UN Climate Technology Centre & Network
UNFCCC Technology Mechanism

CTCN Technical Assistance
Request Submission Form

Guidelines:

- This Request Submission Form should be completed by the organisation requesting technical assistance from the Climate Technology Centre & Network (CTCN) in collaboration with the National Designated Entity (NDE) of the country in question
- The Form must be signed by the NDE. Please see updated contact list of NDEs here: http://unfccc.int/ttclear/support/national-designated-entity.html
- The Form can be submitted as a Word file containing a digital signature or as a signed and scanned PDF file in combination with an un-signed Word file
- For requests submitted by multiple countries, all the NDEs of the respective countries shall sign identical Forms before official submission to the CTCN
- NDEs have the opportunity to submit CTCN requests in collaboration with National Designated Authorities (NDAs) for the Green Climate Fund (GCF) if targeting the GCF Readiness Programme.

Requesting country or countries:	KENYA
Request title:	DEVELOPING A BLOCKCHAIN-BASED NATIONAL SYSTEM OF METRICS ON CLIMATE CHANGE MONITORING, REPORTING AND DATA MANAGEMENT
NDE	Dr. Kelvin Khisa Head Environment Division Kenya Industrial Research and Development Institute Mobile: +254 20 6003842 kelvinnamukhasi@gmail.com; kelvin.khisa@kirdi.go.ke
Request Applicant:	National Environment Management Authority (NEMA) P.O.BOX: 67839-00200, Nairobi. **Fax:**+(254)-020-6008997 **Tel No:** +(254) 020-2101370, +(254) 020-2183718, +(254) 020-2307281, +(254) 020-2103696 **Mobile:** +254724 253398, +254735 013046+254363 010 Email: dgnema@nema.go.ke Website: www.nema.go.ke **Contact person:** Ms.Wangare Kirumba NIE Coordinator Mobile: +254722457289 wangarekirumba4@gmail.com

Climate objective:

☒ Adaptation to climate change

☐ Mitigation of climate change

☐ Combination of adaptation and mitigation of climate change

Geographical scope:

☐ Community level

☐ Sub-national

☒ National

☐ Multi-country

If the request is at a sub-national or multi-country level, please describe specific geographical areas (provinces, states, countries, regions, etc.).

Problem statement related to climate change (up to one page):

Kenya's economic growth is linked to the climate sensitive sectors such as agriculture and tourism, with a significant amount of the country's energy needs dependent on hydro and geo-thermal power that is climate dependent. The ability to report, track, store and retrieve climate information is key in adaptation planning. Further, with Kenya being a signatory to the UNFCCC and the Paris agreement on climate change, the country has an obligation for reporting on its greenhouse gas emissions and reduction efforts. However, the existing reporting system is not streamlined nor predictable and does not ensure reporting across sectors and between the two levels of government.

In the climate sphere itself, there are multiple applications of blockchain technology – increasing consumer consciousness, informing climate finance, tracking carbon emissions, and even the very niche field of enhancing climate reporting. Blockchain could even be a game-changer in monitoring the implementation of NDCs under the Paris Agreement.

Blockchain is part of an ecosystem of digital technologies including remote sensors, internet of things, big data and artificial intelligence. The combined use of these new technologies can unlock new, more accurate ways to measure, report and verify climate outcomes at lower transaction costs. Using blockchain to digitize the collection, monitoring and reporting of climate data can allow the coding of methodologies and processes in the form of smart contracts for the automated issuance, transfer and payment of climate outcomes. A blockchain solution can facilitate access to carbon markets or other results based finance schemes for the private sector players, in particular in weaker regulatory frameworks – including for climate finance and adaptation. It can also transform corporate supply chains towards more transparency and accuracy on climate and sustainability impacts of goods produced and sourced.

Leveraging on emerging technologies especially the blockchain technology will become an important tool for collecting, monitoring and reporting data related to climate change at the national, territorial, sectoral and climate action levels. This initiative could allow blockchain technology in climate reporting to reach greater heights in years to come, which will in turn improve reporting and monitoring of greenhouse gas emissions, climate change and other environmental information and therefore, strengthen adaptation planning and improve disaster preparedness.

Past and on-going efforts to address the problem (up to half a page):

Lack of a coordinated system and data repository for climate change reporting has continued to hamper information sharing and availability of the same that is key to adaptation planning. As part of the country's obligation to the UNFCCC and the Paris agreement, Kenya has prepared its INDCs that seeks to check on its relatively low greenhouse gas (GHG) emissions estimated at 73 MtCO2eq in 2010, out of which 75% are from the land use, land-use change and forestry (LULUCF) and agriculture sectors. The country has also prepared two national communication reports to the UNFCCC that highlight

greenhouse gas emissions and removals by sinks for the year 2000, as well as additional years between 1995 and 2010. Getting current data on GHG emissions and removals has remained a challenge and has constrained the production of these reports.

Leveraging on blockchain technology will help overcome data challenge and significantly improve the transparency, accountability and traceability of greenhouse gas emissions as well as provide more accurate, reliable, standardised, and readily available data on carbon emissions.

Despite, several institutions having developed and established Information Management Systems (IMS), these capacities are not maximized in utilization due to hardware and software disparities between programmes and projects. Further, data sharing arrangements/protocols between institutions and sectors remain a challenge.

In recent times, the world has seen the application of blockchain technology for adaptation projects. For instance, blockchain is being deployed for drought risk insurance in Kenya, providing local farmers with access to affordable crop insurance through their mobile phones. High resolution satellite imagery provides data on drought, unlocking automated insurance pay-outs when certain conditions of extreme weather are met. Streamlining the pay-out process of disaster risk insurance programmes for the climate-vulnerable can represent a remarkable step in global adaptation efforts.

Specific technology[1] barriers (up to one page):

The technology barrier that hinder efforts and GHG monitoring, data generation and reporting is linked to:

- Technological barrier – absence of coordinated GHG emissions monitoring, data generation and reporting has been linked to lack of a data capture, storage, sharing and retrieval system.
- Hardware disparities between programmes and projects and lack of interoperability between different systems has led to lack of single source of truth on climate change progress
- Transparency - reporting and sharing of information as a key pillar
- Trusted measuring, reporting and verification (MRV) of emissions, emission reductions, adaptation actions and progress in achieving targets
- Transparent exchange of information and review mechanisms to enable country stock take of GHG emission status

Sectors:

Please indicate the main sectors related to the request:

☐ Coastal zones	☒ Early Warning and Environmental Assessment	☒ Human Health	☐ Infrastructure and Urban planning
☒ Marine and Fisheries	☒ Water	☒ Agriculture	☐ Carbon fixation

[1] *"**any equipment, techniques, practical knowledge and skills** needed for reducing greenhouse gas emissions and adapting to climate change" (Special Report on Technology Transfer, IPCC, 2000)*

☒ Energy Efficiency	☒ Forestry	☒ Industry	☒ Renewable energy
☒ Transport	☒ Waste management		

Please add other relevant sectors:

Cross-sectoral enablers and approaches:

Please indicate the main cross-sectoral enablers and approaches

☒ Communication and awareness	☒ Economics and financial decision-making	☒ Governance and planning	☒ Community based
☒ Disaster risk reduction	☒ Ecosystems and biodiversity	☒ Gender	

Technical assistance requested (up to one page):

Overall objective

The CTCN technical assistance will enable the first conceptualization and the start of a journey to mainstreaming of blockchain technology in climate change adaptation in Kenya, with the potential of:

- Improved awareness, perception and reporting on GHG emmissions and climate finance flows and data sharing through blockchain technology.
- Building the capacity of relevant institutions, regulators, stakeholders; and
- Gathering consolidated feedback from stakeholders which serves as a basis to develop a favourable policy and regulatory environment for green blockchain innovations nationwide.

Anticipated groups of activities to be performed by the technical assistance

- Capacity building workshops for government agencies and sectoral stakeholders on ISO blockchain standards
- Capacity building on technology transfer including blockchain technology
- Development and implementation of a public awareness mechanism on the potential use of blockchain and emerging technologies for climate change adaptation
- Operationalize the climate change resource centers and enhance linkages with other resource centers at the country and regional levels
- Conduct a feasibility study on the development of Climate Finance Registry to track investment in the climate finance space through budget codes
- Conduct a baseline assessment to establish current gaps specifically in the technological domain within ongoing projects; and opportunities in Climate Information Services
- Stakeholder engagement activities including guided Focus Group Discussions involving government line ministries, agencies, regulatory bodies and private sector bodies like Kenya Association of Manufacturers, who will be invited to contribute to the development of policy and regulatory recommendations as to the way forward for the country

Anticipated products to be delivered by the technical assistance.

- A feasibility study report with an assessment of the technological, legal, regulatory as well as private sector models that can help to reduce barriers to climate action
- Development of enabling policy on use of blockchain technology and data provision and sharing across sectors

Expected timeframe:

The project is estimated to last for 12 months

Anticipated gender and other co-benefits from the technical assistance:

The technical assistance project, positioned as a real catalyst for real social change in Kenya, will implement a Two Thirds Gender Rule whereby participants at any level of the project will not be more than two thirds of any gender. This approach will enhance gender mainstreaming through specific mechanisms like:

- Gender-specific data collection and analysis - data will be collected, analysed and presented by gender.
- Women and men equally involved in decision-making - measures and strategies geared towards a balanced gender ratio will be taken at all levels of decision making.
- Equal treatment integrated into steering processes - all targets related to people will be defined in terms of full equality and the targets attained will be therefore presented by gender.

Key stakeholders:

Stakeholders	Role to support the implementation of the technical assistance
National Designated Entity	Overall supervision and approval of the outcomes of the technical assistance
Request Applicant	Mamo B Mamo Director General, National Environment Management Authority (NEMA – Kenya)
Kenya National Climate Change Council	Policy direction on climate change and GHG monitoring
Kenya Meteorological Department	Provide weather and climate information services, including climate knowledge and information management
State Department for Planning & Statistics National Treasury Kenya National Bureau of Statistics Climate Change Directorate National Adaptation Coordination Committee National Drought Management Authority Kenya ICT Authority Insurance Regulatory Authority Ministry of Devolution and Arid and Semi-Arid	Provide cross-cutting and sectoral information

Lands Ministry of Environment and Forestry Ministry of Agriculture and Irrigation Ministry of Tourism and Wildlife Ministry of Water and Sanitation Public Service, Youth and Gender Affairs Ministry of Energy Ministry of Information, Communication and Technology	

Alignment with national priorities (up to 2000 characters including spaces):

The bottom-up nature of the Paris Agreement moves away from the centralized accounting and reporting framework of the Kyoto Protocol and allows countries to choose how to report their progress—in which metrics, form and technical protocol. With such heterogeneity, achieving transparency is even more complex. This is also true for Kenya's ability to track its own climate action and progress toward domestic goals. Transparent measurement and disclosure of national progress towards adaptation goals are needed to ratchet up climate ambition over time.

Paris Agreement elements and related information flows provides an overview over the main elements to implement the Paris Agreement and the activities related to mitigation action, adaptation and sustainable development. These elements have become primary components of the national system for climate action - governed by institutional entities - but may also be seen as databases to facilitate the exchange of information necessary to operationalize the Paris Agreement.

To evaluate progress toward NDC targets, Kenya must track the tonnes of GHG it emits from different sources in a National GHG Inventory. The national policies and measures describe the domestic action the country has chosen to implement to meet its NDC target.

The Government of Kenya has made substantial progress in implementing its first NCCAP, which was operational from 2013 to 2017. NCCAP 2013 - 2017 helped the country to deliver on domestic goals, and international obligations under the UNFCCC. It identified 38 priority actions, including nine mitigation actions, and twenty-nine enabling actions in the areas of climate finance, knowledge management, legislation and policy, and performance measurement. Seven actions were completed, twenty-five were in progress as of May 2018, and many have been carried over to NCCAP 2018-2022. Six actions did not progress, five of which were under the National Performance and Benefit Measurement subcomponent. Kenya is among the countries with the most robust policy and regulatory frameworks in Africa.

Reference document (please include date of document)	**Extract** (please include chapter, page number, etc.) Direct alignment and contribution to NDC implementation is required for all CTCN technical assistances. Please include a direct reference to the INDC/NDC document (chapter, page number, etc.)
Kenya INDC 2015 (23rd July 2015)	Page 16: (https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Kenya%20First/Kenya%27s%20First%20%20NDC%20(updated%20version).pdf) Kenya is committed to enhancing its adaptation ambition by

	committing to: • Enhance generation, packaging and widespread uptake and use of climate information in decision making and planning across sectors and counties with robust early warning systems (EWS) • Enhance uptake of adaptation technology especially of women, youth and other vulnerable groups, incorporating scientific and indigenous knowledge • Strengthen tools for adaptation monitoring, evaluation and learning (MEL) at the national and county levels, including non-state actors
Kenya National adaptation Plan 2015-2030 (July 2016)	*Page 36*: (https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Kenya_NAP_Final.pdf) • Support innovation and development of appropriate technologies • and capacity that promote climate resilient development • Rising to the challenges of climate change requires innovative application of technology and science matched to local needs and risks. • Promote and facilitate transfer of appropriate technologies to the most vulnerable
National Climate Change Action Plan 2018 - 2022	*Page 10*: (http://www.environment.go.ke/wp-content/uploads/2020/03/NCCAP_2018-2022_ExecutiveSummary-Compressed-1.pdf) Kenya is committed to ensure enhanced resilience to climate change towards the attainment of Vision 2030 by mainstreaming climate change into the Medium Term Plans (MTPs) and implementing adaptation actions. Achievement of the NDC is subject to international support in the form of finance, investment, technology development and transfer, and capacity development.

Development of the request (up to 2000 characters including spaces):

The proposal was developed by the Kenya National Management Authority (NEMA), a government agency established under the Environmental Management and Co-ordination Act No. 8 of 1999 (EMCA) as the principal instrument of Government for the implementation of all policies relating to environment. The object and purpose for which NEMA is established under EMCA is twofold: to ensure sustainable management of the environment through exercising general supervision and coordination over matters relating to the environment and; to be the principal instrument of government in the implementation of all policies relating to the environment.
Last year when Ms. Wangare Kirumba (NIE Coordinator) attended the COP26 in Glasgow, she observed notable differences from the previous COPs. First, innovation was literally taking the center stage on many discussions, including developing and deploying clean technologies faster. The second major shift is that the private sector is now playing a central role alongside governments and nonprofits. The third

shift she observed was the more visibility for climate adaptation. Today's climate change reality is that the most vulnerable to the effects of climate change are the people who have done the least to cause them. During the summit, there were conversations about blockchain being one of the technological innovations that would boost global cooperation for climate action.

Even though she had had heard mentions about this technology before, it still did not make a lot of sense then. It was not until the beginning of 2022 that she started having this conversation again about blockchain with colleagues, friends and professional networks. Slowly but surely, these conversations started to crystalize around the possibility of using the technology to accelerate climate action.

Even though no formal consultations were done in regards to the development of this proposal, the informal engagements were very instrumental in shaping the proposal. A lot of informal meetings and back and forth communication led to the conception of this proposal.

It took several meetings with the NDE, with the leadership of Dr. Khisa from KIRDI to be convinced about the feasibility of the project. And after rigorous assessment of the suitability of this proposal for submitting a CTCN Technical Assistance Request, it was concluded that this project is not only aligned with the country's INDC objectives, but would also benefit a sizeable proportion of our youth who are technology savvy if this project became successful in the future. The NDE expressed their readiness to help in whatever way possible in firming the design of this Technical Assistance request.

Background documents and other information relevant for the request:

Relevant documents:

- Kenya National Adaptation Plan 2015-2030
- National Climate Change Action Plan 2018-2022
- Big Four Agenda for 2018-2022
- Nationally Determined Contributions
- Vision 2030
- 2030 Agenda for Sustainable Development
- African Union Agenda 2063
- Paris Agreement

The request was not developed with the input or support of the CTCN Request Incubator

OPTIONAL: Linkages to Green Climate Fund Readiness and Preparatory Support

The CTCN is collaborating with the GCF in order to facilitate access to environmentally sound technologies that address climate change and its effects, including through the provision of readiness and preparatory support delivered directly to countries through their GCF NDA. These actions are in line with the guidance of the GCF Board (Decision B.14/02) and the UNFCCC, particularly paragraphs 4 and 7 of 14/CP.22 that addresses Linkages between the Technology and the Financial Mechanisms[2].

The CTCN is therefore implementing some of its technical assistance using GCF readiness funds accessed via the country's NDA. Any application for GCF support, including the amount of support

[2] Please see:
https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cop22_i8b_tm_fm.pdf

provided, is subject to the terms and conditions of the GCF and should be developed in conjunction with the NDA.

Please indicate whether this request has been identified as preliminarily eligible by the NDA to be considered for readiness support from the GCF.

☒ Initial engagement: The GCF NDA of the requesting country has been engaged in the design of this request and the NDA will be involved in the further process leading to an official agreement for accessing GCF readiness support.

☐ Advanced engagement (preferred): The GCF NDA of the requesting country has been directly involved in the design of this request and is a co-signer of this request, the signature indicating provisional agreement to use readiness national funds to support the implementation of the technical assistance.

NDA name: The principal Secretary; National Treasury and Planning

Date:

Signature:

Monitoring and impact of the assistance:

By signing this request, I affirm that processes are in place in the country to monitor and evaluate the technical assistance provided by the CTCN. I understand that these processes will be explicitly identified in the CTCN Response Plan and that they will be used in the country to monitor the implementation of the technical assistance following standard CTCN procedures.

I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name:	Kenya Industrial Research and Development Institute
Date:	June 13, 2022
Signature:	

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

The CTCN is available to answer all questions and provide guidance on the application process.