs of interventions, although aggregation of outputs can be difficult due to the diversity of themes. However, monitoring of outcomes and impacts for both TA and non-TA interventions remains a challenge, as there are many small activities over a wide range of themes and countries. The RT has some concern about involving NDEs as main actor in measuring outcome and impacts after termination of TA-projects. NDEs do not have incentives and resources available and it will be difficult to standardize measurements of outcome and impacts across over 130 NDEs. It could leave CTCN with a substantial effort in terms of collection of data, but low-grade product/results, which would not be value for money.

CTCN could consider developing a more qualitative system, including tracer studies/reviews of groups of representative groups of TA-projects to be done with regular interval after termination of the TA-project. This approach could secure information on the value/results of the CTCN approach, albeit not detailed information on the outcome and impact of each projects. The basis for this type of monitoring would be a well-defined theory of change/implementation strategy to be included in the response plans, which defines the changes, outcomes and impacts intended, and the assumptions and drivers for this change. The status of the change process should be made in the closure reports. This would thus provide the basis for qualitative review/tracer studies.

Governance and administration: The CTCN secretariat is lean, and it appears - from the 2017 Review - to be efficient although the approved 2018 Annual Operating Plan budget reflects that the CTCN operations account for over 25 % of the total budget. It is acknowledged that the relative share of secretarial costs can fluctuate with fluctuation in overall budget. Still, there is a need for CTCN with the Advisory Board to clearer distinguish administrative costs from activity costs and monitor over time the

[5] However, it is understood from CTCN that the Adaptation Committee has recently introduced an impact assessment process and the CTCN is associated with this effort.

ratio of secretariat costs to activity budgets. Due to personnel turnover and lengthy UN staff recruitment procedures, vacancies have resulted in gap filling by other personnel.

Although complicated, CTCN has during its first four years of operation managed to establish a functioning set-up with UN Environment and UNIDO and Consortium partners, and the Network is growing with currently over 400 members – links/cooperation are established with the main part of the currently 159 NDEs. There are strategic linkages to GCF and GEF and the structural link to the TEC is reflected in joint CTCN/TEC progress reporting to COP.

CTCN work planning and monitoring is guided by its original 2013 Programme Document and 2013 Draft Programme of Work, which has not been updated. It is implemented through the Annual Operating Plans that are approved by the AB along with the annual budget. The is no one-on-one reporting back to the Advisory Board on the AOPs, and there is a need for transparent and consistent multi-year financial overviews of approved budgets and corresponding expenditures, and of yearly trends.

UNIDO undertakes procurement of TA implementation services, which appears to function efficiently. There is a need to closely monitor that its lowest cost selection criteria - along with the consideration of pro bono offers by tenderers, and the shift from consortium partners towards network partners – results in the best quality of TA. The RT agrees with the conclusions made in the 11th Advisory Board meeting, that the CTCN should ensure transparency on how Pro Bono contributions are included in the tender processes, and this needs to be monitored carefully.

The CTCN Advisory Board is a sizeable set-up with 25 members meeting every six months for 3 days. It is a valuable oversight mechanism and brings together the various partners involved in CTCN. It could be considered to make every second meeting through virtual participation, and a proposal for virtual participation is being discussed. In addition, the formal anchoring in the UNFCCC entails many meetings in the formal convention structures.

Capacity development: While CTCN provides capacity development support to NDEs and other partners through regional events and other means - including tapping-into GCF readiness support and including an incubator programme for LDCs - the incentives to NDEs is a concern, as they receive no financial contributions from CTCN. Moreover, given the CTCN's funding limitations and TA eligibility/prioritisation criteria the average time between requests that meet CTCN approval for any one NDE could be more than 5 years (although in practice, this varies a lot from country to country; CTCN has informed NDEs that currently, only one TA can be approved for any one country). There is also a need to ensure that the regional events are cost-effective in delivering sustainable capacity development outcomes.

Knowledge sharing and communication: An appropriate CTCN communications strategy has been developed and implemented, but the general awareness of CTCN among climate technology stakeholders can be improved and it is difficult to assess the uptake of CTCN knowledge products and services such as publications, newsletters, and webinars. The CTCN website and knowledge management system has a very high level of information and transparency, including cross-links to other climate technology partner web-resources. A process is ongoing to improve the website architecture and navigation. Some information, e.g. on completed TA projects, needs updating.

The emphasis on impact briefs and lessons learned based on TA closure reports is important; and the plans to further develop geographic and thematic impact brief very relevant. It should be considered to expand the impact briefs to 3-4 pages to allow for description of deeper substantive, replicable lessons of experience.

Abbreviations and Acronyms

AB	Advisory Board
BINGO	Business and industry non-governmental organizations
CC	Climate change
CCEE	Copenhagen Centre on Energy Efficiency (generally referred to as the Copenhagen Centre)
CDM	Clean Development Mechanism
COP	Conference of the parties (under the UNFCCC)
CTC	Climate Technology Centre core centre in the UN City in Copenhagen
CTCN	Climate Technology Centre and Network
DAC	Development Assistance Committee of OECD
Danida	brand name for Danish international development assistance, under the Ministry of Foreign Affairs of Denmark
DHI	DHI Group Denmark
EE	Energy Efficiency
EU	European Union
FTA	Fast technical assistance
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Green House Gas
ICRAF	World Agroforestry Centre
KMS	Knowledge Management Sytem
LDC	Least Developed Country
MEUC	Danish Ministry of Energy Utilities and Climate
MFA	Ministry of Foreign Affairs of Denmark
MKL	MFA Department for Multilateral Cooperation and Gender Equality
MOU	Memorandum of Agreement
MRV	Measurement, reporting and verification
MTS	Mid Term Strategy
NAMA	Nationally Appropriate Mitigation Actions
NDA	National Designated Authority (under GCF)
NDE	National Designated Entity (under CTCN)
NDC	Nationally Determined Contribution (under the Paris Agreement on Climate Change)
NGO	Non-Governmental Organization
NREL	US National Renewable Energy Laboratory
NTA	Non-TA
OECD	Organisation for Economic Co-operation and Development
PIMS	UNEP programme management and information system
PoW	Programme of Work
RINGO	Research and independent non-governmental organisations
RE	Renewable Energy
RT	Review team
SEforAll	UN Sustainable Energy for All Initiative (2012) – the formerly used acronym was SE4ALL
SDG	Sustainable Development Goal
Sida	Swedish International Development Cooperation Agency
SIDS	Small island developing states
SMART	Specific, measurable, attainable, relevant, timebound
SWOT	Strengths weaknesses opportunities and threats
TA	Technical assistance
TAP	Technology Action Plan
TEC	Technology Executive Committee (under UNFCCC)
TEM	Technical expert meetings
TEP-M	Technical examination process on mitigation
TNA	Technology Needs Assessment
ToC	Theory of Change
TQS	MFA Department for Technical Quality Support
UDP	The UNEP DTU Partnership Risø Centre

UNDP	United Nations Development Programme
UNEnvironment	United Nations Environment Programme – the previously used acronym was UNEP
UNEP-DHI	UNEP-DHI Centre for Water and Environment
UDP	UNEP DTU Partnership
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UNOPS	United Nations Office for Project Services
URC	The UNEP Risø Centre on Energy, Climate and Sustainable Development
USD	United States Dollar

1. Introduction and Background

This Danida Review of CTCN was undertaken during February and early March 2018 by a Review Team (RT[6]) led by MFA/TQS at the request of the MFA/MKL, according to its Terms of Reference dated 16 January 2018. The target audiences for the present Review Report is MFA/MKL, CTCN management and senior staff, and the special advisors in UN Environment and UNIDO management engaged in CTCN.

Ongoing Danish funding of CTCN comprises unearmarked grants of DKK 30 million in 2013 and DKK 11 million in 2016 under donor agreements between the MFA and UNEP; the housing of the CTC core centre in the UN City in Copenhagen represents an additional in-kind contribution to CTCN. The overall objective of this Danida review is to provide the basis for decisions on future Danish cooperation with CTCN.

The findings, conclusions, and recommendations contained in this Review Report are those of the Review Team, which may not necessarily be shared by the MFA or the CTCN and its stakeholders. The RT wishes to thank all those who contributed time, information, documentation, and experience to this effort.

According to the TOR this review report is required to be short. The text is therefore generally kept brief and focused on key findings; conclusions are found in the text where relevant and are summarized in the Executive Summary; the Recommendations are found in Section 10. Additional information is found in annexes, and internet links are given to sources of additional information without repeating it in this report.

2. Methodology

This is a Danida Review of CTCN, undertaken by MFA/TQS. It should be stressed that in Danida terminology, reviews and evaluations are quite different in terms of institutional responsibility[7], scope and depth of analysis. Thus, this review does not focus comprehensively on CTCN but has a focus on the specific issue highlighted in the Review Team's TOR – in this sense the Danida review is very different from the Independent Review undertaken in 2017 by Ernst & Young for UNFCCC. The methodology for this Danida review follows the OECD DAC evaluation criteria of relevance, effectiveness, efficiency, sustainability and impact. The review builds upon the evaluation of the CTCN from February 2016 conducted by the UN Environment evaluation office at the request of EU and the report dated August 2017 of the "Independent Review of the effective implementation of the CTCN", commissioned by the UNFCCC secretariat as requested by the Parties at COP 17. The RT has consulted closely with management, staff and consultants at the CTC core centre throughout the process. A start-up meeting was held with the CTCN Director and senior staff on 31 January and after an initial review of background documentation the RT sent a short issues paper to CTCN to indicate its areas of particular focus. During the latter half of February, the RT undertook meetings with CTC and skype and telephone consultations[8] with UN Environment in Paris, UNIDO in Vienna, selected CTCN consortium partners and network members as well as selected NDEs. A small sample of completed adaptation and mitigation TA projects were identified for further rapid assessment. The assessments were limited to available documentation, thus no field verification has taken place. The RT participated as observers in selected sessions at the CTCN AB 11 meetings during 7-9 March.

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[6] The Review Team consisted of Mr. Hans Hessel-Andersen, Team Leader, Senior Technical Advisor, MFA TQS and Mr. Jens Lorentzen, External Consultant.

[7] Evaluations are undertaken by the separate Evaluation Department that refers directly to senior management.

[8] The RT's schedule of activities and key persons met/interviewed are found in Annex 5.

3. Framework Conditions for CTCN

CTCN operates in a global context defined by the UN Framework Convention on Climate Change (UNFCCC), the Paris Agreement on Climate Change, and the Sustainable Development Goals (SDGs). This context is highly conducive to CTCN's objectives but also demanding in view of its funding and capacity constraints. CTCN's mandate[9] was given by the UNFCCC Conference of the Parties (COP) 16 as the operational arm of the UNFCCC Technology Mechanism, with the UNFCCC Technology Executive Committee (TEC) being the policy arm. As a formal UN mechanism, CTCN is based on demand and is obliged to respond to requests from developing country Parties provided they have established NDEs (currently 159 NDEs of which 133 are from developing and emerging economies – the non-Annex 1 countries). The UNFCCC interpretation of climate change adaptation and mitigation is very wide, as evidenced in the CTCN requests received and its portfolio of TA projects (see Section 4 and Annex 1) and CTCN does not have the mandate to decide on a narrower definition, but it can influence such decisions through the formal mechanisms and it also has leverage in proactively focusing on key themes [10]in its work with NDEs – however, the extent to which CTCN can proactively focus is not clear.

As further elaborated in Section 9 and Annex 3 funding of CTCN is based on voluntary contributions that CTCN can solicit but not control and 47% of CTCN's secured funding is earmarked, thus severely affecting its flexibility; CTCN does not benefit from assessed (obligatory) contributions from the Parties.

The CTC core centre is not a legal entity and thus relies on UN Environment and UNIDO for all recruitment and tendering of staff and consultants, the signing of donor agreements and receipt of funding, as well as formal accounting and audited financial information. UN Environment and UNIDO have different procedures in some areas, such as procurement and duty travel and these are not under CTC control.

The above-cited framework conditions in many ways restrict CTCN and have to be kept in mind when assessing its performance and flexibility.

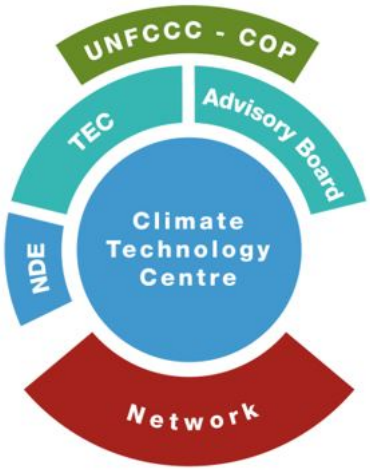
4. Governance and Organisation

4.1 Governance and Overall Organisation

A schematic illustration of the CTCN set-up is shown below (source: CTCN presentation):

[9] The mandate is set out in para 123 of FCCC/CP/2010/7/Add.1 agreed at COP 16 held in Cancun in December 2010.

[10] A list of 7 adaptation technologies/themes is currently being discussed by CTCN with the UNFCCC Adaptation Committee and a list of 10 mitigation technologies/themes is being discussed with the COP high level champions in the TEM[10] process. This process could lead to agreement on themes for more proactive focus by CTCN in development of its TA portfolio, but CTCN is still required to react and respond to NDE requests over the wider range of climate change topics.



The overall governance and direction is provided by the UNFCCC COP through the CTCN Advisory Board (AB) and directly at COP sessions. The overall anchoring in the UNFCCC entails many meetings in the formal convention structures. CTCN Advisory Board has 25 members meeting every six months for 3 days, and there is a need – and a proposal under discussion – for how to increase efficiency through remote participation in meetings. COP18 provided the AB with its constitution[11].

The AB guides CTCN, approves procedures and the AOPs including annual budgets, endorses financial statements, and monitors CTCN activities and results through several "snapshots" and presentations submitted to the AB at is semi-annual meetings. There is no consolidated reporting to the AB on progress specifically on AOP targets and on results and lessons. The 2017 Independent review found that the AB provided "appropriate guidance" to the CTCN secretariat on implementation of its mandate and on strategic matters. The Danish MFA/Danida is not represented in the AB though Danida is a major funder of CTCN. The Technology Executive Committee TEC is represented on the AB, which facilitates coordination and CTCN and TEC submit joint annual reports to COP.

The RT attended many sessions of AB11 as observers and found the level of substantive comments and inputs to be generally high. The AB11 agenda seemed less focused on presentation of snapshots and other background material compared to earlier meetings, and the discussions focused to a high degree on strategic issues including the management response to the 2017 Independent Review, the proposed Vision 2015, and the draft Fund Mobilisation Strategy. Several follow-up actions to the AB 11 require work in task forces. The upcoming AB12 in October 2018 will be of critical importance as it will consider the draft work programme for 2018-2021 and related resource mobilisation.

4.2 UN Environment, UNIDO, and the CTC Core Centre

The CTCN delivery structure is anchored within the two "mother" organisations and the CTC core centre in Copenhagen, and this structure is under the command of the CTCN director. CTCN draws on UN Environment and UNIDO expertise in several ways. Country offices of the two organisations assist CTCN in outreach. The internal organisation and staffing in this set-up is shown in Annex 2. It is noted that not all personnel attached to this set-up work full time for CTCN.

UN Environment is the lead partner and signatory with the UNFCCC on the Memorandum of Understanding concerning CTCN, with overall anchoring in the Economy Division whose Director is in the UN Environment Headquarters in Nairobi; in the Divisions' offices in Paris 3 staff members and 2 consultants work on CTCN; one of the staff members serves as liaison officer in Paris ensuring

[11] https://www.ctc-n.org/sites/www.ctc-n.org/files/documents/08a02_0.pdf

coordination and inputs; further, a senior Special Advisor in Paris (at head of department level) is attached to CTCN.

UNIDO Headquarters in Vienna has an important substantive role, particularly on the mitigation agenda, and due to its agility in procurement, UNIDO has a key role in TA implementation. One staff member and 1 consultant in Vienna are part of CTCN, and the staff member serves as liaison ensuring coordination and inputs; further, a UNIDO senior Special Advisor (at head of department level) is attached to CTCN.

As the **CTC core centre** is not a legal entity but a programme unit, the roles of UN Environment and UNIDO are critical in the CTCN organisation and for resource mobilisation, financial management and reporting (for instance, CTC does not have a bank account so all financial transactions take place through UN Environment and UNIDO).

At the CTC core centre in Copenhagen there are 1 Director and 6 staff members all employed by UN Environment; 2 UNIDO staff members; 5 consultants; and 1 secondee. There are 3 regional consultants (in Bangkok, Abidjan, Panama). The Independent Review found CTCN to be efficient. However, due to personnel turnover and lengthy UN staff recruitment procedures, the limited secretariat capacity has resulted in vacancies and gap filling by other personnel. The lean set-up means that this is an informal organisation with significant internal delegation of responsibilities. The RT understands that there are plans to reorganise the secretariat set-up along geographical lines rather than by service line. The competence profiles of secretariat personnel seem to match well with the requirements; both staff and consultants have strong academic credentials, and many have long experience in multilateral organisations but less hands-on project experience from developing countries; CTCN personnel generally have a young age profile. The internal communication lines between CTC in Copenhagen and staff and consultants in Paris and Vienna seem to work efficiently despite the need for virtual communication.

In conclusion, the RT finds this set-up complex, but it seems to function in practice though CTCN users may be confused by different entry points in 3 different organisations.

4.3 Consortium Partners, NDEs and Network Members

In addition to UN Environment and UNIDO, the CTCN set-up includes 11 other **Consortium Partners**[12] with expertise in climate technologies. These include UNEP-DHI Partnership and UNEP DTU Partnership, both based in Denmark. Consortium partners have so far had a framework contract with UN Environment for implementation of TA projects and other inputs to CTCN. **The CTCN Network**[13] members (presently 408) form a broad community of climate technology stakeholders, including academic, finance, non-government, private sector, public sector, and research entities, as well as the presently 159 NDEs. **National Designated Entities (NDEs)**[14] facilitate support to their countries from the CTCN by serving as National Focal Point on CTCN activities, supporting the articulation and prioritization of requests and proposals, and managing the national submission process

[12] Asian Institute of Technology (AIT) – Thailand, Bariloche Foundation (BF) – Argentina, Council for Scientific and Industrial Research (CSIR) – South Africa, The Energy and Resources Institute (TERI) – India, Environment and Development Action in the Third World (ENDA-TM) – Senegal, Tropical Agricultural Research and Higher Education Center (CATIE) – Costa Rica, World Agroforestry Centre (ICRAF) – Kenya, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) – Germany, Energy Research Centre of the Netherlands (ECN) – The Netherlands, National Renewable Energy Laboratory (NREL) – United States of America, UNEP-DTU Partnership – Denmark, UNEP-DHI Partnership – Denmark.

[13] More information on the CTCN network and its membership and functions can be found here: https://www.ctc-n.org/network

[14] More information on NDEs including their roles and responsibilities is found here: https://www.ctc-n.org/about-ctcn/national-designated-entities

of technical assistance requests to the CTCN. Establishment of an NDE is necessary before a Party to the UNFCCC can participate in the CTCN. The list of NDEs counts 159 of which about 142 are from developing countries (UNFCCC "Non-Annex 1 countries"). Currently, TA-projects are more frequently being tendered out, in order to engage more Network partner in implementation.

5. Relevance

The CTCN mission statement articulated its core purpose and was agreed by Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in 2012. CTCN's original mandate from COP16 specified that through collaboration with the private sector, public institutions, academia and research institutions, CTCN should stimulate and encourage the development and transfer of existing and emerging environmentally sound technologies, as well as opportunities for North–South, South–South and triangular technology cooperation. CTCN facilitates the transfer of technologies through three core services: i) providing technical assistance at the request of developing countries to accelerate the transfer of climate technologies; ii) creating access to information and knowledge on climate technologies, particularly through its knowledge management system; iii) fostering collaboration among climate technology stakeholders via NDEs and its network of regional and sectoral experts. Budget-wise, the technical assistance is the dominant service. CTCN's delivery structures are: a) the CTC core centre with inputs from UN Environment and UNIDO; b) the 11 consortium partners; c) the presently 408 network members – the NDEs are also an integral part of the CTCN structure

Although the Technology Mechanism is part of the agreement of the COP and in this way in itself relevant, this review team would like to express some concern about technology transfer in the context, within which it is implemented. In the RT's experience a series of political economy and enabling environment factors are often a prerequisite for introduction and uptake (transfer) of new technologies. Isolated interventions for technology transfer, , in particular within limited time and budget frame, could have limited impact. It is however, not the task of this review to discuss the Technology Mechanism under the Convention, this is taken as a given for the review. Still, the RT intends to provide some recommendations, which may help overcome the limitations, which could be faced by isolated technology interventions.

The RT's interviews with NDEs and other CTCN stakeholders highlighted CTCN's flexibility, agility and neutrality in providing TA support among its comparative advantages vs. other climate technology stakeholders and initiatives. CTCN has carried out analysis of strengths weaknesses, threats and opportunities (SWOT), as reflected in the 2014 CTCN communication and partnership strategy – this analysis highlights among its strengths that it was created at the behest of UNFCCC thus indicating a high level of trust, and that it structure creates a forum for enhanced communication among experts.

Thus, the CTCN is relevant in the above-cited global context and also with regard to Danish[15] development cooperation priorities, Denmark's support for the implementation of COP decisions, and the location of the centre in the UN-city in Copenhagen.

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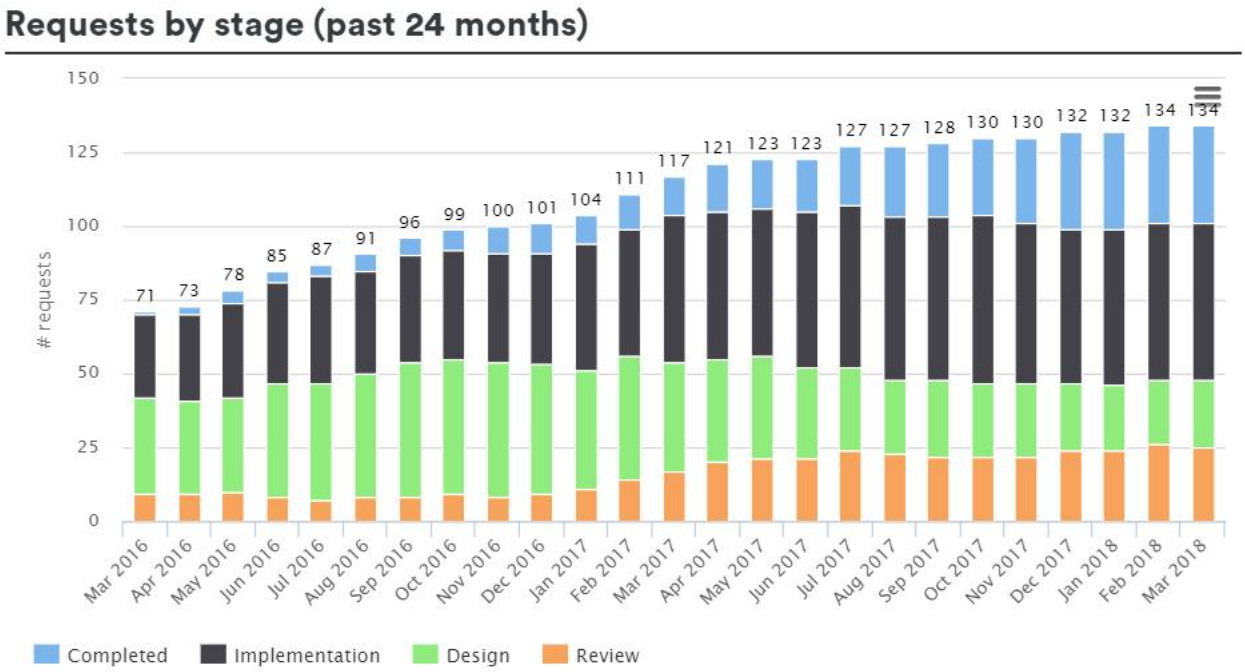
[15] Particularly the second outcome in the theory of change for the "Guiding Principles for the Danish Climate Envelope" (Scale up of climate-relevant technologies, infrastructure and markets) and "The World 2030" and its emphasis on helping developing countries expand their knowledge about climate change and integrate climate consideration in their planning on all levels, including in relation to infrastructure and other economic activities. contributing new knowledge, competencies, technology and innovation, promotion of work with technology and innovation to boost local and concrete results that can inspire new and larger-scale initiatives, and the focus in multilateral cooperation on SDGs # 5 (gender equality), #7 (sustainable energy), #13 (climate), and #17 (partnerships). Also, the Danish funding of the UN City in Copenhagen that houses the CTC core centre, is a priority in support of UN organisations working in areas prioritised by Denmark.

6. Technical Assistance

CTCN began operations in late 2013, while the Technical Assistance (TA) programme that accounts for in the order of 80% of its resources, began in early 2014. There has been a steady increase in TA requests until 2016 and the number of projects that are under implementation or completed, has seen a steady increase until today. A total of 33 TA project have been completed and another 50 are under implementation. Altogether, 196 requests for TA have been received by CTCN from NDEs. A demand for CTCN TA has been established that is beyond what it is able to fund. However, the number of new requests declined in 2017. The summary information is found in Table 6.1. that was prepared by CTC at the RT's request.

The RT finds the information given on the website "live dashboard" on the TA project portfolio very useful, with TA visualisations in the form of bar charts and pie charts showing several different breakdowns[16]. However, the RT finds it a weakness that the information is cumulative, making it difficult to assess annual results and trends over time. The visualisations also do not show distribution[17] and trends in the size of TA (which can range from USD 50,000 to 250,000). Furthermore, information is not always fully updated (for instance, the information found on TA projects varies). A change made in March 2018 was to delete the inactive projects from the overall bar chart:



[16] Charts are shown at https://www.ctc-n.org/technical-assistance/request-visualizations by the following categories: stage (under review/design/implementation/completed); objective (mitigation/ adaptation/combined); sector (13 sectors plus cross-sectoral); partner country income level (low/lower-middle/upper-middle/high); eligibility/prioritisation (eligible and prioritised/not eligible/inactive/eligible but not prioritised); geographical scope (national/sub-national/community based/regional multi-country/other multi-country); TNA (i.e. if TNA was completed or not or not applicate if multi-country); type of assistance (9 different types); geographical region (16 different sub-regions/regions). It is a useful feature that the coloured pie charts can be downloaded as images – however, the headings are not included in the photo files, which is a disadvantage for the user. A few examples of the pie charts are shown in Annex 1 to the present report.

[17] An overview presented to AB 10 showed that 32% of TAs were under USD 50,000; 27% were between 50,000 and 150,000; 35% were in the range 150,000 to 250,000; and 6% were over 250,000.

However, it is unclear how the inactive requests are reflected in other visualisations (in the pie chart for eligibility and prioritisation inactive projects are shown to account for 13.4%). The RT understands that there is now an effort underway to clear the list of inactive requests.

Table 6.1 – overview of TA project requests/projects

Application year	2013	2014	2015	2016	2017	2018	Total
Number of applications		20	57	80	38	1	**196**
Approved (eligible and prioritised)		15	28	52	14	2	**111**
Contracted TAs (budget allocated)		2	10	27	33	1	**73**
Inactive requests[18]		5	12	31	11	2	61

Among the reasons for the lower number of requests, it can be mentioned that in late 2016, CTC communicated to NDEs that given its budget limitations and the need to serve as many countries as possible, only one request per country per year would be funded and implemented. In this connection it is worth noting CTCN's prioritization criteria (see Annex 1). The RT finds that the trends in the TA portfolio need to be further illustrated on the website and in CTCN reporting to the AB and donors. This could help to underscore learning and transparency; the trends noted in the TA paper AB/2018/11/S.1 mentions only an accelerating trend to support sub-national action, especially at provincial and city level, notes the positive correlation between requests and completed TNAs, and – importantly – notes the linkages with GCF. Thus, CTCN has provided support to countries to facilitate access to GCF readiness funds and 5 GCF readiness proposals were accepted by the GCF Board while 2 others are pending approval. In Annex 1 the RT's own comparisons (see pie charts) of requests by partner country level of income show that in 2017 compared to the average for 2013-2017 there was a clear trend toward lower-middle income economies and a reduction for the low-income group.

The TA project cycle includes six steps: 1. Request, 2. Decision on eligibility, 3. Design of response plan, 4. Implementation, 5. Preparation of closure report and 6. Evaluation and learning. Monitoring is performed across the project cycle, as relevant. The decision on eligibility is based on a number of eligibility and prioritisation criteria, which are listed in Annex 1.

The project cycle is guided by several different templates. The RT has assessed the templates for i) TA requests, iii) the newly introduced fast TA (FTA)[19]; iii) response plans/TOR, iv) closure reports, v) TA monitoring and evaluation plan, and vi) NDE feedback. The RT finds that while CTCN staff appear in their daily assessment and guidance of partners to stress the importance of transformative aspects of projects, to stress ownership by participating institutions, and address how the TA is supporting/are embedded in an ongoing national process, these aspects are vaguely described, particularly in the templates for requests and response plans. Moreover, there is a need for all the templates to be consistent in this regard and internally consistent so that closure reports address key issues that were included in design.

Strong national ownership and embedment in national activities are critical factors for transformation. It is found particularly important to ensure that the national proponent's own commitment and inputs to the TA are reflected as "golden threads" through the templates and the project cycle and that it is clearly shown how the TA is embedded it the proponent's own development and investment plans. While the

[18] Includes requests that are: i) not eligible; ii) eligible but not prioritised; iii) withdrawn or changed by NDE; note: there are 24 requests where screening is still pending.

[19] FTA responds to developing country requests that are strategic, time sensitive, and smaller in scope end hence shorter in duration.

NDEs may be critical[20]in facilitating the project identification and preparation, they are not the project owner and do not necessarily possess technical insight in the TA-projects (that range over a wide spectrum of technologies). It appears that the different templates, and also the CTCN draft Vision 2025 paper, put too much emphasis on the NDEs - or rather maybe too little attention to the role of the proponent/project owners, who are critical for the future outcome and impact of any project.

It is widely recognised that to achieve the SDGs and the goals of the Paris Agreement on climate change it is imperative to mobilise the resources and capacities of the private sector. It is therefore important for CTCN to engage the private sector in climate action. About 44 % of CTCN's over 400 network members are private sector organisations, but the portfolio of TA projects within private sector engagement and market creation is presently less than 2 % of the total TA portfolio.

It is important to mention that while the originally foreseen helpdesk function has not materialised as such, the CTC provides often extensive support in preparing requests – including under the incubator programme for LDCs[21].

The Secretariat takes a very hands-on approach to project implementation and are often supervising each step of the process and performing quality assurance of all the products produced during the TA implementation. It could be discussed whether this is the best use of secretariat resources given that the implementation is done by specialised and skilled consultants and secretariat staff can have limited technical insight into the large variety of projects supported. The RT finds that CTCN could consider shifting the balance of secretariat inputs in the project cycle towards the early stages of design and due diligence (also in the evaluation of tenders for implementation contracts), while less attention may be required in the review and quality assurance of technical reports prepared by the contracted implementer. This could call for some reorientation of staff work, in order to support the best possible design of the TA projects, which can be critical for implementation and outcomes. In this connection, it is also worth considering the shift from reliance on consortium partners to network members in TA delivery. An overview provided by the secretariat to the RT showed that the number of TA projects implemented varied considerable by consortium partner, from 1 project for TERI to 13 for UNEP DTU Partnership and 7 for the UNEP DHI Partnership.

The RT finds that while UNIDO procurement procedures seem expedient for timely delivery of TA, there are concerns as to whether the requirement to accept the lowest technically qualified bidder ensures

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[20] CTCN informs Annex I NDEs on a monthly basis regarding new TA requests received from developing country NDEs thus ensuring they are updated on the progress of these requests and providing them with an opportunity to work collaboratively; all NDEs are informed of opportunities to bid for TA implementation, encouraging them to forward the bidding opportunities to organisations within their countries that may be interested in supporting implementation;

[21] The IIED Issues Paper on LDC experiences with the UNFCCC Technology Mechanism http://pubs.iied.org/10189IIED/ presents information the LDC Group representatives on the TEC and CTCN Advisory Board have gathered on how LDCs are currently using technology initiatives and programmes, aiming to better understand the barriers and challenges LDCs face in implementing technology development and transfer and explores what changes to existing technology and financial institutions could lessen these barriers and challenges. The paper shows interesting results of a survey carried out in 2017 targeting the 43 LDC NDEs and the UNFCCC focal points in LDCs without NDEs. The response rate was about half. The results showed that challenges faced by NDEs due to capacity gaps and needs for financial support. 4 LDCs found that CTCN support had influenced their technology project design "a great deal", while and equal number responded: "not at all". Among respondents from 16 countries that were familiar with the CTCN incubator programme, 9 responded that they benefited from the programme, but it was found worrying that 7 were not aware of the incubator programme and a conclusion was that there needed to be further awareness raising on the programme. The survey found that it was unclear why some LDCs had not submitted TA requests to CTCN and it was concluded that CTCN was short of funding and required additional financial resources to do its work effectively. National level capacity was also found important and because NDEs are the channel of engagement, they need support if they are to serve LDCs effectively. It was recommended that CTCN should improve its engagement and interaction with NDEs and stakeholders at country level.

quality of TA – an issue that requires ongoing attention. This may also mean that consortium partners may have less opportunities to win TA project implementation contracts. A related issue is how pro bono inputs offered by bidders are considered in the tender procedures so that a level playing field for bidders is ensured. This issue was raised during AB11 and it was decided that further work was needed to ensure transparency of the tender process in relation to pro bono contributions.

The 2017 Independent Review undertook a far deeper assessment of CTCN than the present Danida review and concluded that the TA projects responded well to the demands of NDEs and beneficiaries. On the basis of the RT's interviews and assessments of selected mitigation and adaptation projects, the RT broadly concurs with this assessment of effectiveness, with the caveats mentioned above concerning the needs for a stronger focus on the transformative aspects, proponent ownership and embedment in national processes – and the need for eliciting and communicating results, lessons and impact stories. For some TA-projects reviewed there was a clear follow up, while other appeared to be more stand-alone activities. The Banja Luka support for district heating is a very good example of an intervention with clear demand and ownership in a locally determined process with clear follow-up and tangible mitigation results. The RT found that support for flood forecasting in Bangkok, although in principle highly relevant, was not strongly embedded in a local planning and budgeting process and thus could risk to remain as a standalone intervention. The support for Strengthening Capacity to Access International Financing in Jordan was seen to lead to follow-up through the Green Climate Fund. The pilot demonstration of Energy Service Company (ESCO) model for greenhouse gases emission reduction in the cement sector in Vietnam was an example of the response plan being part of the services tendered, but this had led to disagreement with the proponent over the support that could be expected from CTCN and how it would be delivered.

The review team found it difficult to assess the results in terms of outcome and impact of the TA-projects. Often the individual projects are limited in scope, and it is not clear how they are adding to and supporting a specific process. After introduction of the closure report in March 2017, it is possible to see outputs of the support and intended outcomes and impacts. For projects implemented before this time, limited information is available on project results. CTCN has ongoing considerations of how best to assess the results of older projects.

7. Communication, Knowledge Sharing, Outreach, Capacity Development, Networking

Communication: The Review Team finds the CTCN communications and partnership strategy from 2014 as very good (albeit not as such up-to-date); the strategy identified key stakeholders and target audiences, as well as related planned communication outcomes by target group. Various updates have been provided in snapshots etc. submitted to AB meetings, the latest communications and KMS snapshots are dated February 2018, prepared for AB11. There may be a need for at consolidated updating of the communications strategy, not least in connection with the new programme of work and resource mobilisation strategy.

Knowledge sharing: CTCN has a very good website[22]and knowledge management system (KMS) that facilitate knowledge sharing, capacity development and transparency in CTCN activities (123,000 online visits in 2017 – nearly 16,800 online tools and information materials in 19 climate-related sectors). The knowledge sharing comprises webinars[23] (17 held in 2017, over 100 webinars are available on-demand);

[22] But adding a print function on the website would be a great help to users.

[23] Statistics from 2018 show that the number of attendees varied considerably by webinar depending on the topic; and it is a concern that there is a worrying lack of consistency between registrations for webinars and actual attendance and similarly a low response rate. Thus, about 23 % of the participants responded on the extent to which the webinar increased their

media coverage (over 40 articles in international press and regional/country media); press-releases; videos (for instance the Jakarta flood risk response video had 35,000 views); CTCN organised events at COP23 (775 attendees); e-newsletters (15 newsletters in 2017 with over 10,000 subscribers); and social media coverage. CTCN does not emphasise glossy publications in its knowledge sharing strategy (and the RT agrees), but many publications are available for download. The impact briefs found on the website are considered useful, although too short. The plans to prepare thematic and geographical impact briefs are very relevant. It should be considered to expand the Impact Briefs to 3-4 pages, as they in the current form are providing headlines, while little information is provided on the deeper substantive lessons learned concerning key elements in successful TA-projects.

Outreach: CTCN outreach comprises ongoing liaison with 159 NDEs, the participation of core personnel in numerous regional events and in the formal fora under the UNFCCC, and engagement of the 11 consortium partners several of which have a strong regional presence and local networks. CTCN also has regional advisors in Bangkok, Abidjan and Panama, and there are links to UN Environment and UNIDO offices, as well as cross-promotional opportunities in events and via websites of partner institutions.

Despite these outreach and communication efforts, the RT finds that visibility of CTCN and the awareness of its services remains lower than hoped for among climate technology stakeholders. This was also noted by the 2017 Independent Review and confirmed in several of the Danida RT's interviews. There are, however, encouraging trends[24]. KMS taxonomy is frequently updated to facilitate internet search results. Website architecture and user friendliness are being improved based on 2 recent user surveys carried out by consortium partner NREL.

Webinars also contribute to outreach - the feedback from webinars is generally positive as mentioned in the footnote. The CTCN secretariat has provided the RT with registration details for the webinars, which reflect a very wide range of climate technology stakeholders in a long list of developing and developed countries, including public sector, private sector, international agencies, NGOs, researchers, journalists, etc. The originally envisaged "helpdesk function" has not materialised as such although the CTC provides a lot of on-the-spot and short-term advice and assistance, not least to facilitate TA requests. As mentioned in Section 4, a new fast TA facility is now being rolled-out, which can hopefully also help CTCN's outreach.

Information to NDEs: It is a given in the CTCN design that NDEs have a key role in partner countries. The NDEs are kept informed in several ways, including monthly newsletters sent to all NDEs; contacts to all NDEs twice a year informing them about Network institutions based in their countries; CTCN's direct engagement with non-Annex I NDEs through the TA request process; and inviting NDEs to regional and sub-regional forums, training programmes and other events organised by the CTCN and/or its partners that are relevant to a particular NDE.

Capacity Development: The approach to capacity development of NDEs comprises training, webinars and in-person workshops, as well as an incubator programme [25]for the least developed country (LDC)

knowledge, and 56% found this was moderate and 38% found it entirely; 42% found the webinars very good and 22% excellent.

[24] For instance there is evidence of substantial development on social media (likes on Facebook posts increased in 2017 by 25% and followers on Twitter by 54%); the analysis of web-statistics indicates a trend toward developing country users in number of pages visited by session and duration of session and a concentration of users in the 24-25 years age group; compared to the previous year, KMS experienced a 47% increase in site visits, 59% increase in number of users, and 24% increases in page views; the ratio of new vs returning visitors is 60/40, and the time users spend on the website increased about 50%.

[25] The RT has not assessed the incubator programme in any details, but notes that in 2017, 5 new LDCs enrolled in the incubators programme that can comprise the inputs of a national climate technology consultant to review NDC, TNA, NDC

NDEs. In view of the CTCN's limited funding, it is important to consider the NDEs' incentives and motivation for the capacity development effort and what objectives it serves, since NDEs do not receive any financial support from CTCN and the limitations in CTCN funding can result in considerable time between implemented TA projects.

There is also a need to ensure that the regional events are cost-effective in delivering sustainable capacity development outcomes and that NDEs are enabled to reach out effectively into the institutional landscape in developing countries, including to the private sector and to coordinate with GCF NDAs and other focal points (from the RT's interviews the regional events seem to be effective in bringing NDEs and other focal points together and also facilitate the identification of opportunities for multi-country TA projects). The achievements of engaging with NDEs in developed countries could be further highlighted. There may also be opportunities to leverage the "means of implementation" under UNFCCC to build NDE capacity.

The CTCN secondment programme is part of the capacity development effort and has thus far involved 7 secondees for 6-12 months; currently a Korean secondee works at CTC in Copenhagen – the RT assesses this programme as highly beneficial.

Networking: An important service of CTCN is the facilitation of networking and South-South, South-North, and triangular exchanges. The 2017 Independent review noted that CTCN had not yet succeeded in developing a real community of practice, and this was confirmed by the Danida RT in several of its interviews. The network has grown significantly and now comprises 408 members (about equally divided on Annex I /Non-Annex I countries, 43% are private sector, and there is a slight overweight om mitigation expertise). All NDEs are considered network members as well, although the practical implications of this are somewhat unclear to the RT. As reflected in some interviews, many network members joined to get opportunities to bid for TA implementation contracts and do not really consider themselves part of a community. The 2017 Independent Review found that several network members are not very active.

The Independent Review found the knowledge sharing and capacity development efforts to be generally effective. The present review team acknowledges the progress made by CTCN in these areas but also need for continued efforts to raise awareness of CTCN, based on a clear description of its comparable advantage among climate technology stakeholders, to strengthen monitoring of the uptake of CTCN knowledge products and services, as well as the communication of results in the CTCN "non-TA" (NTA) service lines.

8. Results Framework, Work Planning, Monitoring and Reporting

Intervention logic: CTCN's Programme Document from 2013 contained a brief description of its intervention logic[26]. The 2017 Independent Review had a reconstructed the intervention logic for CTCN with cumulative targets for the first 3 years, as a basis for its assessment.[27] Apart from the brief descriptions in the project document, CTCN does not have a theory of change (ToC) as such. A ToC is also not included in the TA response plans. Technology innovation, transfer and uptake are complex processes in today's dynamic and multi-stakeholder environment. As noted in the UNEP Evaluation, it

and national priorities under NDE coordination with a view to developing a road map as a tool to assess feasibility, develop business and financial models for bankable projects and prepare for investment. The 2017 Independent Review found the incubator programme successful. The RT finds that it would be useful if more information was given on the CTCN website on the number of LDC NDEs and how many of these have benefited from the incubator programme and what the results have been.

[26] Section C Figure 2 schematically illustrated the technology innovation process cycle in a national setting.

[27] Which is found in the Independent Review report figure 5 and will not be repeated here.

is important for CTCN to clear define its understanding of technology transfer and innovation and to articulate how it contributes to these transformational processes. This is also an important basis for assessing the outcomes and impacts.

Results frameworks: The 2013 Programme Document included a detailed Logical Framework with quantitative and qualitative targets and indicators, means of verification and assumptions. The CTCN draft Programme of Work (PoW) set out target outputs by year for each of CTCN's 3 service areas and outcomes with cumulative targets for the first 5-year period along with related indicators. At TA project level, the results frameworks are guided by the Response Plan template that contains a template for the required detailed Logical Framework for the CTCN Technical Assistance at outcome and output levels.

Monitoring and evaluation (M&E): Development of TA and non-TA Monitoring and Reporting systems has been underway[28] for some time. The Norwegian consortium partner DNV GL has assisted CTCN in an internal M&E system review. The draft report on these activities has only recently been completed and has not been available to the Danida RT. The RT acknowledges the challenges in monitoring and evaluating the many small interventions over a wide range of topics and contexts that characterises CTCN's services. The M&E system does not seem to address the efficiency and effectiveness of the use of resources.

The TA Closure Report template from March 2017 increased the focus on monitoring[29] and eliciting lessons learned, but the closure reports that are produced when a TA closes, can only report on outputs and to some extent on outcomes and anticipated, indicative impact. The Impact Briefs that are being prepared for each TA (and also aggregated in a publication on the website), are a reflection of the emphasis on the learning and dissemination of experience that can inspire other partners and thus contribute to capacity development and cross-learning. However, the RT finds that the issue of transformational change still needs attention in this regard. A stronger articulation of CTCN's theory of change and related assumptions and risk factors would be helpful.

The RT has some reservations about the NDEs' comparative advantages in M&E given their limited resources and the need for a uniform M&E effort over a wide range of interventions in many countries and very different contexts. The RT considers that based on experience from other similar types of interventions in other organisations, thematic and/or geographically focused tracer studies may be a relevant mechanism to assess impact at least qualitatively, both for NTA and TA support. It is also noted

[28] A TA M&E system was approved at AB6 while an update on non-TA M&E was presented at AB9. An update on M&E procedures for non-TA activities was presented to AB10 with identification of process and performance indicators and the approach to reporting on intended impact vs. specifically identified SDGs. This system also includes plans for periodic assessment of overall process and procedures for M&E of non-TA. In the follow-up notes to AB10 it was stated that no comments on the NTA M&E framework were received and no objections were raised by AB11 regarding the finalization and acceptance of this M&E framework.

[29] The TA Response Plan template specifies that based on the work plan, a monitoring and evaluation plan must be developed with specific, measurable, achievable, relevant, and time-bound indicators used to monitor and evaluate the timeliness and appropriateness of the implementation – a CTCN template for TA M&E is also in CTCN's tool box. The monitoring and evaluation plan should apply selected indicators from the CTCN Closure and Data Collection report template and enable the lead implementer to complete the CTCN Closure and Data collection report at the end of the assignment. Moreover, a two-page CTCN Impact Description must be formulated in the beginning of the TA and updates/revised once the TA is fully delivered.

that the next UNFCCC Review of CTCN is planned to be launched in 2020 and completed in 2021, which may offer opportunities to evaluate impact of early CTCN TA and NTA interventions[30].

Monitoring and reporting on the uptake of knowledge products, is always a challenge, and is mainly done in connection with regional events and in other interactions with targets groups, and the evidence seems to be mostly anecdotal. As stated in the 2018 AOP, efforts will be made to ensure that CTCN-produced materials will focus on technical assistance impacts and lessons learned, along with highlighting replicable solutions.

Work planning and reporting: CTCN follows a rolling annual work planning approach with Annual Operating Plans (AOPs) approved by the AB. The AOPs set out detailed prioritized actions for each of its activity areas and specifies target outputs for the year (several targets are defined as quite broad ranges, for instance for year 5: 30-50 TA requests under implementation and concluded; 10-15 webinars organized, etc.). The AOPs contain approved budgets defined as activities by main component, which provide the framework within which the CTCN teams organize and prioritize their work. There is no clear link from the AOPs back to the Programme Document. However, the Independent Review assessed achievements against the 2013 PoW but not the original signed Programme Document – this Review found that most of the activities described in the original PoW had been implemented.

Results of the work plan are reported to the Advisory Board yearly in a number of smaller notes and "snapshots". To ensure a more transparent and systematic reporting it could be considered to submit an annual report to the Advisory Board, which reports progress towards the AOP targets.

Due to earmarking and specific donor requirements CTCN provides a number of different reports, some of which can be generated from the dashboard and KMS systems, while reporting on earmarked contributions require manual collation of information. Advisory Board donors could play an important role to reduce the specific reporting requirements and work toward a more consolidated report

The website dashboard reflects feedback from the M&E system, but is still an area under development. The joint annual CTCN/TEC progress reports reflect results and achievements, but there is still a need for a consolidated reporting to the COP, AB, donors and others that enables a structured comparison of results achieved with the approved AOPs. The "glossy" CTCN Annual Reports are of a more general nature serving wider audiences.

New Work Programme 2018-2021 and draft Vision 2025: The MOU with UNFCCC has been renewed, why a new Work Programme 2018-2021 will be developed for endorsement at the Advisory Board 12th Meeting in October 2018. Also, a draft Vision 2025 paper has been developed based on an AP task force process and presented for discussion at AB11.

The preparation of a Vision paper is important and highly relevant for setting a perspective for the new Work Programme. The draft Vision placed strong emphasis on the role of NDEs, while less attention was provided to describe describing the niche of CTCN and its comparative advantages, the role of its expanding network, and the role of the private sector in a market context.

It is encouraging that CTCN will further develop the Vision paper and integrate the comments made by AB11 to develop a simpler vision statement that communicates CTCN uniqueness in common language with less emphasis on UN terminology; and consider the comment above. Despite the time horizon for finalizing the Vision being planned to go beyond COP 24, it would be relevant to move the process

[30] It is understood from CTCN that it is actively engaged in relevant monitoring and evaluation processes under the UNFCCC including the Adaptation Committee consideration of impact monitoring for climate change adaptation.

forward to ensure that the Vision does provide the framework for the 2018-20121 CTCN work programme that will be developed over the coming 5-6 months.

9. Budgets, Expenditures, Funding and Financial Sustainability

9.1 CTCN overall Budgets/Expenditures and Support Modalities

The 2013 Programme of Work for CTCN was based on a 5-year budget of USD 100 million. However, as can be seen from Table 9.1 the actual spent budget for 2013-18 will be approx. USD 42.6 million. Furthermore, the budget secured for 2019-21 is seriously below expectations. To this situation, it should be noted that several regular donors are to decide on new funding during 2018/2019, and probably funding from other sources can be secured. Still, the situation gives reason for some concern, and it is highly appropriate that CTCN now intends to pursue a structured and coherent resource mobilisation strategy[31] including hiring of dedicated staff allocated to fund raising.

Table 9.1. Funding, budget and expenditures 2013-21 in USD 1,000 excluding programme support costs

	Secured funding 2013-21	Expenditure 2013-17	Balance Jan 2018	Secured income 2018-21	Available 2018-21	Budget 2018	Available 2019-21
Earmarked	26,132	n.a.	4,256	10,200	14,456	n.a.	n.a.
Unearmarked	29,411	n.a.	4,380	1,100	5,480	n.a.	n.a.
Total	55,543	33,500	8,636	11,300	19,936	9,110	10,826

Of the secured budget, earmarked funds constitute 53% and unearmarked 47%, while 72 % of funding for 2018-21 is earmarked. The main part of the current funding is received from bilateral donors, while readiness funding from the Green Climate Fund is increasing[32] and some funds are received from UN Environment and UNIDO. More than 50 % of the funding is received from EU, Norway, and Denmark. Denmark has contributed DKK 41 million (unearmarked and all transferred to CTCN as of December 2017).

It is clear from the above that CTCN is underfunded compared to the envisaged budget level and if no new funding is ensured in the near future, it will face financial constraints in 2019. It is further of concern that earmarked funds constitute 53 % of total funding and 72 % of the remaining funding. Unless a higher share of unearmarked funding is secured, it could be difficult for CTCN to maintain its demand-based approach and satisfy an equal distribution of funds in relation to mitigation/adaptation, partner country level of income and geography. Finally, it should be discussed, whether CTCN with the current level of funding can play the intended role as a mechanism with a global outreach.

9.2 Budget and Expenditures 2013-2018.

CTCN introduced UNEP's accounting procedures in 2015, which made it possible to present budgets and accounts on an output/programme basis. In 2013 and 2014 this is not possible. Execution of the budget (i.e. actual expenditure) has in general been low, from 36 % in 2016 to 70 % in 2017. This low budget execution is mainly due to the fact that CTCN with the acceptance of the Advisory Board prepared "Aspirational budgets" only. As a result, it is not possible to assess efficiency in budget

[31] The draft Resource Mobilisation Strategy February 2018 was presented to and extensively discussed at AB11.
[32] But this is project funding that is not reflected in CTCN's budgets

execution and implementation of the related activities. CTCN has, in the 2018 budget, taken steps to prepare a more realistic budget. This is appreciated, as realistic budgeting is the basis for accountability and for the Advisory Board to undertake its supervisory role.

CTCN has since 2015 had average yearly expenditures slightly under USD 9 million, which could be difficult to maintain in the future. This review has not in details analysed the individual items of the budget and expenditures including costs for operating the secretariat. Thus, the RT is not in a position to assess, whether the apparently high costs for secretariat operations are justified. Table Annex 3.1 (see Annex 3) shows CTCN budgets and expenditures prepared by the RT based on tables received from CTCN-secretariat. Table Annex 3.2 (see also Annex 3) shows CTCN income and expenditure summary for 2013-2017 from the CTCN secretariat. From table Annex 3.1 it can be seen that the costs of CTCN operations until 2017 have been between 18 and 22 % of total expenditures and is budgeted at 27 % of the total budget in 2018. There is a need for the secretariat to present a further breakdown[33] of operating costs to enable the Advisory Board to assess the balance between operational costs and activity costs. It is recognised that it will be a challenge for CTCN management to balance the budget, if CTCN experiences constant budget fluctuations.

9.3 Financial Management

Financial management in CTCN has improved substantially with the introduction of new accounting procedures in 2015 and with the arrival of an accountant/financial management officer. CTCN is not a legal entity, why CTC is not formally responsible for expenditures and accounts. Accounts are done in the two mother organisations. It is a challenge for CTCN to manage budgets from as well UN Environment as UNIDO, each with different procedures with some delay in transfer of information. Also, staff are hired according to procedures in the two organisations and tender procedures, travel rules etc. differ. Further, the high degree of earmarked funding, and some donor funds channelled through UNEP and some through UNIDO, complicate financial management.

Although this arrangement cannot be considered efficient, it appears that a functional system has been stablished. Correspondingly, funds are audited according to UNEP and UNIDO rules.

9.4 New Resource Mobilisation Strategy

As noted above, CTCN has presented a new draft strategy for resource mobilisation, indicating a potential shift away from bilateral funding towards a more diversified funding profile. The strategy aims at maintaining a yearly core budget of USD 10 million, while aiming at a total budget of more than USD 20 million in 2021. It is very positive that CTCN takes this initiative for fund mobilisation. The strategy was discussed at the 11th meeting of the Advisory Board. The AB stressed that the niche or comparative advantage of CTCN needs to be further highlighted, it requested more information on basis for the estimates, and it was requested that the use of "Pro Bono" funding was further clarified and in particular, how such resources are assessed in tender procedures. It is premature to assess whether the funding strategy and its targets are realistic, although expectations appear high, in particular in the short term. The RT agrees that the niche and comparable advantage of CTCN should be clarified and it is important for CTCN to improve documentation and communication of results as a basis for fund mobilisation. The discussions at AB11 also indicate a need the further explain in simple terms what the earmarking of funding means and how it restricts CTCN flexibility and increases transaction costs.

[33] The Secretariat has informed the Review team that "Budget of $2.5 million are for fixed costs such as staff, fundamental operational costs and meeting costs for AB and Consortium partners" and "consultants working directly on the programme activities are all accounted under programmatic activities (except those who works for CTCN Director), so this can be adjusted".

10. Risk Management and Cross-cutting Issues

Risk management: The original 2013 Programme Document contained an analysis of risks and assumptions, and the risk matrix contained mitigating measures[34]. The 2013 PoW Section 9 listed critical success factors and mentioned that *"a SWOT analysis and a risk assessment have been conducted for the CTCN and have informed the work with the plans and roadmaps for this Programme of Work. The analysis will be actively used by the CTCN management in the continued development of the CTCN, particularly over the next 18 months. The CTCN will build on its strengths and pay particular attention to the opportunities in its positioning and communications. Likewise, practical actions will be taken to counter weaknesses and threats to the extent these are feasible*". It is unclear to the RT what operational follow-up has been made on this although an updated SWOT analysis was contained in the 2014 communication strategy.

The RT has also not found a systematic follow-up on the original risk analysis from the programme document. The 2016 UNEP Evaluation (on page 62- 64) addressed risk factors and found that *"There is no appropriate risk management strategy".* It further found no evidence that risks and assumptions had been discussed with key stakeholders. On the financial risks it was found that these were incorporated in the risk description, but further noted that *"As the CTCN is important in the international climate fora, the prospect for funding is judged as "real". The COP will ultimately rely on GEF to close funding gaps".* This has obviously not materialized. The 2016 evaluation also had in its Recommendation 1 that a clear risk assessment with respect to staffing structure was highly recommended. And as part of its Recommendation 2 *"the development of a typology of requests and of final products of the TA, a standardized risk assessment that helps understand and mitigate the risks of non-implementation".* The 2017 Independent Review mentioned in its evaluation questions under "efficiency" a question on the extent to which CTCN's operational risks had been well managed, but this question does not seem to have been given emphasis in the review report's findings conclusions and recommendations.

The Danida RT finds that assumptions and risk management have not been sufficiently prioritised in the TA templates – for some of the selected closed TA projects that the RT looked into, lessons[35]reflected in TA closure reports illustrate obstacles, which could have been foreseen as risk factors and mitigated in requests and response plans. In general, it is not clear to the RT if/how the risk analysis has been used and updated, but it is noted that the communications strategy in 2014 did contain a detailed SWOT analysis. The RT concludes that there is a need for further focus on risks and assumptions, including in CTCN's TA templates.

Cross-cutting issues: Concerning the cross-cutting issues, CTCN has a very strong and appropriate focus on gender. CTCN staff and consultants count slightly more women than men. AOP 2018 prioritises "Activities to identify and highlight the important role of gender in climate technologies" and also mentions that consideration of endogenous technologies will be continued. A 7-page "gender snapshot" paper was submitted to AB11 giving an overview of CTCN gender activities and results. A human rights-based approach (HRBA) is not explicitly addressed by CTCN though the general human rights principles

[34] Surprisingly, the likelihood of the risk that "CTCN does not benefit from sufficient and adequate funding and other resources to operate efficiently and effectively" was rated "low" while its impact was rated "high". The risk mitigation strategy was to: Follow up on COP decision explicitly requesting the Global Environment Facility to support CTCN; Explore other sources of funding suggested by the COP including bilateral, multilateral channels; Secure funding from those countries that have already expressed interest in funding the CTCN (i.e., Denmark, USA, Canada, Japan); As host, consortium brings cash and in-kind funding to CTCN.

[35] E.g "the Strengthening of Bangkok's Early Warning System to respond to climate induced flooding", where a key lesson was that both availability and quality of data was a challenge.

(non-discrimination, participation & inclusion, transparency, and accountability) are followed implicitly and explicitly.

11. Recommendations

<u>Recommendation 1:</u> Based on the dialogue held with the Advisory Board at its 11th meeting, CTCN should finalize and implement a realistic resource mobilization strategy with clear yearly targets for each service area. The strategy should be based on a clear identification of roles and responsibilities for resource mobilization and establish a platform for dialogue with funding partners.

<u>Rationale:</u> This is a critically important initiative, due to the financial situation for CTCN. Currently secured funding is far from being able to maintain CTCN as a global mechanism serving developing countries as the operational arm of the UNFCCC Technology mechanism. With the funding level realized so far – only half of what was originally intended - CTCN is from an average consideration able to provide TA project implementation for individual countries every 5 -6 years (although in practice, it varies a lot from country to country). This makes it difficult to sustain attention of the developing country NDEs (and other climate technology stakeholders) towards CTCN. While CTCN is a body under UNFCCC with formal decision structures, it is considered valuable to maintain closer contact with key funding partners, as the environment for mobilising funding for climate initiatives is highly competitive. It will be important to consider whether CTCN should be based only on voluntary contributions, or if framework contributions from GCF and GEF can be secured.

<u>Recommendation 2:</u> CTCN should finalize the planned Work Programme 2018-2021 for endorsement by the Advisory Board at its 12the Meeting in September 2018, with particular attention to the following points.

The Work Programme should clearly:

- Describe the niche of CTCN and it comparative advantage compared to other similar mechanisms in the light of the achievable funding level.
- Reassess diversity and nature of activities to support, in order to focus interventions and to ensure critical mass within the chosen focus areas.
- Make a clear operational definition of technology transfer and concrete Theory of Change for securing transformational change.
- Define the roles of NDEs vis-a-vis project owners/proponents during the full project cycle.
- Reassess CTCN's modalities of operation in light of a realistically achievable funding level and clearly answer whether CTCN should: i) maintain its three current service modalities; or ii) be transformed – or change the balance of its activities - to a help-desk type function with smaller interventions offered to its current target countries; or iii) focus on specific countries and sectors; or iv) be transferred as a separate window under GCF or similar? Each option should be assessed on its ability establish a critical mass for CTCN to function as a global mechanism.
- Define an operational strategy for how to involve the private sector and private funding in both developing and developed countries, while making clear that the private sector has different roles as i) target user of climate technology innovation; ii) supplier of climate technology solutions and services; iii) funder of technology innovation and transfer. Particular attention should be given to the role of private sector associations and their role in market transformation, as well as to the regulatory and enabling environment in developing countries for private sector engagement.

- Define an effective and efficient system for qualitative and quantitative monitoring and reporting on outputs, outcomes and impacts for TA projects.
- Detail the description of the functions of the secretariat and ensure proper balance between cost of secretariat functions and activities in the field.
- Address how to ensure that the shift from TA delivery by consortium partners to tender-based delivery by network partners, is achieving its goals, is efficient and maintains quality of advice. It should specifically be addressed whether the lowest price selection criterion in UNIDO tender procedures secures the best quality of TA input and how pro bono contributions are considered in tender procedures.

Rationale: The preparation of a new Work Programme provides a good opportunity to revisit the modalities and priorities of CTCN. Currently, CTCN provides support to all aspects of adaptation and mitigation, support for small as well as larger interventions; support for readiness activities as well as more focused TA. This carries a high risk of diluting the interventions and makes it difficult to draw replicable lessons learned. Further, it appears that only limited attention is provided to the private sector, as technology carrier and investor in a market perspective. CTCN currently undertakes a valuable and necessary effort to prioritise activities. To strengthen the impact of interventions, CTCN needs to sharpen and communicate its niche and comparative advantage as compared to other similar initiatives. The future level of funding will be critical for the niche and the modalities to be implemented. Communicating results and impact is also critical for mobilisation of funding. Finally, with the strong focus on price in the UNIDO system, the shift towards tendering to network organisations risks preventing many of the current consortium members from winning tenders. It should be examined how this influences the quality of services. With current activity level, the envisaged/budgeted cost of the secretariat constitutes more than 25 % of the budget.

Recommendation 3: Bilateral donors such as NORAD/Norway, SECO/Switzerland, and Danida/Denmark, which are to decide on future funding during 2019, should preferably carry out a joint/coordinated appraisal based on a new Draft Programme of Work 2018-2021 for CTCN. The conclusions and recommendations of this Danida review and CTCN's follow-up should be considered when drafting TOR for appraisal.
Rationale: As several donors will during the coming 2 years have to decide on possible future funding of CTCN, it would be efficient to undertake a joint or at least coordinated assessment of the relevance for continued funding to CTCN. Visits in the field would allow for a more in-depth dialogue with receiving countries/institutions and for a first-hand view on impact of the CTCN.

Recommendation 4: CTCN should consider elaborating a more uniform and systematic annual report to the Advisory Board and its donors corresponding to the Annual Operating Plans (AOPs) and the overall CTCN multi-year Work Programme.
Rationale: CTCN prepares AOPs, which are approved by the Advisory Board. However, CTCN does not prepare a corresponding Annual Report enabling the Board members to do a one to one comparison between plan and achievements and in a systematic manner to discuss constraints, barriers and opportunities across AOP activities. A yearly update of targeted and secured future funding (amounts, support modalities and duration) should be included. CTCN should further strengthen the initiated effort to make budgets realistic and not aspirational.

Recommendation 5: CTCN should further strengthen the good effort to prepare and make publicly available, the TA closure reports. This should include the retroactive effort of making and publishing closure reports for TAs completed before March 2017.

Rationale: The closure report format introduced in March 2017 represents a good step forward toward assessing outputs and lessons learned from TA projects. However, there is a backlog of projects from before the introduction of the Closure Reports, which are not documented in the same way. It is being considered that junior staff prepare closure report from these older projects, and this is strongly endorsed by the review team.

Recommendation 6: CTCN should consider making representative reviews or tracer studies to assess outcome and impact of TA projects and in order to assess the relevance of the mode of operation in achieving CTCN goals.
Rationale: CTCN faces the difficult challenges in documenting outcome and impact of relatively small interventions and doing so after the projects' termination. It does not appear realistic to expect the NDEs to perform uniform monitoring of all projects after termination. The NDEs receives no funding from CTCN for their functions and may not have experience in tracing outcomes and impact over a wide range of technologies and by a comparable standard. Therefore, it could be considered to perform qualitative reviews and/or tracer studies of results of representative projects. Although not providing comprehensive assessment of results, it would be sufficient to assess whether the project modality does actually work and provides results. A brief and concrete description of Theory of Change and assumptions included in the response plan should provide a basis for the monitoring. This type of monitoring should be seen together with the output monitoring to be included in closure reports.

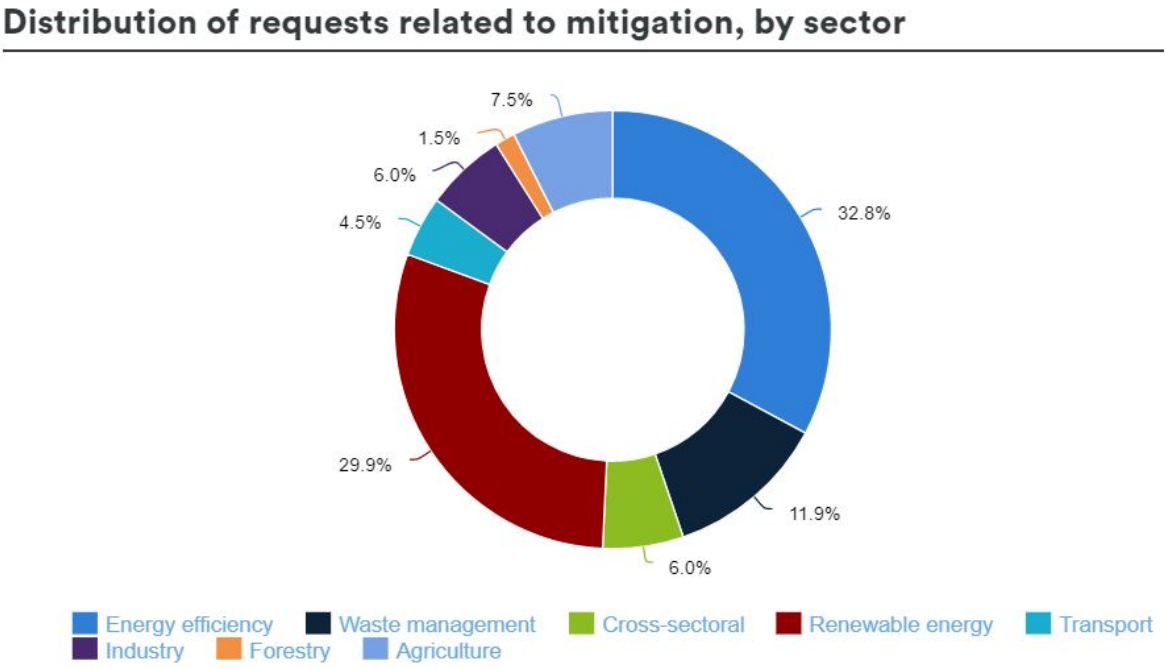
Recommendation 7: CTCN should update its templates for TA project requests, response plans, closure reports, and NDE feedback, to emphasize the transformational change perspective, national ownership by proponents, and the integration in national processes.
Rationale: CTCN staff appear in their daily assessment and guidance of partners to stress importance of transformative aspects of projects and to ensure ownership by participating institutions. However, these aspects are vaguely described in the templates for requests and response plans and all the templates should be consistent in this regard. With the limited amount of funding available within traditional development assistance, it is critical to influence upscaling, replication and transformation changing traditional investors. Strong national ownership and embedment in national activities is a critical factor for transformation.

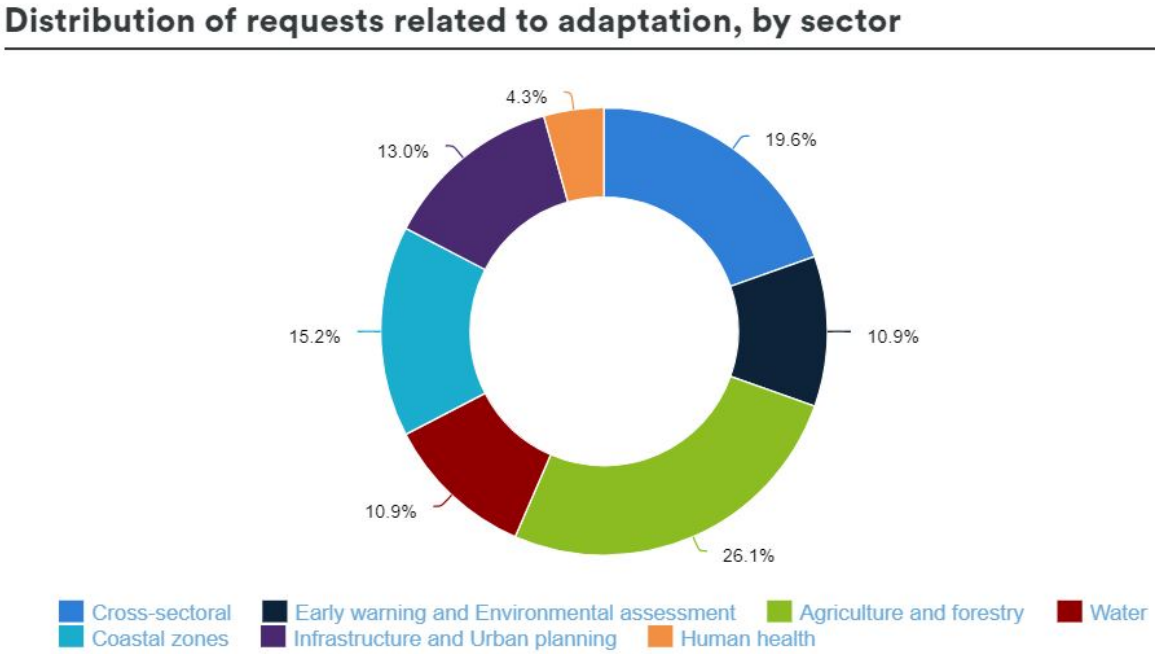
Recommendation 8: CTCN should more systematically report on results in all its three core service areas, also in knowledge sharing and capacity development/networking.
Rationale: The TA Impact Briefs are important publications and the plan for preparing thematic and geographic impact notes are fully supported by the review team. However, the briefs could benefit from being expanded (3-4 pages) and should be further focused on replicable lessons learned and impact stories to provide even more substantive and actionable lessons learned to be used by practitioners. More information should be provided on the uptake of CTCN's knowledge products including the use of information and knowledge conveyed though webinars.

Recommendation 9: Future Danish support should be based on the new CTCN 2018-2021 Programme of Work as endorsed by the 12th meeting of the Advisory Board and preferably be provided as non-earmarked basket funding.
Rationale: Currently, CTCN receives more than 50% as earmarked funding. Given the small TA-projects, it is with high transaction cost that CTCN needs to plan and report separately to donors. Furthermore, earmarking does not support CTCN's ability to function as a demand-driven and flexible global mechanism for implementation of COP decisions.

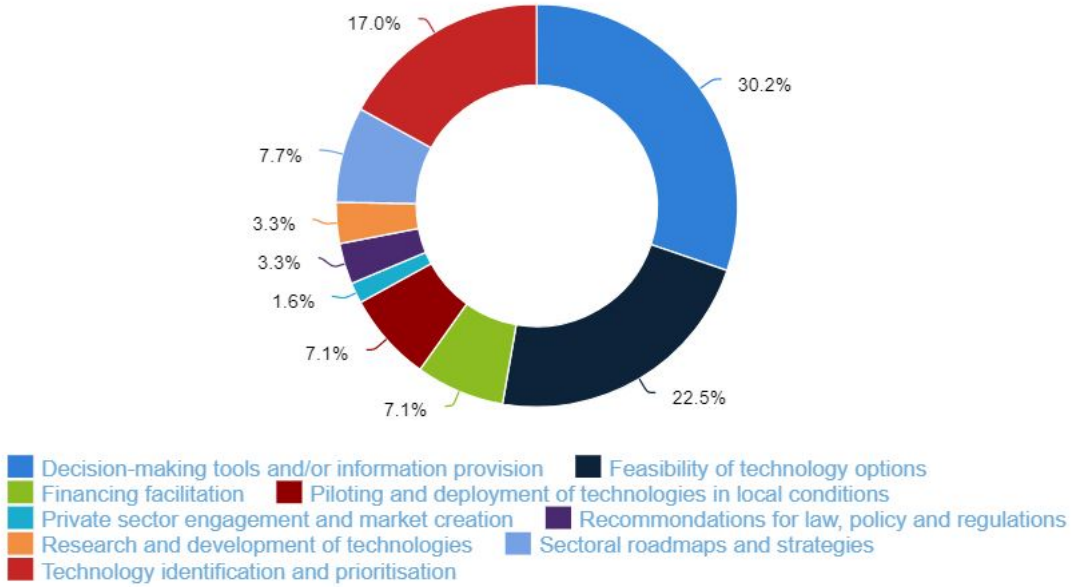
Annex 1: Illustrations of the CTCN TA project portfolio and prioritisation criteria

In order to illustrate the very wide range of CTCN's TA portfolio, a few examples are given below of the visualisations of the TA portfolio – the full dashboard can be found here: https://www.ctc-n.org/technical-assistance/request-visualizations and more information on the active TA projects can be found here: https://www.ctc-n.org/technical-assistance/data where the data can be filtered by country, objective, approach, sector. For each project several documents can be downloaded, including the original TA request, technical reports, and in some cases and impact brief and the closure report. It is noted that the level of information varies by project.

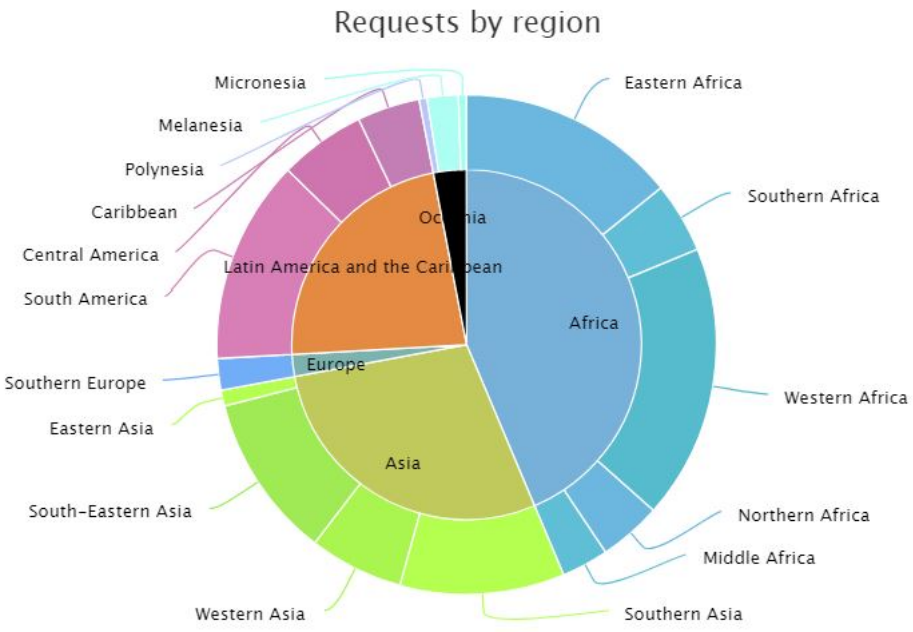




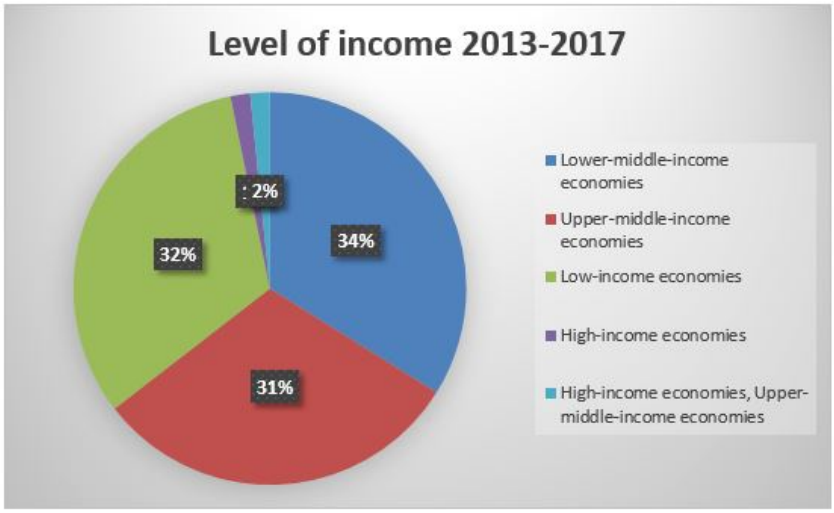
Distribution of requests by type of assistance

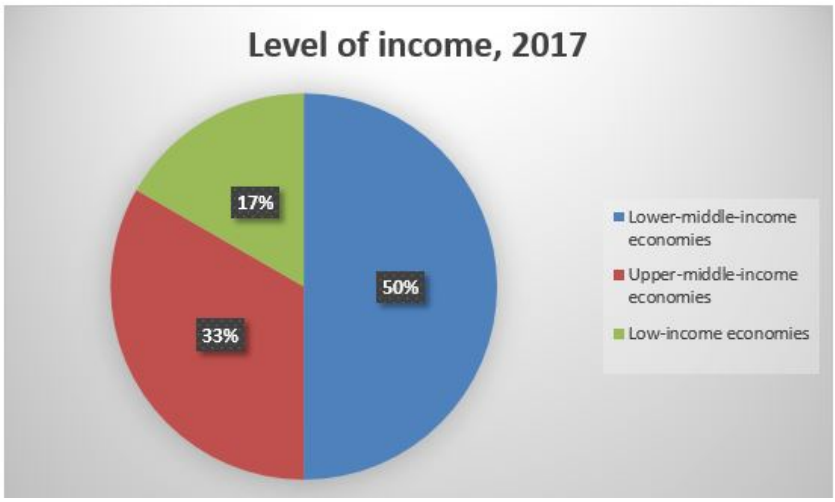


Requests by region



An analysis undertaken by the Review Team of the distribution of requests by level of income is shown below, reflecting a trend toward more requests from lower-middle income countries and less from low-income countries.





The CTCN TA eligibility, prioritisation, and balancing criteria are:

Technical Assistance: Criteria

Eligibility criteria:

1. A) The support will contribute to increased resilience and/or mitigate emissions; and
   B) The request is in line with national strategies and plans.
2. The support will enhance endogenous capacities.
3. Processes are in place in requesting country to monitor and evaluate.

Prioritisation criteria:

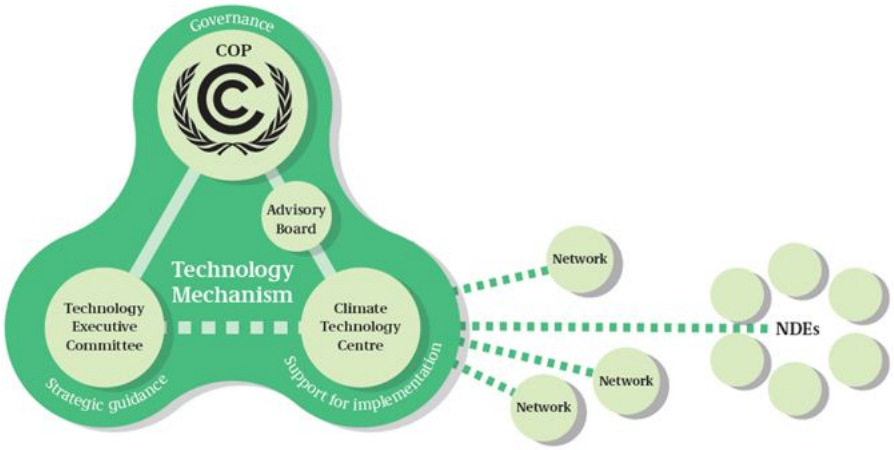
1. Promote endogenous and appropriate technologies and processes.
2. "Project readiness" and potential for replication or scaling up.
3. Promote collaboration amongst and between stakeholders, including between countries, and having elements of South–South, bilateral, or multilateral cooperation.
4. Promote multi-country approaches and the regional bundling of requests
5. Leverage public and/or private financing.
6. Promote and demonstrate multiple benefits, as well as social, economic benefits, and environmental sustainability.
7. Promote and demonstrate gender equality and empowerment of vulnerable groups, including women and youth.

Balancing principles:

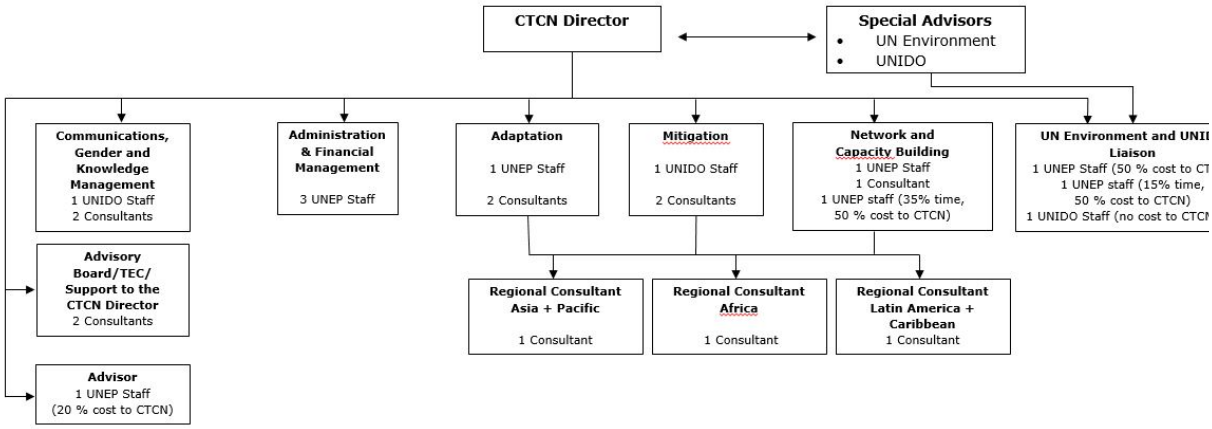
1. Inter and intra-regional equity, with a preference for requests submitted by LDCs and other highly vulnerable and low capacity countries
2. A balance of technological-related activities covering both adaptation and mitigation
3. A balance of technological related activities spanning the technology cycle.

Annex 2: CTCN organisational set-up/delivery structure

Schematic illustrations of CTCN's set-up and the CTC core centre organisation are given below (source: CTCN presentations):



CTC internal organisation and staffing.



Annex 3: Financial Overviews

Table Annex 3.1 - CTCN budgets and expenditures prepared by the RT based on tables received from CTCN-secretariat. For discussion.

Budgets and expenditures per year (USD 1,000 excluding programme support costs)

Service area	2013 exp.	2014 budget	2014 exp.	2015 budget	2015 exp.	2016 budget	2016 exp.	2017 budget	2017 exp. Preliminary	2018 budget
TA		**2,350**		**9,400**	**4,201**	**12,750**	**4,058**	**8,300**	**6,595**	**4,900**
Outreach etc		**850**		**1,600**	**1,749**	**2,030**	**509**	**1,200**	**627**	**710**
KMS, Cap. Dev.		**1,500**		**1,800**	**1,969**	**1,920**	**150**	**1,700**	**642**	**1,000**
CTCN operations	**384**	**1,300**		**1,700**	**1,692**	**2,280**	**1,480**	**2,500**	**1,678**	**2,500**
Total	**384**	**6,000**	**5,836**	**14,500**	**9,610**	**18,980**	**6,977**	**13,700**	**9,543**	**9,110**

Notes:

1. No breakdown by service area for 2013 and 2014 is available as the legacy system did not capture the information by service area, but only by object of expenditures (e.g. personnel, travel, operation, etc.).
2. CTCN started operations only in late 2013 so no expenditures are given for this year.
3. All the expenditures include commitments (i.e. obligations).
4. 2017 expenditures are preliminary figures.

Table Annex 3.2 below shows CTCN income and expenditure summary for 2013-2017 (source: CTCN secretariat):

CTCN - INCOME and EXPENDITURE SUMMARY up to December 2016 and Preliminary Figures for 2017

UNEP

		Income (Cash Receipt)						Expenditure (net of PSC)								
Donor	Type	2013	2014	2015	2016	2017 Preliminary	TOTAL Preliminary	2013	2014	2015	2016 incl. Adj	2017 Preliminary	TOTAL Preliminary	PSC	Refund to Donor	BALANCE Preliminary
Multi-donor trust fund	Unearmarked	8,631,273	4,298,584	5,491,957	2,478,419	3,865,154	24,765,388	14,464	4,589,843	2,603,328	8,925,260	4,848,021	20,980,916	2,003,297	- 44,201	1,736,974
Earmarked							**24,765,388**						**20,980,916**			1,736,974
EU	Approved Budget (CB)	3,392,131	-	1,221,167	2,170,964	-	6,784,262	369,210	1,246,360	1,240,482	1,738,336	621,110	5,215,498	323,361	-	1,245,403
EU	Approved Budget (TA)	-	-	-	1,037,593	-	1,037,593			-	-	931,503	931,503	65,205	-	40,885
US	TA and KMS	-	-	460,000	-	-	460,000				407,080	-	407,080	52,920	-	- 0
Germany, Korea	non TA/KMS	-	-	-	572,000	177,038	749,038			-	-	119,394	119,394	11,939	-	617,704
Japan	Technology Library	-	-	-	556,209	-	556,209			-	20,133	223,295	243,428	31,646	-	281,135
Japan	Asia Mitigation 1	-	-	1,000,000	-	-	1,000,000			312,000	436,000	-	748,000	97,240		154,760
Japan	Asia Mitigation 2	-	-	-	1,000,000	-	1,000,000			-	295,872	573,120	868,992	112,969	-	18,039
Japan	Asia Mitigation 3	-	-	-	-	1,000,000	1,000,000			-	-		-	-	-	1,000,000
GCF	Approved Budget (TA)	-	-	-	-	500,150	500,150				-	256,131	256,131	-		244,019
							13,087,252						**8,790,026**			3,601,945
		12,023,404	**4,298,584**	**8,173,124**	**7,815,185**	**5,542,342**	**37,852,640**	**383,674**	**5,836,203**	**4,155,810**	**11,822,681**	**7,572,574**	**29,770,942**	**2,698,578**	**- 44,201**	**5,338,919**

UNIDO

		Income (Cash Receipt)						Expenditure (net of PSC)								
Donor	Type	n/a	2014	2015	2016	2017 Preliminary	TOTAL Preliminary	n/a	2014	2015	2016	2017 Preliminary	TOTAL Preliminary	PSC	Refund to Donor	BALANCE Preliminary
Switzerland	Unearmarked		-	-	2,042,233	1,000,000	3,042,233			-	-	648,785	648,785	84,342		2,309,106
Switzerland	Unearmarked			400,000			400,000		116,260	151,552	- 2,975		264,837	34,429		100,734
GEF	Approved Budget			1,971,000			1,971,000			145,870	556,911	603,418	1,306,199	124,089		540,712
Japan	TA over $100K		-	-	882,275		882,275			-	-	679,778	679,778	88,371		114,126
UNIDO	UNIDO RB		375,000	250,000	250,000	250,000	1,125,000		273,029	230,748	224,279	164,193	892,248	-		232,752
		-	**375,000**	**2,621,000**	**3,174,508**	**1,250,000**	**7,420,508**	**-**	**389,288**	**528,170**	**778,216**	**2,096,174**	**3,791,848**	**331,231**	**-**	**3,297,429**

	2013	2014	2015	2016	2017	TOTAL Preliminary	2013	2014	2015	2016	2017	TOTAL Preliminary	PSC	Refund to Donor	Balance Preliminary
Total (excluding UNIDO RB)	12,023,404	4,298,584	10,544,124	10,739,693	6,542,342	44,148,147	383,674	5,952,463	4,453,232	12,376,617	9,504,556	32,670,542	3,029,809	- 44,201	8,403,596
Total (including UNIDO RB)	12,023,404	4,673,584	10,794,124	10,989,693	6,792,342	45,273,147	383,674	6,225,491	4,683,980	12,600,896	9,668,748	33,562,790	3,029,809	- 44,201	8,636,348

Table Annex 3.2 continued:

CTCN - PROJECTED CASH INCOME for 2018 onwards

UNEP

Donor	Type	2017 Balance Preliminary	Projected Cash Inflow 2018	2019	2020	2021	Proejcted Total	
Multi-donor trust fund	Unearmarked	1,736,974	120,000	-	-	-	1,856,974	*Spain EUR100K pledged, possiblity of $1.9M from Canada (COP22 pledge)
Earmarked		**1,736,974**	**120,000**	-	-	-	**1,856,974**	
EU	Approved Budget (CB)	1,245,403					1,245,403	
EU	Approved Budget (TA)	40,885	2,593,984	2,334,586	1,296,992	382,272	6,648,719	*subject to change in the payment schedule
US	TA and KMS	- 0					- 0	
Germany, Korea	non TA/KMS	617,704		372,544	372,544		1,362,792	
Japan	Technology Library	281,135					281,135	
Japan	Asia Mitigation 1	154,760					154,760	
Japan	Asia Mitigation 2	18,039					18,039	
Japan	Asia Mitigation 3	1,000,000					1,000,000	
Japan	Asia Mitigation 4		750,000					
GCF	Approved Budget (TA)	244,019	592,700				836,719	
		3,601,945	**3,936,684**	**2,707,130**	**1,669,536**	**382,272**	**11,547,567**	
		5,338,919	**4,056,684**	**2,707,130**	**1,669,536**	**382,272**	**13,404,541**	

UNIDO

Donor	Type	2017 Balance Preliminary	Projected Cash Inflow 2018	2019	2020	2021	Proejcted Total
Switzerland	Unearmarked	2,309,106	1,021,117				3,330,223
Switzerland	Unearmarked	100,734					100,734
GEF	Approved Budget	540,712					540,712
Japan	TA over $100K	114,126	1,171,190				1,285,316
UNIDO	UNIDO RB	232,752	125,000				357,752
		3,297,429	**3,297,429**	**3,297,429**	**3,297,429**	**3,297,429**	**3,297,429**

	2017 Balance Preliminary	Projected Cash Inflow 2018	2019	2020	2021	Proejcted Total
Total (excluding UNIDO RB)	8,403,596	7,229,113	6,004,559	4,966,965	3,679,701	30,283,932
Total (including UNIDO RB)	8,636,348	7,354,113	6,004,559	4,966,965	3,679,701	30,641,684

Annex 4: Key documents consulted

No.	Title	Date, Author
1.	Report of the Independent review of the effective implementation of the Climate Technology Centre and Network, FCCC/CP/2017/3	25 August 2017, UNFCCC/Ernst and Young et Associés
2.	Case Study contributing to the terminal evaluation of Project 12/3-P1, P2	23 February 2016, UNEP Evaluation Office/Arepo Consult
3.	Joint CTCN TEC progress report	FCCC/SB/2017/3, 29 September 2017
4.	CTCN Progress Reports	2014-2015, 2016, 2017 CTC
5.	CTCN templates: Technical Assistance Request Submission Form; Fast Technical Assistance (FTA) Request Submission Form; Technical Assistance Response Plan – Terms of Reference; TA Monitoring and Evaluation plan; Instructions to lead implementers for drafting the TA Closure and Data Collection Reports; NDE response feedback form; Prioritisation criteria for responding to requests from developing country Parties	CTC 2013-2018
6.	Documentation on selected adaptation and mitigation TA projects	Downloaded from CTCN website, various authors
7.	Financial information overviews, statistics on TA projects, webstatistics, and information on webinars, selected CTCN newsletters, videos	CTC, 2018
8.	Programme Document, Joint UNEP-UNIDO Programme to host CTCN	2013
9.	CTCN Annual Operating Plans (AOPs)	CTC, particularly for 2016-2017-2018
10.	CTCN draft Programme of Work	Approved by the Advisory Board at its Second Meeting, 9 – 11 September 2013 in Bonn
11.	Donor Agreement Ministry of Foreign Affairs of Denmark (MFA)-UNEP	3 October 2013 and no cost extension to 31 December 2017 MFA
12.	Documents and presentations to the CTCN Advisory Board Meetings, particularly AB9, 10, 11	CTC 2017-2018
13.	Report on the Evaluation of Proposals to host the Climate Technology Centre	FCCC/SBI/2012/INF.4 23 April 2012

Annex 5: Programme and Key Persons Met

Programme of the Review:

Activities	Dates
Start-up meeting with the Director and senior staff, CTCN	31 January 2018
Review Team's Issues Paper circulated to CTCN management and senior staff	13 February
Key meetings at CTC core centre with staff and consultants, skype and telephone interviews with UN Environment, UNIDO, selected consortium partners, network members, and National Designated Entities.	15-23 February, 27 February, 1 March
Review Team's preliminary conclusions and recommendations shared informally with CTCN management	6 March
Review Team attendance as observers at the CTCN Advisory Board 11th Meeting	7-9 March

Key persons met/Interviewed by the Review Team:

Name	Title/Institution
CTCN Advisory Board (AB)	
Ms. Mette Møglestue	Advisory Board Chairperson, Acting Director, Department for Climate, Energy, Environment and Research, NORAD, Norway
Mr. Spencer Linus Thomas	Ambassador, Grenada, former AB Chairperson
Mr. Ambuj Sagar	Research and Independent Non-Governmental Organisations (RINGOs)
Dr. Karsten Krause	Directorate-General for Climate Action, European Commission, Brussels
Ms. Orly Jacob,	Manager, Environment and Energy Policy Division, Natural resources Canada, Ottawa, Advisory Board Member
Mr. Michael Rantil	Chairman, Technology Executive Committee (TEC), Advisory Board member
Ms. Moa Forstorp	Advisory Board member, Sweden
Mr. Sergio La Motta	Advisory Board member, Italy and NDE for Italy
Ms. Sara Aagesen Munoz	Advisory Board member, Spain

Mr. Ian Lloyd	Foreign Affairs Officer, Office of Global Change, US Department of State, Washington DC USA, Advisory Board Member
Ms. Claudia Octaviano	Advisory Board member, Mexico
CTC core centre	
Mr. Jukka Uosukainen	Director, CTCN
Ms. Jaime Webbe	Climate Technology Manager, Adaptation (UN Environment staff)
Mr. Federico Villatico Campbell	Climate Technology Manager, Mitigation, (UNIDO staff)
Ms. Karina Larsen	Knowledge and Communications Manager (UNIDO staff)
Mr. Rajiv Garg	Network & Capacity Building Manager (UN Environment staff)
Dr. Hartwig Kremer,	Senior Programme Officer, CTCN (UN Environment staff)
Ms. Sandra Bry	Adaptation Portfolio Coordinator (consultant)
Ms. Irma Juskenaite	Communications Associate (consultant)
Ms. Shanar Taleb-Tabrizi	Knowledge Management Specialist (consultant)
Mr. Scott Willis	Strategic Advisor (Consultant)
Ms. Naomi Kosaka	Administrative and Fund Management Officer
Ms. Nima Joshi	Finance & Administration (UN Environment staff)
Ms. Bibiana Sanchez	Programme Management Assistant (UN Environment staff)
Mr. Ho-Sik Chon	CTCN Secondee from the Green Technology Center, Korea
UN Environment	
Ms. Ligia Noronha	Director, Economy Division, UN Environment, Nairobi
Mr. Mark Radka,	Head of Energy Branch, UN Environment Division, Paris
Mr. Manfredi Caltagirone	Programme Officer, UN Environment staff, CTCN liaison at UN Environment, Paris
Ms. Agathe Laure	Technical assistance coordinator (consultant)
Mr. Victor Low	Special Advisor (consultant)
Ms. Guilia Ferrini	Associate Programme Officer

UNIDO	
Mr. Tareq Emtairah	Director, Department of Energy
Mr. Patrick Nussbaumer	Industrial Development Officer, UNIDO staff, CTCN liaison at UNIDO Headquarters
Ministry of Foreign Affairs of Denmark (MFA):	
Mr. Bo Jul Jeppesen	Head of Section, Department for Multilateral Cooperation, Climate Change and Gender (MKL)
Ms. Merete Villum Pedersen	Chief Technical Advisor, MKL
Mr. Jonas Henriques	Financial Management Officer, Department for Quality Support, TQS
CTCN Consortium Members:	
Mr. Peter Koefod Bjørnsen	Director, UNEP-DHI Partnership – Centre on Water and Environment, Hørsholm, Denmark
Ms. Sara Lærke Meltofte Trærup	Senior Researcher, UNEP DTU Partnership (UDP), Copenhagen, Denmark
Mr. Muhammad Mehmood Ul Hassan	Head, Capacity Development Unit, World Agroforestry Centre/ICRAF, Nairobi, Kenya
Dr. Javed Rizvi	Director, South Asia Regional Program, World Agroforestry Centre/ICRAF, New Delhi, India
Mr. Ron Benioff	Director of Multilateral Programs, National Renewable Energy Laboratory (NREL), Golden, Colorado, USA
Ms. Victoria Healey	National Renewable Energy Laboratory (NREL), Golden, Colorado, USA
CTCN Network Members:	
Mr. Emiel Hanekamp	Partners for Innovation -BV, Netherlands
Mr. Changsun Jang and Ms. Inhye Bak	Green Technology Center-Korea (GTC-K), Seoul, Korea
Ms. Joëlle Matte	ECONOLER, Vancouver, Canada
Mr. Albert Boateng	Private Financing Advisory Network (PFAN), Accra, Ghana
National Designated Entities (NDEs)	
Mr. Pham Van Tan	Deputy Director General, Department of Meteorology, Hydrology and Climate Change, Ministry of Natural Resources and Environment of Vietnam

Mr. Djordje Vojinovic	Research Assistant, Faculty of Technology, University of Banja Luka, Bosnia and Herzegovina
Ms. Sara Qais Al Haleeq	Ministry of Environment, Amman, Jordan
Mr. Henry Roman	Department of Science and Technology, Pretoria, South Africa
Ms. Julia Both	NDE Germany Coordinating Office, HEAT Gmbh Königstein

Annex 6: Terms of Reference

TERMS OF REFERENCE (TOR)

FOR

REVIEW OF THE CLIMATE TECHNOLOGY CENTRE AND NETWORK

Background

The Climate Technology Centre and Network (CTCN) is a body mandated by the United Nations Convention Framework on Climate Change (UNFCCC) to assist developing countries in deploying environmentally sound technologies to address climate change challenges. The issue of technology transfer has been a cornerstone of the UNFCCC since the Convention was established. As a major step forward, Parties agreed on the Technology Mechanism, of which the CTCN is a body, at the 16th session of the COP in Cancun in December 2010.

The CTCN consists of two parts: a *centre*—a coordinating entity located in UN City Copenhagen and the consortium of 12 organizations[36]— and a worldwide *network* of organizations that delivers CTCN services—both virtually and actually. UNEP has been selected as the host of the Climate Technology Centre, in collaboration with UNIDO and with the support of 12 Consortium Partners[37]. The network includes a variety of stakeholders ranging from regional climate technology centres and networks to intergovernmental, international, regional and sectoral institutions, organisations, partnerships and initiatives that can contribute to technology deployment and transfer as well as research, academic, financial, non-governmental, private-sector and public-sector organisations and partnerships[38].

The objective of the CTCN is to ensure that environmentally sound technologies are widely used in developing countries to adapt and mitigate climate change, in line with their development objectives. Technologies include any equipment, techniques, practical knowledge and skills that can be used to decrease greenhouse gas emissions in the atmosphere – mitigating climate change – and to increase resilience to climate change effects – adapting to climate change. For example, the CTCN has been assisting countries in deploying climate technologies such as clean public transport systems, early warning systems using cell phones, flood modelling software, district heating infrastructures, agro-forestry practices, water saving techniques, agricultural waste to energy technologies, etc.

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[36] United Nations Environment Programme (previously UNEP, now UN Environment), United Nations Industrial Development Organisation (UNIDO), Asian Institute of Technology (AIT) – Thailand, Bariloche Foundation (BF) – Argentina, Council for Scientific and Industrial Research (CSIR) – South Africa, The Energy and Resources Institute (TERI) – India, Environment and Development Action in the Third World (ENDA-TM) – Senegal, Tropical Agricultural Research and Higher Education Center (CATIE) – Costa Rica, World Agroforestry Centre (ICRAF) – Kenya, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) – Germany, Energy Research Centre of the Netherlands (ECN) – The Netherlands, National Renewable Energy Laboratory (NREL) – United States of America, UNEP-DTU Partnership – Denmark, UNEP-DHI Partnership – Denmark.

[37] A Memorandum of Understanding to that effect was signed between UNEP and the UNFCCC during the 27th Session of UNEP Governing Council/Global Ministerial Environment Forum (Nairobi, 22 February 2013).

[38] As of September 2016, the network is composed of more than 200 member organizations, i.e.: The Business Council for Sustainable Energy (USA), Carbon Trust (UK), the Japan Environmental and Sanitation Center, The Bangladesh Center for Advanced Studies, Forest Carbon (Indonesia), etc. The network also counts member organizations from Denmark including Quercus Group, Grue + Hornstrup A/S and NIRAS.

The CTCN implements this objective by providing three core services: 1) technical assistance at the request of developing countries to accelerate the transfer of climate technologies; 2) creating access to information and knowledge on climate technologies, 3) fostering collaboration among climate technology stakeholders via the Centre's network of regional and sectoral experts from academia, the private and public sector as well as research institutions.

In 2014, CTCN began managing requests submitted by countries for technical assistance, building capacities of national stakeholders requesting assistance, training National Designated Entities (NDEs) to enable them to fulfil their role; conducting outreach to potential Network members; collecting climate technology resources to be disseminated through the CTCN Knowledge Management System, developing webinars on climate technologies, approaching potential knowledge partners for its Knowledge Management System; and increasing its global visibility through participation in and organisation of events related to climate technologies. As of September 2016, 67 developing countries have formally submitted a total of 200 requests for technical assistance to the CTCN. The assistance is at various stages of advancement, but the CTCN is currently designing the assistance or implementing support in approximately 60% of them. Similarly, the numbers of applications to the CTCN network have grown steadily over the past 32 months and the network counts 400 members as of September 2016.

In line with the decision of the COP, costs associated with the CTCN and the mobilization of the services of the Network should be funded from various sources, ranging from the financial mechanism of the Convention to philanthropic sources, as well as financial and in-kind contributions from the host organization and participants in the Network. Parties in a position to do so were invited to support the CTCN through the provision of financial and other resources. Denmark has granted 41 million DKK to the CTCN between 2013 and 2017. Other donors include the EU Commission, Sweden, Norway and Germany.

At the 23rd Conference of the Parties to the UNFCCC in 2017, it was decided to extend the hosting of the CTCN by the UN Environment and UNIDO for the next four years starting 2018. As of 1 January 2018, the CTCN has secured a total of USD 53 million from bilateral and multilateral sources. The funding target for the CTCN's first 5 years of operations amounts to USD 100 million as approved by Parties to the UNFCCC. Based on the current funding forecast, however, limited additional resources are expected to be received for 2018 and beyond. The limited funding affects the technical assistance provided by the CTCN to developing countries and risks affecting the continuity in the work of the CTCN as well as the ability to fulfil its mandate.

Objective

The objective of this review is to provide the basis for decision on future Danish cooperation with the CTCN. The review will cover both the centre and the network and will, where relevant, utilize the evaluation of the CTCN from February 2016 conducted by UNEP to optimize the use of resources, especially taking into account the report of the Independent review of the effective implementation of the CTCN, commissioned by the UNFCCC secretariat as requested by the conference of the Parties at COP 17 .

Scope of work

The review will assess the overall performance and efficiency since 2014 with a forward-looking perspective and special focus on future development potentials and enhancing the impact of the CTCN's activities. Alignment with relevant Danish strategies and priorities, including the monitoring framework of the Danish Climate Envelope, will be given special consideration.

Specifically, the review will:

- Review the relevance and the appropriateness of CTCN strategies, work programme, portfolio of activities, services and implementation modalities. In this connection, special consideration will be given to i) past, current and anticipated demand for its services, ii) geographical coverage, iii) immediate and long-term specific and global outcomes of the activities undertaken iiii) the Danish focus areas for development cooperation, including the Guiding Principles for the Danish Climate Envelope.
- Review the appropriateness of the CTCN's results framework and the ability of the CTCN to document results and create impact.
- Establish an overview of the current financial and staffing situation of CTCN and assess CTCN's expectations for future developments in financing and staffing.
- Assess CTCN's competences, organisational set-up, management and administration structures, and the role of its Advisory Board.
- Review the (cost) efficiency of the CTCN with a special focus on improving project implementation and administration.
- Review the financial sustainability of the CTCN, including important factors for future donor support. This will further include a review of modalities of support received by CTCN and the appropriateness of these in supporting CTCN to achieve its mandate.
- Review the relevance and role of the CTCN in light of other actors in the field, including its comparative advantages, complementarities, and collaboration with other climate technology stakeholders and initiatives.
- Discuss opportunities for future focusing of CTCN's work.
- Provide concrete recommendations for future support.

Method

The review will be conducted by Danida in close consultation with the CTCN management team. The main approaches to the review will include:

1. Desk review of project documents, outputs, monitoring reports, previous evaluations and relevant correspondence. The desk study will identify selected outputs/products and country interventions for more in-depth analysis. The desk review will result in a brief issues note identifying the key issues to address and key stakeholders to interview. The note will be discussed with MKL and provide the basis for interviews with CTCN management and staff and relevant stakeholders.

2. Visit to and consultation with management and staff of the CTCN in Copenhagen.
3. Consultation with important international partners, contributors and beneficiaries to/of the CTCN.

Output

The output will be a review report, written in English, of no more than 15 pages excluding annexes:

1. Executive summary (no more than 3 pages)
2. Introduction/Background, Scope, objective, and methodology
3. Findings, lessons learned, and conclusions
4. Recommendations
5. Annexes

Timing and Milestones

The review will be conducted by the MFA/Danida Technical Quality Service and 1 external consultant.

The review will be undertaken during January and April 2018

1. CTCN will provide the review team with all necessary documentation on request.
2. An issue paper will be prepared by the team and discussed with MKL, before visits to CTCN headquarter. The note will further identify the focus of the review.
3. A draft report shall be available for comments by March 30 2018
4. Comments to the draft report will be sent to the review team after a maximum of two weeks. The review team will submit the final report no later than 1 week after receiving the comments.

Staffing

The review team will consist of the following members:

Hans Hessel-Andersen, Team Leader, TQS

Jens Lorentzen, PEMconsult

Hans Hessel-Andersen

Chief Adviser

Technical Quality Assurance

MFA, January 16th 2018

Annex 7: Process Action Plan – Proposed Next Steps

Action	Responsible	Timing
Submit Final Review Report to MFA/MKL for distribution to CTCN, UN Environment and UNIDO	Review Team	16 May
Consider the Review's key conclusions and recommendations in the formulation of the draft 2018-2021 Work Programme, fund mobilisation, and ongoing activities; consider discussing follow-up to the review at AB 12 as relevant	CTC Director	May-September 2018 and beyond
Undertake a joint or at least coordinated appraisal of proposals for further donor funding of CTCN	Like minded donors planning contributions in 2019	2019