

## TNA Implementation tracking

3 November 2025.

Starting in 2009, UNEP and the UNEP Copenhagen Climate Centre (previously UNEP DTU Partnership) have led the implementation of the Global Technology Needs Assessments (TNA) project. The project is funded by the Global Environment Facility (GEF) and has guided to date 98 countries in identifying and assessing climate technology deployment pathways, providing them with measures to mitigate and adapt to the global challenge of climate change. 17 additional countries have joined/re-joined the project in 2025. Through the TNA process, national TNA teams develop their TNAs and Technology Action Plans (TAPs) for selected priority sectors, outlining challenges for key technologies as well as pathways for their successful deployment and uptake. The TNA process guides them towards the implementation of their Nationally Determined Contributions (NDCs) to the Paris Agreement, along with achievement of the Sustainable Development Goals (SDGs), as well as other nationally set targets.

An overview of the Global TNA project is given in Table 1 below, and more information on countries is provided in Annex I.

**Table 1**

Global TNA project	Year	No. of countries joining the project	GEF project financing, USD
TNA Phase I	2009 – 2013	35	8,200,000
TNA Phase II	2014 – 2018	24	6,100,000
TNA Phase III	2018 – 2022	22	6,210,000
TNA Phase IV	2020 – 2025	17	4,590,000
TNA Phase V	2025 - 2027	17	5,100,000
<b>Total</b>		<b>115</b>	<b>30,200,000</b>

Many countries have used the results of the TNA process as a foundation both to scale-up and implement action on climate technologies to meet their national emission reduction targets, and to build resilience against climate-change related risks. An overview of proposals approved by the Green Climate Fund (GCF), Global Environment Facility (GEF) and Adaptation Fund (AF) is provided in Table 2. More details are in Annex II. The overview shows that TNAs and TAPs have a strong potential to provide an effective and solid basis for countries to both scale-up and implement action on technologies for mitigation and adaptation. It is also evident that from the time of completion of a TNA and TAP it takes several years to go through a process of further elaboration and approval of a project proposal, building on these.

**Table 2**

Approved projects informed by the national TNAs/TAPs developed under the Global TNA project in USD				
	Funding	Co-Finance	Total Financing (funding + co-finance)	Number of Projects
<b>GCF (incl. Grants and Loans)*</b>	776,251,144	1,848,118,120	2,624,369,264	24
<b>GEF</b>	24,364,235	295,920,258	320,284,493	8
<b>AF</b>	10,707,000		10,707,000	2
<b>Total in USD</b>	<b>811,322,379</b>	<b>2,144,038,378</b>	<b>2,955,360,757</b>	<b>34</b>

\*Includes Readiness and implementation

In addition to the projects implemented with GCF, AF and GEF support, many more implemented TNA/TAP-based projects have been presented in six brochures "From needs to implementation" produced by UNEP-CCC<sup>1, 2, 3, 4, 5, 6</sup>, building on the available evidence of initiatives and actions taken by countries following TNAs. Attribution of TNA to the proposals, actions and implementation is not always obvious since actions can be associated with multiple activities in the country.

The engagement of key stakeholders, including decision-makers, during the TNA and post-TNA stages, is instrumental in securing that TNA-prioritized technologies are included in new and ongoing governmental programmes, strategies, and plans, so that sector-level goals can be achieved with the help of concrete actions from TNAs and technology action plans (TAPs). This also helps substantiate requests for funding from domestic and international funding instruments.

Co-development of TNAs and TAPs with Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), Global Environment Facility, Green Climate Fund and Adaptation Fund pipelines and using the TNA/TAP results as inputs to these instruments, helps to mainstream TNA outcomes in overarching national strategies and programmes for climate and sustainable development.

Development of pilot projects will help to demonstrate available technology options and allow for gaining experiences with their utilization and ability to deliver financial and other benefits. Financial assistance for implementing such pilot projects is available through various channels, including multilateral and bilateral funding programmes. Technical support and advice can be provided in this process by various organizations such as the Climate Technology Centre and

<sup>1</sup> <https://tech-action.unepccc.org/publications/from-needs-to-implementation-stories-from-the-technology-needs-assessments-2016/>

<sup>2</sup> <https://tech-action.unepccc.org/publications/stories-from-the-technology-needs-assessment/>

<sup>3</sup> <https://tech-action.unepccc.org/publications/from-needs-to-implementation-stories-from-the-technology-needs-assessments-2019/>

<sup>4</sup> <https://tech-action.unepccc.org/publications/from-needs-to-implementation-stories-from-the-technology-needs-assessments-2021/>

<sup>5</sup> <https://tech-action.unepccc.org/publications/from-needs-to-implementation-stories-from-the-tna-2023/>

<sup>6</sup> [Stories from the Technology Needs Assessments 2025 – UNEP-CCC](#)

Network (CTCN), including for the preparation of concept notes for funding of proposals, and delivery of appropriate trainings to enhance local capacities.

Integration of TNA results in a country's overarching policy framework, such as development and climate policy, is a key mark of success for a TNA process. Such integration confirms that the prioritized technology-support policy processes are stakeholder-driven, and at the same time increases the likelihood for the technology options to be financially supported. From the perspective of technology-neutral policies, the link with TNAs is also attractive as the TNA is an unbiased process that allows technology options to be shortlisted in-line with a country's social, economic and environmental priorities, and recommends measures for optimizing market conditions.

The role of equipped and trained national champions is key for projects success, to continue work beyond TNA project borders.

More information on the Global Technology Needs Assessment Project can be found at <https://tech-action.unepccc.org/>

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## Annex I

Global TNA project (2009 - 2027), country overview					
Region	TNA I (2009-2013)	TNA II (2014-2018)	TNA III (2018-2023)	TNA IV (2020-2025)	TNA V (2025 – 2027)
<b>Africa</b>	<ol style="list-style-type: none"> <li>Cote d'Ivoire</li> <li>Mali</li> <li>Morocco</li> <li>Senegal</li> <li>Ghana</li> <li>Kenya</li> <li>Mauritius</li> <li>Rwanda</li> <li>Sudan</li> <li>Zambia</li> </ol>	<ol style="list-style-type: none"> <li>Burkina Faso</li> <li>Burundi</li> <li>Egypt</li> <li>Gambia</li> <li>Madagascar</li> <li>Mauritania</li> <li>Mozambique</li> <li>Seychelles</li> <li>Swaziland</li> <li>Tanzania</li> <li>Togo</li> <li>Tunisia</li> </ol>	<ol style="list-style-type: none"> <li>Benin</li> <li>Central African Republic</li> <li>Chad</li> <li>Djibouti</li> <li>Guinea</li> <li>Liberia</li> <li>Malawi</li> <li>Niger</li> <li>Sao Tome and Principe</li> <li>Uganda</li> </ol>	<ol style="list-style-type: none"> <li>Ethiopia</li> <li>Lesotho</li> <li>Somalia</li> <li>South Sudan</li> <li>Comoros</li> <li>Guinea-Bissau</li> </ol>	<ol style="list-style-type: none"> <li>Eritrea</li> <li>Sierra Leone</li> <li>Mali</li> <li>Morocco</li> <li>Senegal</li> <li>Tunisia</li> <li>Cote d'Ivoire</li> <li>Ghana</li> </ol>
<b>Asia and the Pacific</b>	<ol style="list-style-type: none"> <li>Bangladesh</li> <li>Cambodia</li> <li>Indonesia</li> <li>Thailand</li> <li>Vietnam</li> <li>Bhutan</li> <li>Lao PDR (TNA only)</li> <li>Lebanon</li> <li>Mongolia</li> <li>Nepal</li> <li>Sri Lanka</li> </ol>	<ol style="list-style-type: none"> <li>Jordan</li> <li>Lao PDR (TAP only)</li> <li>Malaysia</li> <li>Philippines</li> </ol>	<ol style="list-style-type: none"> <li>Fiji</li> <li>Afghanistan</li> <li>Myanmar</li> <li>Nauru</li> <li>Vanuatu</li> </ol>	<ol style="list-style-type: none"> <li>Timor-Leste</li> <li>Kiribati</li> <li>Niue</li> <li>Papua New Guinea</li> <li>Solomon Islands</li> <li>Tonga</li> <li>Tuvalu</li> <li>Maldives</li> <li>Yemen</li> </ol>	<ol style="list-style-type: none"> <li>Bahrain</li> <li>Cook Islands</li> <li>Micronesia</li> <li>Mongolia</li> <li>Philippines</li> <li>Thailand</li> </ol>
<b>Latin America and Caribbean</b>	<ol style="list-style-type: none"> <li>Argentina</li> <li>Costa Rica</li> <li>Guatemala</li> <li>Peru</li> <li>Cuba</li> </ol>	<ol style="list-style-type: none"> <li>Belize</li> <li>Bolivia</li> <li>Grenada</li> <li>Guyana</li> <li>Honduras</li> </ol>	<ol style="list-style-type: none"> <li>Antigua &amp; Barbuda</li> <li>Dominica</li> <li>Jamaica</li> <li>Suriname</li> <li>Trinidad &amp; Tobago</li> </ol>	<ol style="list-style-type: none"> <li>St. Kitts and Nevis</li> <li>Bahamas</li> </ol>	<ol style="list-style-type: none"> <li>Peru</li> <li>Venezuela</li> </ol>

	6. Colombia 7. Dominican Republic 8. Ecuador 9. El Salvador 10. Bolivia	6. Panama 7. Uruguay	6. Haiti		
<b>Europe and CIS</b>	1. Georgia 2. Azerbaijan 3. Kazakhstan (TNA only) 4. Moldova	1. Armenia 2. Kazakhstan (TAP only) 3. Turkmenistan 4. Uzbekistan	1. Ukraine		1. Azerbaijan
<b>Countries, Total no</b>	35	24 + 3 carry over (Bolivia, Lao PDR and Kazakhstan)	22	17	17 (whereas 11 are re-joining the project to update their TNA/TAP)

## Annex II

GCF projects informed by national TNA/TAP										
TNA Phase	Year of project approval	Region	Country	Sectors	Title	Objective	Implementors	GCF Funding (loan and Grant)	Co-Financing	Total project investment (USD)
III	2022	Africa	Liberia	Energy	Develop a renewable energy investment framework to increase the share of renewable energy-based electricity generation to achieve Liberia's NDC commitments	Readiness	GCF	600,000		600,000
I	2021	Latin America and Caribbean	Cuba	Coastal zones	Adaptation Plan for the Havana Coastal Zone	Readiness	UNDP	3,000,000		3,000,000
II	2021	Latin America and Caribbean	Grenada	Finance	Getting Grenada Private Sector Ready for Grenada's Climate Finance (GPS-4-GCF)	Readiness	Grenada Development Bank	619,000		619,000
I	2021	Asia and the Pacific	Cambodia	Transport	Climate Technology Deployment Roadmap for E-mobility Ecosystem in Cambodia	Readiness	Green Technology Center	224,000		\$224,000
II	2021	Africa	Tunisia	Energy	Development of Strategic Framework for upgradation to a smart water network system through technological interventions in Sousse and Monastir in Tunisia	Readiness	UNEP - CTCN	437,000		437,000

I	2021	Asia and the Pacific	Cambodia	Coastal zones	Enhanced actions to respond to climate change through sustainable waste management in Coastal Cities in Cambodia	Readiness	UN-Habitat Cambodia	295,000		295,000
I	2021	Asia and the Pacific	Mongolia	Agriculture	Mongolia: Aimags and Soums Green Regional Development Investment Program (ASDIP)	Project	Asian Development Bank (ADB)	175,000,000	560,000,000	735,000,000
I	2020	Asia and the Pacific	Mongolia	Agriculture	Improving Adaptive Capacity and Risk Management of Rural communities in Mongolia	Project	United Nations Development Programme	23,100,000	53,200,000	79,000,000
I	2019	Asia and the Pacific	Lao PDR	Agriculture	Implementation of the Lao PDR Emission Reductions Programme through improved governance and sustainable forest landscape management	Project	GIZ	17,526,700	57,376,300	74,900,000
I	2021	Asia and the Pacific	Thailand	Agriculture	Enhancing climate resilience in Thailand through effective water management and sustainable agriculture	Project	United Nations Development Programme	17,533,000	16,377,000	33,910,000
I	2019	Asia and the Pacific	Lao PDR	NbS	Building resilience of urban populations with ecosystem-based solutions in Lao PDR	Project	UNEP	10,000,000	1,500,000	11,500,000
I	2018	Asia and the Pacific	Mongolia	Energy	Energy Efficient Consumption Loan Programme	Project	XacBank LLC	11,500,000	10,000,000	21.500,000

II	2018	Asia and the Pacific	Pakistan	Transport	Green BRT Karachi	Project	Asian Development Bank	49,000,000	534,500,000	583,500,000
IV	2021	Asia and the Pacific	Timor-Leste	Early Warning Systems	Enhancing Early Warning Systems to build greater resilience to hydro-meteorological hazards in Timor-Leste	Project	UNEP	21,000,000	700,000	21,700,000
I	2017	Africa	Ghana	Agriculture	Drought Early Warning and Forecasting System: Improving resiliency of crops to drought through strengthened early warning within Ghana	Readiness	GCF	300,000		300,000
I	2016	Asia and the Pacific	Mongolia	Energy/finance	Business loan programme for GHG emissions reduction	Project	XacBank LLC	20,000,000	40,000,000	60,000,000
I	2020	Asia and the Pacific	Sri Lanka	Agriculture	Strengthening Climate Resilience of Subsistence Farmers and Agricultural Plantation Communities residing in the vulnerable river basins, watershed areas and downstream of the Knuckles Mountain Range Catchment of Sri Lanka	Project	IUCN	39,800,000	9,200,000	49,000,000
I	2025	Asia	Azerbaijan	Early Warning Systems	Action plan for flood warning technology	Project	UNEP	25,000,000	10,000,000	35,000,000
II	2016	Asia	Armenia	Energy Efficiency	Improving energy efficiency in multi-apartment buildings. Registry creation and development	Project	UNDP	20,000,000	82,697,000	102,697,000
I	2025	Asia	Lao PDR	Cross-cutting	Collaborative R&DB Programme for Promoting the Innovation	Project	KDB Bank	104,471,000	116,700,000	221,171,000

					of Climate Technopreneurship					
II	2025	Africa	Madagascar	Agriculture	Increase Resilience to Climate Change of Smallholders Receiving the Services of the Inclusive Agricultural Value Chains Programme (DEFIS +)	Project	IFAD	53,861,003	96,986,441	150,847,444
I	2025	Africa	Ghana	Agriculture	Climate-resilient landscapes for sustainable livelihoods in northern Ghana	Project	UNEP	63,211,141	6,987,681	70,198,822
I	2025	Asia	Cambodia	Agriculture	Climate Adaptive Irrigation and Sustainable Agriculture for Resilience (CAISAR) in Cambodia	Project	IFAD	80,000,000	160,000,000	240,000,000
II	2016	Asia and the Pacific	Armenia	Energy	De-risking and Scaling-up Investment in Energy Efficient Building Retrofits in Armenia	Project	UNDP	20,000,000	96,070,000	116,070,000
								<b>776,251,144</b>	<b>1,848,118,120</b>	<b>2,624,369,264</b>

GEF projects informed by national TNA/TAP									
TNA Phase	Year of approval	Region	Country	Sectors	Tech. Title / Project Title	Implementing Agency	GEF Funding	Co-Financing	Total project investment (USD)
I	2023	Africa	Rwanda	Agriculture	SMARTFARM - A data and digital technology driven and farm management solution for climate resilience.	IFAD	819,536	3,755,000	4,574,536
0/IV	2023	Latin America and Caribbean	St Kitts and Nevis	Energy	Achieving a rapid decarbonization of the energy sector in Saint Kitts and Nevis	UNEP	3,318,995	11,120,000	14,438,995
I	2017	Latin America and Caribbean	Argentina	Energy	Reducing Argentina's Greenhouse Gas Emissions from the Energy Sector through the Utilization of Organic Waste for Energy Generation in Agriculture and agroindustries.	UNIDO	6,000,000	38,460,000	44,460,000
I	2016	Asia and the Pacific	Thailand	Waste	Achieving Low Carbon Growth in Cities through Sustainable Urban Systems Management in Thailand (LCC)	UNDP	3,150,000	182,301,010	185,451,010
II	2015	Africa	Madagascar	Energy	Increased Energy Access for Productive Use through Small Hydropower Development in Rural Areas	UNIDO	2,855,000	14,305,000	17,160,000
I	2014	Latin America and Caribbean	Ecuador	Energy	Securing Energy Efficiency in the Ecuadorian Residential and Public Sectors (SECURE)	UNDP	1,776,484	25,800,000	27,576,484
III	2025	Africa	Liberia	Coastal Zones	Coastal Revetments	EPA	3,944,220	11,194,248	15,138,468
I	2012	Africa	Ghana	Multiple	Promoting Value Chain Approach to Adaptation in Agriculture	IFAD	2,500,000	8,985,000	11,485,000
							<b>24,364,235</b>	<b>295,920,258</b>	<b>320,284,493.00</b>

<b>AF projects informed by national TNA/TAP</b>									
<b>TNA Phase</b>	<b>Year of approval</b>	<b>Region</b>	<b>Country</b>	<b>Sectors</b>	<b>Tech. Title / Project Title</b>	<b>Implementing Agency</b>	<b>AF Funding</b>	<b>Co-Financing</b>	<b>Total project investment (USD)</b>
IV	2025	Asia and the Pacific	Fiji	Coastal Zones	Strengthening the Adaptive Capacity of Coastal Communities of Fiji to Climate Change through Nature-Based Seawalls	The Pacific Community	5,707,000		5,707,000
IV	2025	Latin America and Caribbean	Belize	Multi Sector	Securing Water Resources through Solar Energy and Innovative Adaptive Management (SEAM)	Protected Areas Conservation Trust	5,000,000		5,000,000
							<b>10,707,000</b>		<b>10,707,000</b>