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Matters relating to technology development and transfer

Poznan strategic programme on technology transfer

Evaluation of the Poznan strategic programme on technology transfer

Report by the secretariat*

Summary

This report, prepared by the secretariat under the guidance of the Technology Executive Committee and in consultation with the Global Environment Facility in response to the mandate in decision [9/CP.29](#), presents the outcomes of the evaluation of the Poznan strategic programme on technology transfer conducted to take stock of progress, challenges, successes and lessons learned in the implementation thereof. The report includes key messages, drawn from the outcomes of the evaluation, related to strengthening technology implementation in developing countries.

* This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.

Abbreviations and acronyms

COP	Conference of the Parties
CTCN	Climate Technology Centre and Network
CTFC	climate technology transfer and finance centre
DTU	Technical University of Denmark
FINTECC	Finance and Technology Transfer Centre for Climate Change
GEF	Global Environment Facility
GEF-4	fourth replenishment of the Global Environment Facility Trust Fund
GEF-5	fifth replenishment of the Global Environment Facility Trust Fund
GEF-6	sixth replenishment of the Global Environment Facility Trust Fund
MDB	multilateral development bank
NAP	national adaptation plan
NDC	nationally determined contribution
PPP	public–private partnership
PSP	Poznan strategic programme on technology transfer
SBI	Subsidiary Body for Implementation
SCCF	Special Climate Change Fund
SCCF-B	Special Climate Change Fund Programme for Technology Transfer
STAR	System for Transparent Allocation of Resources
TAP	technology action plan
TEC	Technology Executive Committee
TER	terminal evaluation report
TNA	technology needs assessment
TT:CLEAR	technology information clearing house
UNEP	United Nations Environment Programme
UNEP-CCC	UNEP Copenhagen Climate Centre
UNIDO	United Nations Industrial Development Organization

I. Executive summary

1. The PSP was approved in 2008 with funding of USD 50 million under GEF-4 (which covered July 2006 to June 2010). A plan for the long-term implementation of the PSP was later developed by the GEF and funded under GEF-5 (which covered July 2010 to June 2014). The funding allocated under those cycles was fully spent, with funded activities largely completed. Since GEF-6 (i.e. from July 2014 onward), technology transfer has been embedded in the GEF programming strategy, along with elements of the PSP. All PSP activities have been completed, with the exception of one national pilot project, which is expected to be completed in June 2026.
2. COP 29 requested the secretariat to prepare a report on the evaluation of the PSP for consideration at SBI 64. As mandated, this report presents the outcomes of the evaluation to take stock of progress, challenges, successes and lessons learned in the implementation of the PSP (from 2008 to 2025)¹ in terms of the relevance of the PSP, the effectiveness and efficiency of its implementation, and the sustainability and impact of the results thereof. It offers forward-looking insights that may inform Parties' considerations related to strengthening technology implementation under the UNFCCC, including under the Belém Technology Implementation Programme.
3. To ensure and maintain **relevance**, the work under the PSP has, since its establishment, been adjusted to the changing policy context under the UNFCCC, for example by focusing on increasing provision of support for implementing adaptation technologies, enhancing interlinkages between TNAs and other processes and instruments for planning climate action, strengthening the outcomes of TNAs in order to mobilize public funding for and private investment in technology implementation, and fostering synergies with work under the Technology Mechanism. While the transition from GEF-4 to GEF-5 and beyond affected the direction of the work under the PSP, it should be noted that its implementation has been guided by the GEF programming strategy in each cycle, in line with country-driven demands and priorities.
4. A programme-level assessment of the **effectiveness and efficiency** of the implementation of the PSP is challenging as activities have been implemented thereunder with different timelines and often limited interrelation. At the activity level, effectiveness and efficiency are evidenced by, inter alia, the improvement of the institutional structure and guidance available for conducting TNAs, the enhancement of capacity for technology transfer in participating countries as a result of technology piloting, and the leveraged investment in technology implementation compared with the amount of GEF financing, particularly in the context of the regional CTFCs. The effectiveness and efficiency of the implementation of the PSP could have been improved by programme-level monitoring and evaluation of results, stronger interlinkages between activities, undertaking more iterative project planning, budgeting and scheduling, and making better use of national-level institutions and experts for programme design and delivery.
5. It is difficult to assess the **impact** of the PSP in terms of scaling up the level of investment in technology transfer as such attributions are often indirect and results can continue beyond the time frame of a project's execution. However, the continued support provided by the GEF for the TNA process beyond the PSP, the contribution of PSP activities to strengthening countries' ability to mainstream their technology priorities in climate plans and investments, and the knowledge generated and disseminated under the PSP are among the aspects that demonstrate its impact. In addition to systemic barriers, inadequacy of capacity and resources to ensure national ownership and support follow-up activities to technical assistance and project piloting may have undermined the **sustainability** of the results of work under the PSP and their long-term impact.
6. Key messages drawn from the evaluation of the PSP that may be relevant to supporting the implementation of technology priorities in developing countries highlight the importance of:

¹ Decision [9/CP.29](#), para. 2.

- (a) Delivering a range of intermediary support modalities for turning technology priorities into actions;
- (b) Strengthening the quality and timeliness of TNAs and TAPs, and the alignment of the TNA process with other processes under the Convention and the Paris Agreement, including to ensure efficiency and coherence;
- (c) Stimulating the implementation, uptake and market deployment of prioritized technologies through piloting and demonstration;
- (d) Leveraging the engagement and resources of MDBs and implementation agencies in order to strengthen finance and technology implementation pipelines and promote knowledge-sharing and networking;
- (e) Enabling the engagement of financial and private sector actors in supporting climate technology action.

7. Key messages drawn from the evaluation of the PSP that may inform the Belém Technology Implementation Programme include that:

- (a) A programmatic approach could be taken to supporting technology development and transfer, combining multi-level support with multi-source financing;
- (b) A coordinated approach across different activities could enhance the overall effectiveness and efficiency of future programmes;
- (c) A programmatic, results-based framework for reporting, monitoring, evaluation and learning could improve the effectiveness and impact of future programmes;
- (d) The work under the PSP on technology piloting and dissemination, and related to the engagement of the private sector, could inform future activities and programmes aimed at supporting technology implementation and cooperation;
- (e) The success stories and lessons learned under the PSP may inform the work of the TEC and the CTCN and the operating entities of the Financial Mechanism in support of technology implementation.

II. Introduction

A. Background and mandate

8. COP 13 requested the GEF to elaborate a strategic programme for scaling up the level of investment for technology transfer with the aim of helping developing countries to address their needs for environmentally sound technologies.² In 2008, the GEF Council and the Least Developed Countries Fund/SCCF Council approved a strategic programme on technology transfer³ with funding of USD 50 million under GEF-4 (which covered July 2006 to June 2010) and funding windows:

- (a) Window 1: TNAs;
- (b) Window 2: pilot priority technology projects linked to TNAs;
- (c) Window 3: dissemination of GEF experience and successfully demonstrated environmentally sound technologies.

9. COP 14 welcomed and renamed the programme the PSP⁴ and requested the GEF to consider the long-term implementation thereof and report thereon to the COP.⁵ The GEF submitted a plan for the long-term implementation of the PSP to COP 16,⁶ comprising the following elements for scaling up investment in environmentally sound technologies in

² Decision [4/CP.13](#), para. 3.

³ See GEF document GEF/C.34/5.Rev.1.

⁴ Previously referred as the strategic programme of the Global Environment Facility.

⁵ Decision [2/CP.14](#), paras. 1 and 2(c–d).

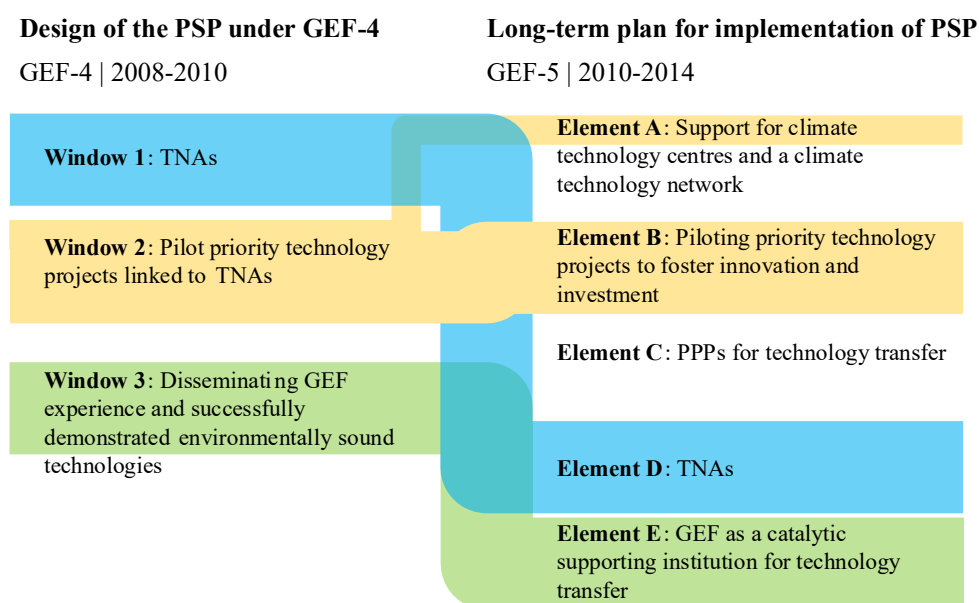
⁶ See document [FCCC/SBI/2010/25](#), annex.

developing countries in accordance with the climate change focal area strategy for GEF-5 (which covered July 2010 to June 2014):

- (a) Support for climate technology centres and a climate technology network;
- (b) Piloting priority technology projects to foster innovation and investment;
- (c) PPPs for technology transfer;
- (d) TNAs;
- (e) GEF as a catalytic supporting institution for technology transfer.

Figure 1

Framing of activities under the Poznan strategic programme across the fourth and fifth Global Environment Facility replenishment cycles



10. Figure 1 shows how the three PSP funding windows and five elements of the plan for its long-term implementation are interlinked, as indicated by the GEF.⁷ This report refers to five groups of activities under the PSP: (1) TNAs (window 1, element D); (2) piloting priority technology projects (window 2, element B); (3) disseminating GEF experience and catalysing support for technology transfer (window 3, element E); (4) support for climate technology centres and a climate technology network (element A); and (5) PPPs for technology transfer (element C).

11. Since GEF-6 (i.e. from July 2014 onward), technology transfer has been embedded in the GEF programming strategy, along with elements of the PSP, which are funded from country STAR allocations or set-asides in each funding period.⁸

12. When adopting the terms of reference of the CTCN in 2011, COP 17 requested the GEF to support the operationalization and activities of the CTCN.⁹ SBI 37 stressed the need to further implement the element of the PSP on supporting climate technology centres and a climate technology network, which should be aligned with, and support, the operationalization and activities of the CTCN.¹⁰ In this context, the GEF secretariat, the CTCN and the GEF agencies supporting the implementation of the PSP consulted on the collaboration between the CTCN and the regional CTFCs under the PSP on numerous occasions.¹¹

⁷ See document [FCCC/CP/2013/3](#), annex, para. 140.

⁸ See document [FCCC/CP/2025/8](#), annex, para. 228.

⁹ Decision [2/CP.17](#), para. 140.

¹⁰ [FCCC/SBI/2012/33](#), para. 123.

¹¹ See document [FCCC/CP/2014/2/Add.1](#).

13. The TEC undertook an evaluation of the PSP in 2015 with the aim of enhancing the effectiveness of the Technology Mechanism.¹² The TEC updated its evaluation of the PSP in 2019, focusing on the regional CTFCs and the pilot technology projects supported by the GEF under the PSP.¹³

14. The GEF has reported on the implementation of the PSP, including in relation to its long-term implementation, in its annual reports to the COP. This includes information on progress, challenges, successes and lessons learned in carrying out activities under the PSP. The GEF also provided half-yearly progress reports on the implementation of the PSP in 2011–2015 for consideration at SBI 35 to 43.¹⁴

15. In its 2015 evaluation of the PSP, the TEC recommended that the GEF structure its reporting on the PSP under three areas: (1) regional and global climate technology activities, (2) national climate technology activities and (3) TNAs, and report annually to the COP thereon. All reports of the GEF on the implementation of the PSP are available on TT:CLEAR.¹⁵

16. The secretariat prepared an information note¹⁶ in 2022 with up-to-date information on the status and successes of, challenges in and lessons learned from projects undertaken through the regional CTFCs.¹⁷ SBI 57 acknowledged the information note and, considering that many of the climate technology activities under the PSP had been completed, agreed that consideration of the matter would continue at SBI 61.¹⁸

17. COP 29 requested the secretariat, under the guidance of the TEC and in consultation with the GEF, to prepare a report on the evaluation of the PSP, to take stock of progress, challenges, successes and lessons learned in the implementation of the PSP. COP 29 also requested SBI 64 to consider the evaluation report with a view to recommending a draft decision for consideration and adoption at COP 31 with the aim of:¹⁹

(a) Supporting the implementation of technology-related activities, such as those identified and prioritized in developing countries' NDCs, NAPs, TNAs, TAPs and long-term strategies;

(b) Informing the Belém Technology Implementation Programme.²⁰

B. Scope

18. This report presents an overview of progress (see chap. III below) and the outcomes of the evaluation of successes, challenges and lessons learned at the activity level (see chap. IV.A below) and at the programme level (see chap. IV.B below) in the implementation of the PSP from 2008 to 2025. It includes key messages, drawn from the outcomes of the evaluation, related to strengthening technology implementation in developing countries (see chap. V below).

C. Approach to the evaluation

1. Sources

19. For the evaluation, information on the implementation of the PSP was drawn from:

¹² As invited in document [FCCC/SBI/2014/8](#), para. 142; the final report on the evaluation is contained in document [FCCC/SBI/2015/16](#).

¹³ As invited in document [FCCC/SBI/2015/22](#), para. 79, and pursuant to the conclusions in documents [FCCC/SBI/2017/19](#), para. 92, and [FCCC/SBI/2018/22](#), para. 74; the report on the updated evaluation is contained in document [FCCC/SBI/2019/7](#).

¹⁴ As invited in document [FCCC/SBI/2011/7](#), para. 137.

¹⁵ <https://unfccc.int/ttclear/support/poznan-strategic-programme.html>.

¹⁶ [FCCC/SBI/2022/INF.13](#).

¹⁷ As requested in document [FCCC/SBI/2022/10](#), para. 103.

¹⁸ [FCCC/SBI/2022/20](#), paras. 78 and 84.

¹⁹ Decision [9/CP.29](#), paras. 2–3.

²⁰ Established in decision [1/CMA.5](#), para. 110, and elaborated in decision [18/CMA.7](#).

- (a) Relevant decisions of the COP and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement and SBI conclusions;
- (b) The TERs for projects implemented under the PSP;
- (c) Reports prepared by the GEF, its implementing agencies or other stakeholders related to PSP activities, including the TEC evaluations of the PSP.

2. Methodology

20. The data sources referred to in paragraph 19 above were analysed through desk research and triangulation, including stakeholder interviews.²¹ Insights were drawn from a results-based examination of progress, successes, challenges and lessons learned in the implementation of the PSP, applying a reconstructed theory of change based on the framework used in available TERs for activities under the PSP as such a framework was not included in the initial design of the PSP (see figure 2).

Figure 2

Reconstructed theory of change applied for the evaluation of the Poznan strategic programme

IMPACT	Scaling up the level of investment for technology transfer with the aim of helping developing countries to address their needs for environmentally sound technologies					
OUTCOME	Enhanced processes, institutions and enabling environments		Enhanced awareness, knowledge and capacity		Enhanced collaboration and engagement	Enhanced investment and implementation pipelines
OUTPUTS	Sectoral TNAs/TAPs	Knowledge products, case studies, guidance materials, tools	Demonstrated technologies, technology start-ups	Dialogues, workshops, events	Technical assistance	Regional/global networks
ACTIVITIES	TNAs	Piloting priority technology projects	Knowledge dissemination and stakeholder engagement	Climate technology centres and a network		PPPs

21. For each of the three PSP funding windows and five elements of its long-term implementation, outputs were analysed, as well as whether their outcomes resulted in improved investment conditions for the transfer of mitigation and adaptation technologies in the participating countries. This results-based approach provides a common framework for evaluation of activities under the PSP that were implemented and concluded within different time frames.

22. An evaluation of the PSP at the activity level was conducted, focusing on outputs and outcomes of the activities, as well as a programme-level evaluation across the activities, focusing on:

- (a) Relevance to supporting technology implementation in developing countries in line with country-driven climate and development agendas;
- (b) Effectiveness and efficiency in terms of contributing to the objectives of the PSP within the parameters of the available time and resources;
- (c) The sustainability and overarching impacts of the results of the PSP on the basis of the outcomes of the activities thereunder.

3. Limitations

23. While terminal and other evaluation reports have been prepared for most of the projects implemented under the PSP, there has been limited integrated reporting on the PSP

²¹ Interviews were conducted with representatives of the African Development Bank, the GEF and UNEP-CCC in March 2026.

at the programme level, such as by applying theory of change or conducting an overarching assessment against key performance indicators. A more thorough analysis was also hindered by limited access to the stakeholders directly involved in the projects implemented under the PSP.

24. Another limitation on the evaluation, especially at the programme level, is the long time frame of implementation of the PSP, starting in 2008 and with a number of activities completed over 10 years ago but others only recently concluded. This makes it difficult to conduct an overarching evaluation of the relevance, effectiveness, efficiency and sustainability of the implementation results under the PSP as a whole.

25. When analysing the impacts of PSP activities, it can be observed that outputs of activities and, in most cases, outcomes have been clearly reported on, but impacts are more complex to evaluate as they are often realized beyond the time frame of implementation of an activity. Some of the reviewed TERs contain assessments of the sustainability of the outcomes of the relevant activity, which can be used to indicate the likelihood of longer-term impacts.

D. Possible action by the Subsidiary Body for Implementation

26. The SBI may wish to consider the information herein in its deliberations on the PSP.

III. Progress in the implementation of the Poznan strategic programme

27. The initial funding for the PSP was drawn from two sources under GEF-4: USD 35 million from the GEF Trust Fund and USD 15 million from the SCCF-B. Funding for the PSP under GEF-5 originated primarily from a combination of country STAR allocations for mitigation projects and global and cross-focal area set-asides for the TNA global project and PPPs.²² Regional projects (i.e. the CTFCs) and the CTCN (under a global project) received funding from the GEF Trust Fund for mitigation projects as well as from the SCCF-B for adaptation projects.²³ Under GEF-6, funding for TNAs was provided through the TNA global project (phase III) through a focal area set-aside for the least developed countries and small island developing States.²⁴

28. Figure 3 presents a timeline of the implementation of PSP activities for 2008–2025, indicating scheduled implementation period and actual implementation time frame.

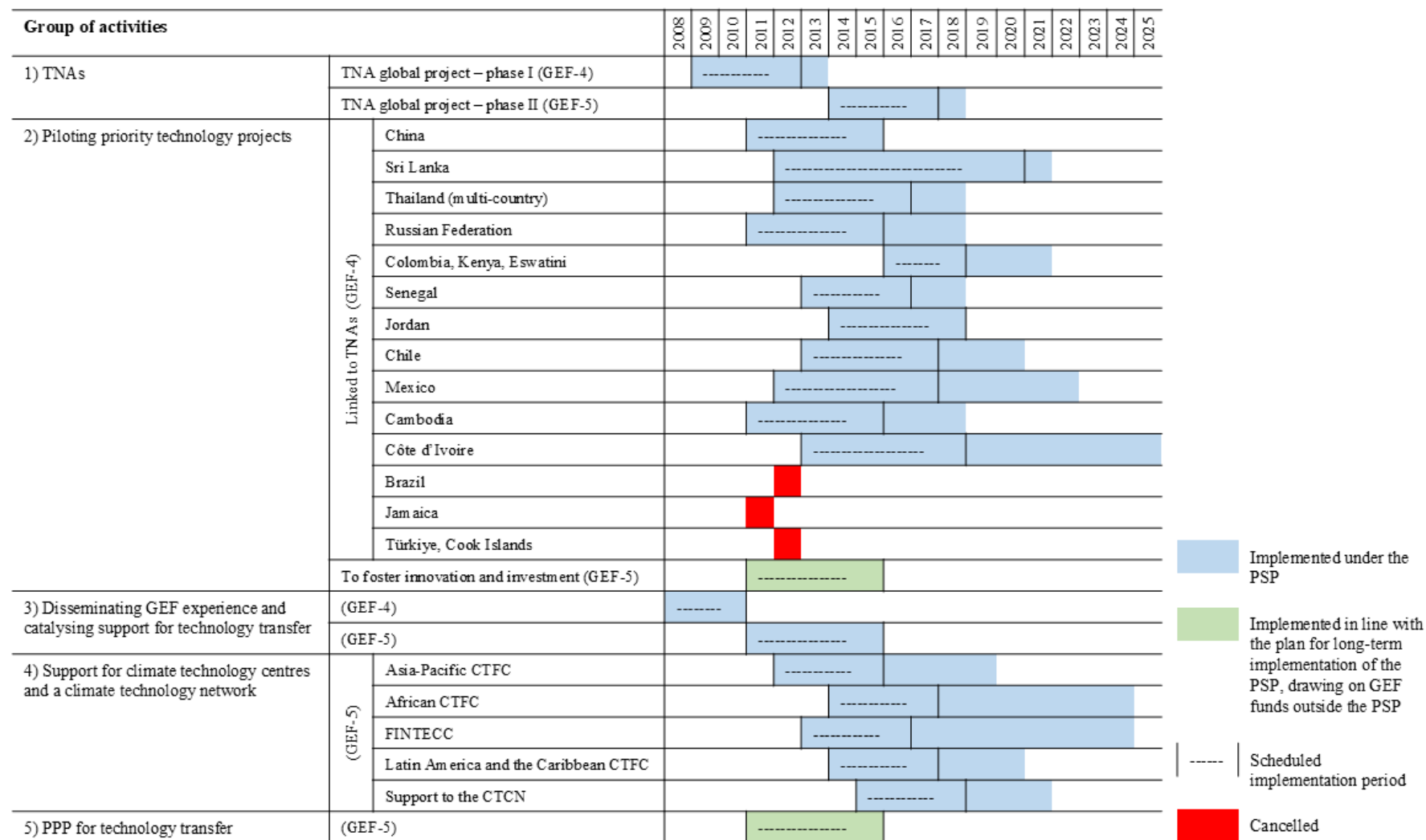
29. The table below provides an overview of PSP activities, including information on sources and amount of financing, implementing agency, geographical scope, thematic focus and type of support provided under the activity.

²² See document [FCCC/SBI/2019/7](#), paras. 13–14.

²³ See document [FCCC/CP/2025/8](#), annex, paras. 227 and 229.

²⁴ See document [FCCC/CP/2020/1](#), annex, para. 205.

Figure 3
Timeline of implementation of activities under the Poznan strategic programme on technology transfer



Overview of activities under the Poznan strategic programme on technology transfer

<i>Group of activities</i>	<i>Region</i>	<i>Agency/agencies</i>	<i>GEF financing</i>	<i>Co-financing</i>	<i>Thematic/sectoral focus</i>	<i>Type of support</i>	
1) TNAs	TNA global project – phase I (GEF-4)	Global, 36 countries	UNEP	USD 8.1 million	USD 2.8 million	Cross-cutting, technology prioritization and implementation planning	Programming, capacity-building, knowledge-sharing
	TNA global project – phase II (GEF-5)	Global, 26 countries	UNEP	USD 6.1 million	USD 2.1 million		
2) Piloting priority technology projects	Linked to TNAs (GEF-4)	Global, 11 countries	African Development Bank, Inter-American Development Bank, International Fund for Agricultural Development, UNEP, UNIDO, World Bank	USD 51.8 million	USD 228.9 million	Cross-cutting	Technology piloting
	To foster innovation and investment (GEF-5)	Implemented as part of other GEF projects with a technology transfer component and/or as part of the work of the regional CTFCs					
3) Disseminating GEF experience and catalysing support for technology transfer	(GEF-4)	Global	GEF secretariat	USD 1 million	–	Cross-cutting	Experience-sharing, awareness-raising, global engagement
	(GEF-5)			Absorbed within the approved budget for the GEF secretariat within the cycle			
4) Support for climate technology centres and a climate technology network	Asia-Pacific CTFC (GEF-5)	South-East Asia, Central Asia	Asian Development Bank, UNEP	USD 12 million	USD 74.7 million	Upstream infrastructure, pipeline-building for technology implementation and financing	Networking, institutional capacity-building, enabling policies, technical assistance
	African CTFC (GEF-5)	Sub-Saharan Africa	African Development Bank	USD 15.8 million	USD 89 million	Water (adaptation), energy (mitigation)	Support for improving market, institutional and policy conditions, research projects

<i>Group of activities</i>	<i>Region</i>	<i>Agency/agencies</i>	<i>GEF financing</i>	<i>Co-financing</i>	<i>Thematic/sectoral focus</i>	<i>Type of support</i>
FINTECC (GEF-5)	Eastern Europe, Caucasus, Central Asia, Southern and Eastern Mediterranean	European Bank for Reconstruction and Development	USD 12 million	USD 77 million	Energy efficiency and renewable energy (mitigation) and agribusiness, built environment and water management (adaptation) technologies	Technical assistance, pilot activities, incentive grants, regional networking
Latin America and the Caribbean CTFC (GEF-5)	Latin America and the Caribbean	Inter-American Development Bank through five regional executing agencies	USD 12 million	USD 227 million (four times the initial target)	Renewable energy, energy efficiency, sustainable transportation, forest monitoring, resilient agriculture	Project development, case study development, policy advisory and support, institutional capacity-building, technology prioritization
Support to the CTCN (GEF-5)	Global, 10 countries	UNIDO	USD 1.8 million	USD 7.2 million	Energy, energy efficiency, waste, circular economy, industry	Technical assistance, partnerships, networking, capacity-building
5) PPPs for technology transfer	(GEF-5)	Implemented as part of other GEF projects with a PPP component				

IV. Successes, challenges and lessons learned in the implementation of the Poznan strategic programme

A. Results-based evaluation of the implementation of the programme at the activity level

30. The results-based evaluation at the activity level of the work under the PSP is structured around the five groups of activities referred to in paragraph 10 above. For the evaluation, the outputs and outcomes of the work were assessed.

1. Technology needs assessments

31. A TNA is a country-driven, participatory process undertaken by a country to identify and prioritize technologies for climate change mitigation and adaptation and compile action plans for their implementation.²⁵ Phases I and II of the TNA global project²⁶ followed a 'prepare-process-outreach' approach with three components: (1) facilitating the TNA process in a participating country, including by establishing a national TNA network, (2) developing tools and methods together with capacity-building for conducting a TNA and (3) conducting outreach on TNA results and creating synergies for post-TNA implementation.

32. In terms of outputs, both phases of the TNA global project helped to define **institutional arrangements** and improved **methodologies and guidance** for conducting TNAs. Executed by UNEP-CCC,²⁷ the project provided a set of assessment and capacity-building tools for advancing in-country efforts related to TNAs and supported regional TNA workshops and thematic networks between countries and regional and global stakeholders.

33. The results of the TNA global project were found to be **highly consistent with and relevant to global, regional and national climate and development priorities**. The design of the TNA process has enabled a balanced approach to assessing and prioritizing climate technologies for **both mitigation and adaptation** in line with national circumstances and priorities in participating countries. In addition to providing support for conducting TNAs at the overall project level, the TNA global project mobilized the support of regional partners, which served as regional hubs for knowledge and good practices for TNAs.²⁸ A direct outcome of the project has been **capacity-building** for TNA national coordinators and core supporting teams.

34. In a 2013 synthesis report prepared by the UNFCCC secretariat on technology needs,²⁹ covering the results of phase I of the project, it was concluded that TAPs varied between countries in terms of structure and level of detail. In a 2015 paper, the TEC concluded that TNAs and TAPs often lacked information about the business case for technology implementation.³⁰ These conclusions led to the TAP guidance³¹ being updated, which resulted in improved TAP reports.³²

35. Importantly, in phase II of the project, more frequent involvement of financial experts in the TNA process was evident. The outputs in phase II highlighted the importance of aligning the collection of data for informing TNAs, including an analysis of barriers and enabling actions, and the analysis and descriptions of TAPs with donor agencies'

²⁵ Resources and guidance materials on TNAs, including those produced under the TNA global project, are available at <https://unfccc.int/ttclear/tna/guidance>.

²⁶ Information related to TNA global project phases I (GEF ID 3907) and II (GEF ID 4948) can be found in the GEF project database, available at <https://www.thegef.org/projects-operations/database>.

²⁷ UNEP-CCC, formerly UNEP Risø Centre and later UNEP DTU Partnership.

²⁸ See TEC document TEC/2019/19/5, para. 26.

²⁹ [FCCC/SBSTA/2013/INF.7](https://unfccc.int/inf/7), paras. 115–117.

³⁰ TEC document TEC/2015/11/8, para. 9.

³¹ See TEC document TEC/2016/12/7.

³² See TEC document TEC/2019/19/5, inter alia, paras. 31 and 54.

requirements. Countries with a clear understanding of climate finance mechanisms were reported to be more successful in formulating fundable project proposals.³³

36. In terms of outcomes, the results of phases I and II of the TNA global project showcase how the participatory nature of the TNA process contributed to **strengthening countries' coordination capacities and national-level institutional and stakeholder networking**. Interestingly, the TER for phase I³⁴ notes that 80 per cent of the respondents to a survey conducted in this context stated that they had made efforts to use the results of their country's TNA for other processes in the country. Over 80 per cent of them expected the results to contribute highly or fairly to their countries' adoption of climate technologies.

37. The GEF has continued to support the TNA process since GEF-6 by providing support for later phases of the TNA global project (currently in phase V) as an enabling activity.

2. Piloting priority technology projects

38. Under the second PSP funding window under GEF-4, 11 pilot priority technology projects were implemented:³⁵ three by the respective regional CTFCs, and the others by United Nations bodies and multilateral organizations (see the table above).

39. The pilot projects realized several outputs with the aim of **strengthening investment conditions** for technology transfer in the participating countries as key outcomes. **Capacity-building** was generally stimulated by these projects, including through improving technical skills related to technology transfer among domestic actors and raising awareness of priority technologies among financing institutions.

40. The review of the TERs for the pilot projects and interviews with stakeholders in the context of this evaluation indicate that integrating capacity-building into the full project cycle of planning, implementation and monitoring contributes to success over time. Projects that focused on piloting a technology in a domestic market often realized short-term project-level results but limited knock-on effects towards broader implementation within the country. On the other hand, **pilot projects with a focus on enabling market conditions**, while generally slower at delivering direct results, are believed to have delivered more sustained support for scaling up technology implementation in countries.

41. Moreover, **strong national project ownership and institutional** engagement were found to be key factors in strengthening a country's capacity for technology transfer over the longer term. Projects that relied mostly on international consultants were considered both relatively costly and limited in terms of domestic knowledge transfer and development.

42. Under GEF-5, in addition to updates on the above-mentioned pilot projects, the GEF included in its annual reports to the COP information on projects with technology transfer objectives undertaken as part of its provision of support in line with the long-term implementation of the PSP.³⁶ The GEF has continued to provide support for piloting technologies since GEF-6 as part of its overall programming strategy.

³³ See TEC document TEC/2019/19/5. For the project phase II TER, see UNEP and GEF. 2016. *Terminal Evaluation of the project: UNEP/GEF Project - Technology Needs Assessment Phase I*. UNEP. Available at <https://wedocs.unep.org/items/b4cfcd5e-6c55-4554-a2d7-4229223adeba>.

³⁴ UNEP and GEF. 2020. *Terminal Evaluation of the UNEP/GEF Project: Technology Needs Assessment Phase II*. UNEP. Available at <https://wedocs.unep.org/items/965fec2f-f7ac-4e07-bf96-218793737ced>

³⁵ Ten of the pilot projects, in Cambodia (GEF ID 4042), Chile (GEF ID 4136), China (GEF ID 4129), Colombia, Kenya and Eswatini (GEF ID 4682), Jordan (GEF ID 4036), Mexico (GEF ID 4132), Senegal (GEF ID 4055), Sri Lanka (GEF ID 4114), Thailand (GEF ID 4037), and the Russian Federation (GEF ID 3541), have been completed, while one, in Côte d'Ivoire (GEF ID 4071), is expected to be completed in June 2026. Information on the pilot projects, including TERs, is available in the GEF project database.

³⁶ See documents [FCCC/CP/2012/6](#), [FCCC/CP/2013/3](#), [FCCC/CP/2014/2](#) and [FCCC/CP/2015/4](#).

3. Disseminating experience of the Global Environment Facility and catalysing support for technology transfer

43. The activities under the third funding window of the PSP were launched in 2010 under GEF-4.³⁷ The aim was to generate around 10 case studies and knowledge products related to successfully demonstrated technologies with GEF support. The lessons learned were disseminated for use in implementing new technology projects under the three PSP funding windows and elsewhere under GEF programmes and the UNFCCC. Such efforts engaged **country representatives, representatives of GEF agencies and other stakeholders** in technology transfer. While the focus was on disseminating success stories, programming gaps were also identified and how to address them. Interviews conducted as part of this evaluation suggest that this helped to improve the design of new GEF projects with technology-related objectives and other activities under the PSP.

44. In terms of outputs, during GEF-5, the GEF published **various knowledge products and reports** on technology transfer and the GEF secretariat participated in key international discussions relevant to supporting the development of technology transfer initiatives and raised awareness of the PSP.³⁸ The GEF has continued to participate in and contribute to technology-related events, meetings and reports since GEF-6 as part of its overall programming strategy.

4. Support for climate technology centres and a climate technology network

45. The regional CTFCs and the global project for provision of support to the CTCN addressed aspects of climate technology transfer via **pilot projects, knowledge generation and networking among technology stakeholders**.³⁹ The lessons learned from the regional CTFCs have informed the operationalization and activities of the CTCN, demonstrating the linkage between the PSP and the work under the Technology Mechanism. Moreover, some of the pilot projects identified under GEF-4 were initiated using allocations to the CTFCs under GEF-5, illustrating the interaction between PSP activities.

46. In terms of **investment in climate technology projects in regions** realized by the regional CTFCs and through the CTCN:⁴⁰

(a) The Pilot African Climate Technology Finance Center and Network provided a grant of USD 400,000 for a project to demonstrate water-filled flood barriers in Nigeria, and for eight projects for adaptation in Benin, Comoros, Côte d'Ivoire, the Gambia, Madagascar, Senegal, Seychelles and the countries of the Zambezi watercourse;⁴¹

(b) FINTECC supported 37 subprojects in 10 countries, including for addressing energy efficiency (e.g. at a beverage production plant in Kyrgyzstan), renewable energy generation (e.g. rooftop solar photovoltaic systems in Morocco and geothermal heat pumps in Georgia) and water recovery (e.g. in a car washing facility in Azerbaijan). In most cases FINTECC support was integrated into a larger financing structure of the European Bank for Reconstruction and Development to leverage a significantly larger budget;⁴²

³⁷ See document [FCCC/CP/2010/5](#).

³⁸ See documents [FCCC/SBI/2011/14](#), annex, paras. 58–64; [FCCC/SBI/2012/9](#), annex, paras. 24(e)–27; [FCCC/SBI/2013/5](#), annex, paras. 33(e)–35; [FCCC/SBI/2014/INF.3](#), annex, paras. 37–39; and [FCCC/SBI/2015/INF.4](#), annex, paras. 41–42.

³⁹ See document [FCCC/SBI/2022/INF.13](#), inter alia, chap. IV.A.

⁴⁰ See document [FCCC/SBI/2022/INF.13](#), chap. IV.C.

⁴¹ See document [FCCC/SBI/2022/INF.13](#), paras. 62–64. More information is available in the GEF project database (GEF ID 4904). The TER is expected to be completed in April 2026.

⁴² See document [FCCC/SBI/2022/INF.13](#), paras. 65–67. Information on the project (GEF ID 4956) can be found in the GEF project database. The TER is expected to be completed by June 2026.

(c) The Pilot Asia-Pacific Climate Technology Network and Finance Center assisted 13 public sector projects for investment in climate technology, enabled the leveraging of USD 624 million in third-party capital and supported 30 early-stage climate technology start-ups in Asia;⁴³

(d) UNIDO, as the (co-)host of the CTCN, used the resources allocated for the global project Promoting Accelerated Transfer and Scaled up Deployment of Mitigation Technologies through the CTCN to provide 10 technical assistance projects, 4 on renewable and biowaste energy, 2 on energy efficiency, 2 on circular economy, 1 on replacing fluorinated gas refrigerants and 1 on mainstreaming gender in the development of energy systems;⁴⁴

(e) The Climate Technology Transfer Mechanisms and Networks in Latin America and the Caribbean supported technology-related projects on renewable energy, energy efficiency, transportation (e.g. electric buses in Bogota and Santiago de Chile), forest monitoring (e.g. new forestry monitoring, reporting and verification tools in Brazil) and climate-resilient agriculture.⁴⁵

47. **All regional CTFCs invested in generating and disseminating knowledge, and networking.** The African CTFC enabled nine research projects to improve market conditions for climate technology uptake, highlighting existing policy-level and other institutional barriers in the areas of clean cooking, renewable energy and adaptation.

48. A proven means of disseminating knowledge has been to **tap into the existing tools, networks and platforms of MDBs**, such as applying the European Bank for Reconstruction and Development's Green Technology Selector tool for communicating climate investment opportunities to regional and international business sector stakeholders. The Latin America and the Caribbean CTFC used the toolboxes of its executing agencies, including innovation platforms, guidebooks, and monitoring, investment and decision support tools, as well as regional dialogues. The African Development Bank utilized its Adaptation Benefits Mechanism to support related activities of the African CTFC.

49. The outputs from the work of the regional CTFCs under the PSP are reported to have benefitted from relevant **existing facilities, platforms and networks** under the MDBs, such as the African Development Bank's Sustainable Energy for All network, and the collaboration of FINTECC with the Food and Agriculture Organization of the United Nations and the International Energy Agency on sustainable networks for small and medium-sized enterprises.

50. As outcomes of their work, the CTFCs generally **facilitated investment flows to technology implementation**, including through co-financing, **and contributed to improving investment conditions and networks** for mitigation and adaptation in participating countries, including by linking technology projects with national climate and sustainable development processes.

51. All four CTFCs and the global project supporting the CTCN were completed. Funding for the projects amounted to USD 53.6 million from the GEF, which was allocated under GEF-5 and used by December 2024.⁴⁶

5. Public-private partnerships for technology transfer

52. In order to improve the availability of private sector capital for technology transfer, the focus under this element of the long-term implementation of the PSP was on innovative and flexible financial instruments, business models and partnerships. The objective was to

⁴³ See document [FCCC/SBI/2022/INF.13](#), para. 71. More information is available in the GEF project database (GEF ID 4512). The TER was made available to the secretariat offline.

⁴⁴ In Brazil, Chile, Mexico and Uruguay; Chile; Dominican Republic; Economic Community of West African States; Gambia; Mali; Paraguay; Uganda; Viet Nam; and Zimbabwe. More information, including the TER, is available in the GEF project database (GEF ID 5832).

⁴⁵ More information, including the TER, is available in the GEF project database (GEF ID 4880).

⁴⁶ See document [FCCC/CP/2025/8](#), annex, para. 229.

enable the leveraging of private funding for investments in mitigation and adaptation and to improve the conditions for that.

53. Under GEF-5, this element was implemented as part of other GEF projects with PPP components in line with the strategy for GEF-5 private sector engagement.⁴⁷ An envisaged outcome of the strategy was the development, dissemination and implementation of new climate technologies.

54. During GEF-5, the GEF Council approved four programmes with PPP components related to climate technology transfer. The total GEF support for the programmes was USD 65 million,⁴⁸ which leveraged over USD 700 million of public and private sector investment in clean energy and biodiversity protection technology projects. In addition, the regional CTFC projects and pilot priority technology projects included activities related to public-private collaboration, thereby establishing linkages between activities under the PSP.

55. As already noted, the elements of the long-term implementation of the PSP have been mainstreamed in the GEF programming strategy since GEF-6. According to the GEF secretariat, aspects related to public-private collaboration have been implemented primarily through the GEF non-grant instruments window, under which climate technology projects represent a predominant share of the projects.

B. Integrated evaluation of the implementation of the Poznan strategic programme at the programme level

56. The PSP was evaluated as a whole in terms of its relevance within the broader landscape of climate technology development and transfer under the UNFCCC, the effectiveness of its implementation in terms of delivery of results compared with stated objectives, the efficiency of its implementation, including in relation to its management structure and the time and resources used for achieving results, and the impact and sustainability of the results of its activities in developing countries.

1. Relevance

57. The framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention⁴⁹ formed the basis for the design of the PSP. Under the PSP, work on TNAs, as well as on strengthening technology information, enabling environments, relevant capacity-building and technology transfer mechanisms, has been advanced.

58. The work under the PSP has evolved since its establishment against the backdrop of a changing policy context under the UNFCCC, which has required the PSP to be adjusted in order to maintain and ensure its relevance:

(a) While initially not a priority topic under the PSP, in alignment with policy processes under the Convention, the **work under the PSP was adjusted to increase allocation of support for climate change adaptation**, such as in the context of TNAs and the work of the regional CTFCs⁵⁰ on adaptation-related technology transfer;

(b) **TNAs have been increasingly linked to planning instruments under the Convention (e.g. NAPs) and the emerging work under the Paris Agreement (i.e. NDCs).** Moreover, the PSP, including through the provision of support for TNAs, enabled links to be established between technology prioritization and countries' sustainable development goals. The regional CTFCs are reported⁵¹ to have supported countries in mainstreaming climate

⁴⁷ See document [FCCC/SBI/2012/9](#), annex, para. 24(c).

⁴⁸ See document [FCCC/SBI/2015/INF.5](#), para. 27.

⁴⁹ See decision [4/CP.7](#), annex, inter alia, sections C.1, C.3 and C.5.

⁵⁰ See document [FCCC/SBI/2022/INF.13](#), inter alia, para. 86.

⁵¹ See document [FCCC/SBI/2022/INF.13](#), inter alia, chap. IV.B.

change mitigation and adaptation in national climate and sustainable development strategies, programmes and policies;

(c) **PSP activities have proven very relevant to the later work under the Technology Mechanism.** For example, the policy work of the TEC on TNAs and the implementation-related support provided by the CTCN have been relevant or linked to multiple PSP activities, for example implementing TNA outcomes, piloting priority technologies, and promoting regional and global technology centres and networks;

(d) **Outputs of the PSP have supported countries in tapping into various funding opportunities under and outside the Convention,** as well as in blending public funding with private investment funds. The work under the PSP on improving TNAs and TAPs has helped countries to secure funding for technology-focused climate projects.⁵² The regional CTFCs supported the piloting of projects and the leveraging of private and public climate technology investments in the respective regions.

59. The transition between GEF-4 and GEF-5 and beyond affected the relevance and direction of the work under the PSP, as related to **shifting programming directions for the climate change focal area across the different GEF replenishment cycles.** Nonetheless, it should be noted that the work under the PSP has been guided by the GEF programming strategy, in line with country-driven demands and priorities.

2. Effectiveness and efficiency

60. Effectiveness refers to the extent to which targets have been achieved, while efficiency refers to the resources and time allocated relative to the results achieved. The effectiveness and efficiency of the work under the PSP were assessed **in adherence to the monitoring and evaluation policy of the GEF,** namely in the TERs for the related projects. However, since **activities under the PSP have been implemented over different time frames and with limited interrelation with one another,** taking a programme-level approach to increasing or assessing efficiency and effectiveness is challenging.

61. For the **TNA global project, effectiveness and efficiency were found to be satisfactory, with participating countries producing TNA reports, albeit at differing levels of quality,** including in relation to TAPs. Efficiency of work was supported by the project management team at the executing agency, including by providing guidance to TNA stakeholders⁵³ regarding recommended roles and responsibilities and working procedures.⁵⁴

62. **Effectiveness varied across pilot priority technology projects,** depending on quality of governance, whether assumptions regarding feasibility and readiness were realistic, accuracy of timelines, and the alignment of projects with the climate policy landscape before and during project execution. Effectiveness in terms of outcomes was the highest when projects were embedded in existing national strategies and supported by stable institutional leadership.

63. A consistent finding across pilot projects is that **mid-project evaluation of effectiveness** could enable **adjustments to be made to the design and implementation of envisaged activities** in order to support the achievement of projects' targets. This requires frameworks that enable more frequent project monitoring and evaluation and flexibility in project implementation.

64. **Across the regional CTFCs, overall effectiveness and efficiency were generally considered satisfactory,** although they varied across institutions, owing in part to the different scopes of the CTFCs. FINTECC and the Asia-Pacific CTFC were the most successful in leveraging direct investment relative to GEF funding, while the African CTFC chose to focus on investing in system-level knowledge and network-building as this was considered more effective than spending the budget mostly on pilot projects.

⁵² See <https://unfccc.int/tclear/tna/outcomes.html#sstories>.

⁵³ This included regional centres and subcontracted national TNA coordinators and consultants.

⁵⁴ See an explanatory note on organizing the TNA process at <https://tech-action.unepccc.org/wp-content/uploads/sites/2/2020/01/tna-explanatory-note-updated-8june-2018.pdf>.

65. For the global project for provision of support to the CTCN, **operations were considered effective** in terms of achieving results (exceeding the target for the provision of technical assistance within the specified budget).

66. In terms of efficiency, **most activities under the PSP did not achieve their objectives in a timely manner**, owing in part to unrealistic timelines, delays to the start of implementation and consequent difficulties, and the impacts of the coronavirus disease 2019 pandemic (e.g. in the case of CTFCs, FINTECC and the global project supporting the CTCN, as they were operational at that time). **Overreliance on international consultants was found to increase overall project costs, thereby reducing efficiency.**

67. The efficiency of the regional CTFCs was strongly influenced by **their design and integration within existing structures**, with the CTFCs that were well integrated within existing financial institutions being able to leverage internal processes and networks, although at times at the cost of operational flexibility.

68. **Capacity and resource limitations** faced by the implementing partners and beneficiaries of the PSP may have undermined its effectiveness and efficiency. For example, the African CTFC received many more expressions of interest in project activities than it could handle owing to limited human resources.⁵⁵

69. From the perspective of monitoring, evaluation and learning, **the absence of an overarching theory of change and results-based management framework** at the programme level prevents a comprehensive overview of successes, challenges and lessons learned in the implementation of the PSP beyond its individual activities. Moreover, with the PSP elements having been mainstreamed in the overall programming strategy of the GEF since GEF-6, **tracking PSP-aligned activities among the broader portfolio of GEF support** provided for technology development and transfer has not been possible. The exception is the later phases of the TNA global project (III–V).

3. Impact and sustainability of results

70. It is difficult to assess the impact of the PSP in scaling up the level of investment for technology transfer in developing countries as monitoring periods often did not extend much further than project execution, and such attributions are often indirect. However, further to the analysis of outputs and outcomes at the activity level, the following **longer-term sustainability of results and thus programme-level impacts** may be considered.

71. Building on the foundations of phases I and II of the TNA global project, the **GEF has continued its support for the TNA process beyond GEF-5**. This has resulted in a growing body of relevant knowledge and capacity, at the national and global level. Evidence gathered as part of this evaluation reveals that several TNA coordinators were later appointed as the focal point in the national designated entity for technology development and transfer under the UNFCCC in their country. Moreover, continued provision of support for TNAs has enabled countries to align their technology prioritization with their nationally determined climate and sustainable development goals. Another indicator of the long-term impact and value of the TNA process is the evidence of continuous efforts by developing countries to conduct and update their TNAs, using a variety of sources and modalities of support,⁵⁶ including national STAR allocations.⁵⁷

72. PSP activities may have strengthened countries' **ability to unlock private funding** as technology projects resulted in them gaining experience in attracting co-financing through public and private funding instruments. TAPs resulting from TNAs have increasingly focused on 'bankability' to attract investment. The PPP-related element of the PSP has improved insights on attracting private sector funding.

⁵⁵ See document [FCCC/SBI/2022/INF.13](#), para. 76.

⁵⁶ See <https://unfccc.int/tclear/tec/support.html#Practicalguide>.

⁵⁷ In phase V of the TNA global project, 12 countries have used their STAR allocation to conduct their TNAs.

73. The work under the PSP has contributed to **national processes for enabling the scaling-up and uptake of prioritized climate technologies**, including by supporting in-depth analysis of value chains, business environments and regulatory frameworks (e.g. through the CTFCs and TNAs). Under the PSP, the GEF has **disseminated technology transfer knowledge**, including to demonstrate how to progress from a pilot project to a programme for technology transfer and how to improve conditions for investment and funding.

74. Notably, in practice the **potential for scaling up piloted priority technologies was found to be lower than anticipated**. Projects were often costlier than anticipated, in part because of **systemic barriers** such as underdeveloped supply chains, insufficient implementation opportunities and private financing constraints. Pilot priority technology projects were **more effective at driving action when combined with technology implementation** instead of solely providing training. The ‘learning-by-doing’ approach proved to be more effective at creating enabling environments, fostering capacity-building and -retention, and creating positive spillover effects on technology implementation.

75. The activities undertaken by the **regional CTFCs and the CTCN are likely to have reinforced each other for greater impact**, including by supporting countries’ ability to leverage funding from the GEF and by tapping into other funding sources such as regional financial actors or the Green Climate Fund. These linkages also helped to improve the quality of investment applications with stronger likelihood of accessing finance. The collaboration between the regional CTFCs and the CTCN **varied in terms of intensity and form**: while the Asia-Pacific CTFC supported the operationalization of the CTCN in the region, collaboration between the CTCN and the African CTFC remained limited to the latter attending CTCN-hosted workshops.⁵⁸

76. Inadequacy of **capacity and resources for supporting follow-up activities** for connecting country-specific technology priorities to financing pipelines has been a challenge for the longer-term impact of the PSP. For example, after a country has concluded a TNA there is no structured support for TAP implementation, which increases reliance on, for example, country-level ‘champions’⁵⁹ to progress implementation. Nevertheless, evidence suggests that the Green Climate Fund, the GEF and the Adaptation Fund have approved 34 projects originating from TNA and TAP outputs, resulting in USD 2.9 billion in (co-)financing.⁶⁰

V. Key messages on strengthening technology implementation in developing countries

77. Funding was allocated to the PSP from GEF-4 to GEF-5 (covering 2006–2014 overall). The allocated funding was fully spent and the activities funded under those cycles were overall completed. Since GEF-6, no additional funding has been allocated to the PSP, and its elements have been mainstreamed in the GEF programming strategy. The GEF has continued to support the TNA process since GEF-6 by providing support for later phases of the TNA global project (currently in phase V) as an enabling activity, funded through set-asides in each replenishment cycle and country STAR allocations.

78. Key messages drawn from the evaluation that may be relevant to supporting the implementation of technology priorities in developing countries are as follows:

(a) The establishment and strengthening of climate technology implementation pipelines may be fostered through the **delivery of a range of intermediary support modalities for turning technology priorities into action on the ground**, such as tailored technical assistance for preparing projects and ensuring readiness for finance,

⁵⁸ See document [FCCC/SBI/2022/INF.13](#), paras. 50 and 78.

⁵⁹ See TEC document TEC/2019/19/5, para. 74.

⁶⁰ See UNEP-CCC. 2025. *From needs to implementation: Stories from the Technology Needs Assessments 2025: Addendum*. Available at <https://tech-action.unepccc.org/publications/stories-from-the-technology-needs-assessments-2025/>.

implementation road mapping, strengthening of enabling environments, leveraging of PPPs and technology piloting;

(b) Strengthening the **quality of the formulation of TNAs and TAPs and the alignment of the TNA process with other processes under the Convention and the Paris Agreement** (e.g. NDCs and NAPs) remains a priority in order to avoid duplication of efforts, reduce the administrative burden for countries of conducting various processes, and ensure coherence and synergy in addressing national climate and development priorities;

(c) Combined with capacity-building and enabling environments, **technology piloting and demonstration** could foster the engagement of the private sector in order to stimulate the implementation, uptake and market deployment of prioritized technologies in developing countries;

(d) The implementing agencies of the GEF and other funds could play a key role in assisting country-driven efforts to **integrate the outcome of TNAs into climate plans and associated implementation pathways**, thereby strengthening technology implementation pipelines and increasing the likelihood of attracting finance;

(e) **Knowledge generation and dissemination, and networking in relation to technology development and transfer**, such as efforts undertaken in the context of TNAs, pilot priority technology projects and the regional CTFCs, could help to align technology prioritization and implementation in developing countries, in line with national needs and circumstances;

(f) Enabling the engagement of financial actors, such as **MDBs, as well as the private sector actors**, in supporting the implementation of climate technology priorities could foster and boost developing countries' access to funding and investment and shorten the time that technologies need to reach maturity and profitability.

79. Key messages drawn from the evaluation that may inform the Belém Technology Implementation Programme are as follows:

(a) The PSP provides an **example of a programmatic approach** to the design of operational modalities for supporting technology development and transfer, **combining multi-level support** for technology implementation (i.e. global, regional and country-level activities) and **leveraging multi-source trust funds and co-financing**;

(b) A coordinated approach **to the implementation of the PSP across funding windows and cycles**, including to enable a more sequential or interactive workflow, could have improved overall effectiveness and efficiency and fostered enhanced coherence and **synergies among different activities**;

(c) **Monitoring, evaluation and learning** under the PSP has been disjointed and only at the activity level. Moreover, tracking its long-term implementation from GEF-6 onwards is challenging, as the reporting on the technology-related work of the GEF covers the full breadth of its efforts and not just this stream of support. A **programmatic, results-based framework** for monitoring and reporting on progress, as well as for capturing, disseminating and encouraging uptake of lessons, could have improved effectiveness and impact;

(d) The work under the PSP on demonstrating and disseminating good practice examples of enabling environments and capacity-building for climate technology transfer, including related to the TNA process, could inform future **programmes aimed at international cooperation to provide tailored support to developing countries** (e.g. capacity-building), including through their national designated entity for technology development and transfer under the UNFCCC;

(e) **Engagement of the private sector**, addressed sporadically under the individual funding windows of the PSP, could be a key overarching priority for future programmes focused on technology implementation;

(f) The PSP provides an example of strong **synergies and complementarities between the work under the Technology Mechanism and the Financial Mechanism**.

Success stories, insights and lessons learned from the PSP could be used to inform the work of the TEC and the CTCN and the operating entities of the Financial Mechanism in support of technology implementation.
