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Key messages

- Kenya has high ambitions for expanding geothermal power, and has produced a Nationally Appropriate Mitigation Action (NAMA) to increase the role of the private sector in accelerating its development.
- The NAMA is an important step in making the National Climate Change Action Plan (NCCAP) a reality on the ground.
- A sub-component of the NAMA was submitted to the NAMA Facility in July 2014, seeking funding to begin implementation.
- The development process had to overcome challenges, including raising awareness and obtaining buy-in of key stakeholders; securing financial partners; documenting and communicating the NAMA; and dealing with questions about 'additionality'.
- Some of the lessons learned include the need for targeted, tailored communication on NAMA's potential added value and linking the scope of the NAMA with the intended transformation of the entire sector.

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Nationally Appropriate Mitigation Action (NAMA) to accelerate geothermal power: Lessons from Kenya

The Government of Kenya has ambitions to significantly expand its power supply from geothermal sources to underpin low-carbon, climate-resilient development, as encapsulated in its National Climate Change Action Plan (NCCAP). Although progress has been made, greater private sector involvement is needed to keep the goal within reach. Kenya has developed a Nationally Appropriate Mitigation Action (NAMA) to mobilise private investment by channelling targeted international climate finance and technical support. After introducing the context and objectives of Kenya's geothermal NAMA, this brief focuses on the challenges faced in the process of developing the NAMA, and highlights lessons learned and recommendations for future NAMA development, both in Kenya and globally.

Geothermal power plants, which convert steam generated from hot rocks deep underground into electricity, have a prominent place in Kenya's overarching development plans. These include the Vision 2030, the NCCAP, and the current '5000+ MW in 40 months initiative'. Geothermal power has the potential to provide reliable, cost-competitive, base-load power with a small carbon footprint, and reduces vulnerability to climate change¹ by diversifying power supply away from hydropower, which currently provides the majority of Kenya's electricity.

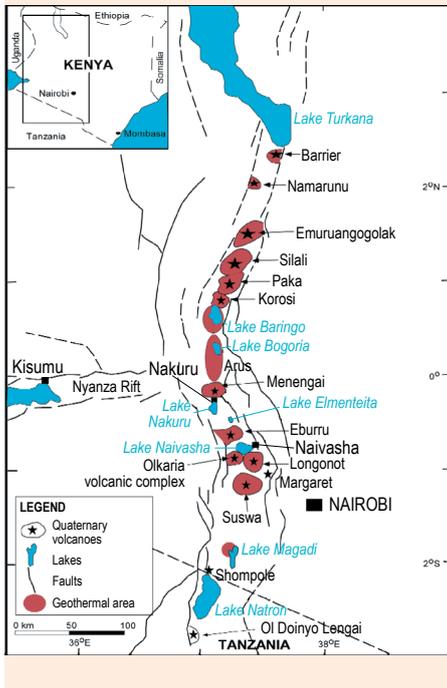
Kenya has set out ambitious targets for geothermal energy. It aims to expand its geothermal power production capacity to 5,000 MW by 2030², with a medium-term target of installing 1,887 MW by 2017³. As of October 2014, Kenya has an installed

geothermal capacity of approximately 340 MW (Figure 1). Although there is significant political will and ambition, reaching these ambitions is a major challenge.

Limited public funds and developers

Kenya's geothermal development stands at a critical juncture, requiring large and rapid investments if it is to meet its goals. New construction in the sector has largely been financed from the domestic budget and international concessional finance through the partially state-owned developer KenGen and the fully state-owned Geothermal Development Company (GDC). These public sources of national and international finance are limited and are a bottleneck to growth.

Figure 1: Geothermal Sites in Kenya (MoEP, 2014)



There is also a long lead-time for bringing additional capacity online as KenGen and GDC can only develop a limited number of fields at a time.

The need to scale-up private sector participation

Attracting private actors to co-invest in the sector will be critical to achieving the targeted growth. It is estimated that the private sector will need to cover approximately 40–50% of the US\$20 bn required to reach the 5,000 MW goal for geothermal power, compared with the historical 10–15% level of private investment.⁴

The Kenyan Government has taken a variety of steps and measures to attract greater private investment in its geothermal sector. The main initiative was the establishment of the GDC to undertake geothermal well explorations and drilling for independent power

producers. However, these steps have not yet achieved the necessary levels of private sector participation.

The Kenyan Government takes action

The term NAMA was first coined at the United Nations Framework Convention on Climate Change (UNFCCC) meeting in Bali in 2007, as part of the Bali Road Map. A voluntary measure, it refers to policies and actions that countries undertake to mitigate greenhouse gas emissions. By packaging actions as NAMAs, developing country governments can potentially receive international financial and technical support.

Recognising this opportunity, the Government of Kenya decided to promote accelerated expansion of geothermal power via a NAMA. The NAMA aims to achieve two key outcomes: first, enhancing the opportunity for investment through an improved risk–return ratio; and second, aiding and developing local human capacity along the supply chain

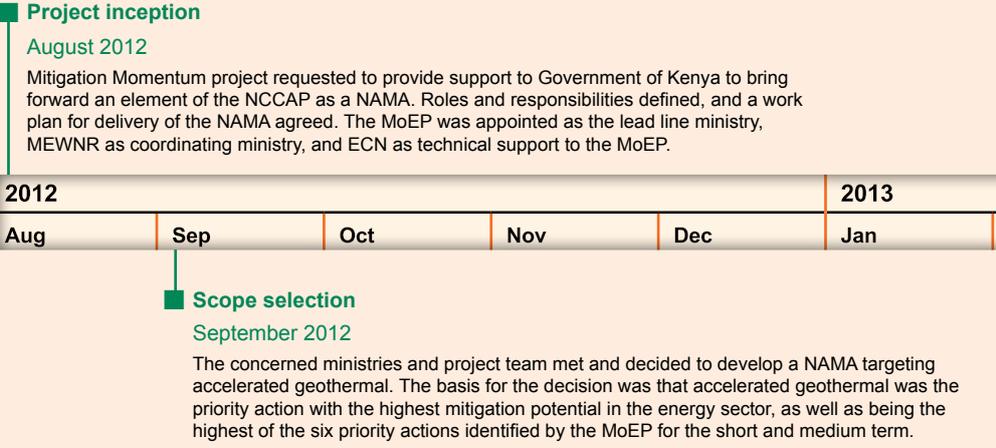
to manage significant expansion of the sub-sector.⁵ The NAMA should directly support 820 MW of additional capacity by 2020, resulting in 3.77 million tonnes of CO₂ equivalent (MtCO₂e) per year emissions reductions by 2020.

NAMA development process

The decision to pursue a NAMA was first taken by the Ministry of Environment, Water and Natural Resources (MEWNR)⁶ in the second half of 2012. The government has identified the potential of this instrument as a key delivery mechanism for the NCCAP 2013–2017. To develop the NAMA, the government sought technical support from the Mitigation Momentum project and CDKN.⁷ The Energy Research Centre of the Netherlands (ECN) provided technical support – its previous involvement in the NCCAP process facilitated a strong link between the NAMA and the NCCAP processes.

The NAMA was developed step-wise with multiple iterations, involving many

Figure 2: Outline of Kenya’s process to develop a geothermal NAMA



The UNFCCC NAMA Registry is a publicly available online platform operated by the UNFCCC Secretariat. Its purpose is to increase opportunities for implementation of and recognition for Nationally Appropriate Mitigation Actions (NAMAs) in developing countries⁸. The NAMA Facility is a joint programme for funding NAMAs of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and the UK Department of Energy and Climate Change (DECC).

different stakeholders. Approvals were required by different actors at various stages throughout the process, as outlined in Figure 2.

Challenges faced and lessons learned in the geothermal NAMA development process

The geothermal NAMA was the first NAMA to be developed in Kenya. With little global experience that could guide the process, the development of the NAMA was a learning experience for all involved, and has valuable lessons for other countries that are embarking on NAMA development. In this section, we highlight some of the major challenges faced, and lessons learned for future NAMA development.

Challenge: Creating institutional and key stakeholder awareness of NAMAs and obtaining meaningful buy-in

For many stakeholders involved in the development of the NAMA, the NAMA concept was generally unheard of. Some technical staff in the line ministries were

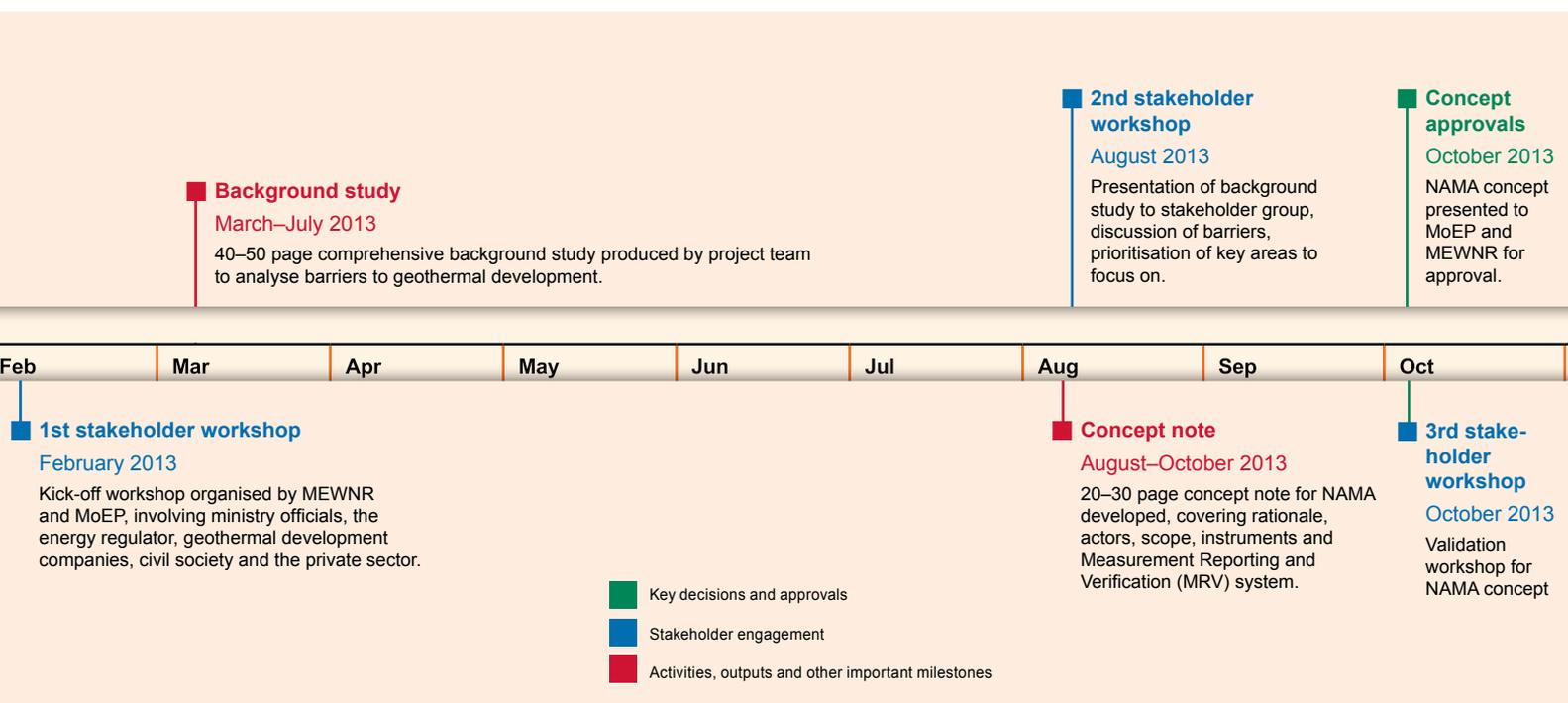
already aware of NAMAs; however, the key decision-makers, such as the principal secretary,⁹ needed to understand the potential value of the instrument before giving approval to move forward. In the case of geothermal power, it was also necessary to obtain support from KenGen and GDC. In addition, buy-in from existing development cooperation partners was required to achieve a workable NAMA programme, complementary to their own efforts. The diverse decision-makers and stakeholders meant that it was important to clearly outline the specific benefits and potential trade-offs for each from the outset. However, due to the abstract nature of NAMAs, this was difficult early in the process, and the two main stakeholders, KenGen and GDC, were initially sceptical that the benefits of NAMA outweighed the potential costs in terms of their time investment.

Implications: Targeted and tailored communication is needed about the potential value added by a NAMA, and transparency on the associated costs to the stakeholders is necessary

For the geothermal NAMA, significant effort was expended on creating awareness of the NAMA concept through briefings, stakeholder workshops and bilateral meetings. An important success factor was tailoring the level of detail for different stakeholders, and articulating the potential benefits of the NAMA for the specific actor. To ensure meaningful buy-in, formal approval through official letters from the relevant decision-maker were sought at important stages of the process. In many cases support was obtained from key stakeholders when the project team was able to identify a key bottleneck and propose a viable solution that was not being brought forward by another actor. With competing demands on stakeholders' time and resources, the demonstration of the potential added value of the NAMA is a critical success factor.

Challenge: Bringing on board financial partners to implement the supported NAMA

Development finance institutions (DFIs) such as the African Development



Bank (AfDB), The World Bank, KfW Development Bank (Germany) and the French Development Agency (AFD) are very active in Kenya's geothermal power development. With their robust processes and procedures built up over many decades in developing countries, DFIs made excellent candidates to manage the implementation of the internationally supported component of the NAMA (the NAMA Facility actually demands participation of such an institution). However, their strength is also a barrier, in that their processes and structure are not particularly flexible, nor adaptable to a new, innovative structure or programme in a short time. Thus, practical constraints prevented otherwise interested DFIs from committing to the supported component of the NAMA. In the case of the Kenya geothermal NAMA, some DFIs had limited capacity to manage an additional programme, there were also concerns over sources of funds and associated legal conditions, risk exposure, bankability and profitability (managing grants is not a 'core business activity'), and obtaining approvals from the internal hierarchy.

Implications: Going beyond consultations with financiers at an earlier stage

In the Kenyan case, early discussions were limited to the provision of technical inputs: primarily understanding the ongoing activities of the DFI to create complementarity. As a result, the components of the NAMA seeking international support were designed in a manner that was incompatible with DFIs' internal funding streams, existing financial instruments and internal processes for engaging in an initiative. A potential opportunity may have been missed by not inviting DFIs to participate at an earlier stage in a more formal manner. A practical approach to avoid missing such opportunities in future would involve: gaining a deep understanding of the potential implementation partners and donors as early as possible; communicating that government has an intention to work collaboratively on defining the supported component of the NAMA programme (rather than merely asking for technical inputs); identifying mutually interesting opportunities –

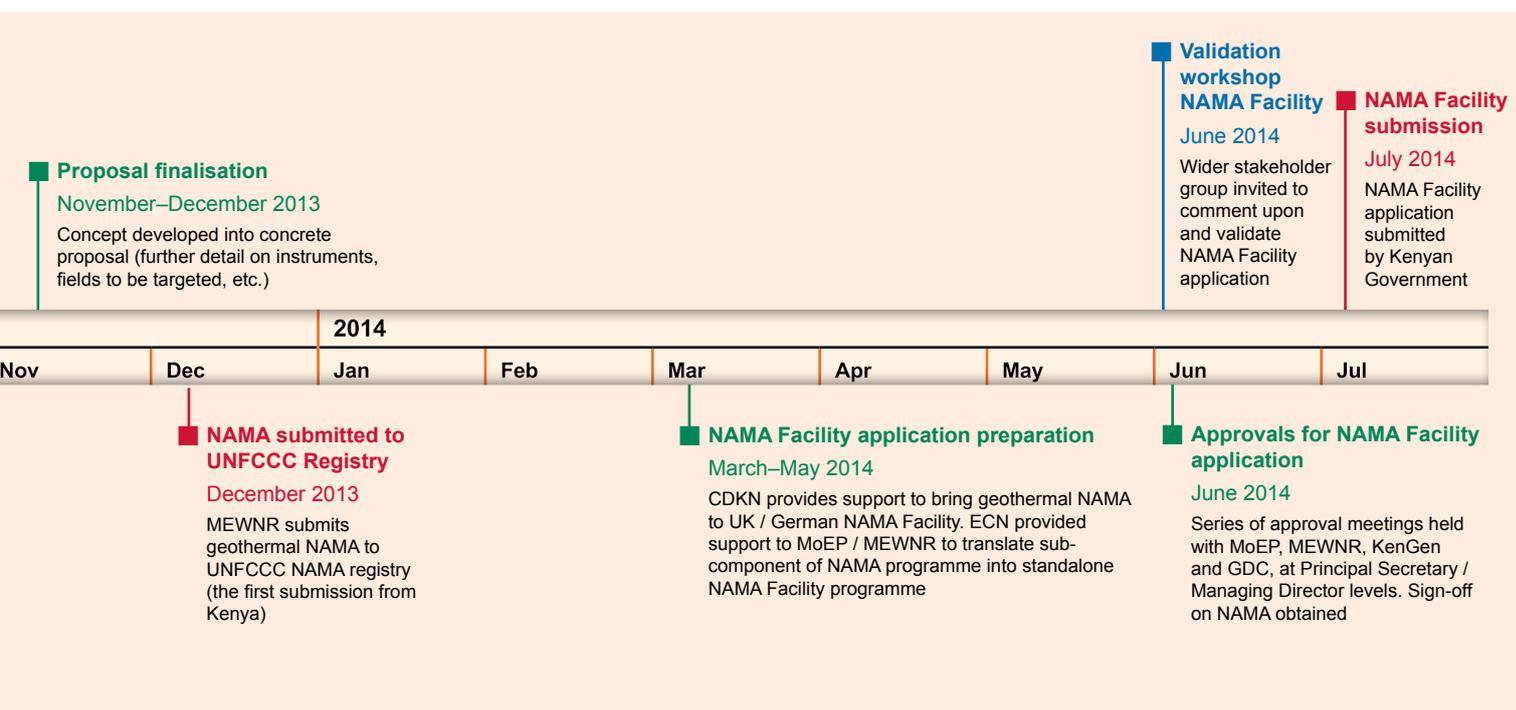
either external (e.g. NAMA Facility) or internal (existing financial cooperation instruments); and formalising cooperation on the specific opportunity.

Challenge: How to document and communicate the NAMA

In the original work plan, a key deliverable was the preparation of a concrete NAMA proposal to attract international support. The challenge faced was that without a definite financing opportunity in view, the instruments, activities and actors remained highly conjectural, since the process for arriving at an implementable supported NAMA is highly iterative between beneficiary (usually government) and donor. This meant that the resources invested in detailing a full NAMA proposal may have been prematurely mobilised.

Implications: Framing of the NAMA and clearly defining the audience

The proposal that was developed for the geothermal NAMA was repeatedly edited down or simplified on an ad-hoc basis, and actually resembled a higher level 'prospectus' or 'suite of options'



that served as a basis for discussions with potential partners and donors. This was then turned into a firm proposal in response to a definite opportunity (the NAMA Facility). In future, this process could be formalised (see Figure 3), with the prospectus containing a suite of options that are being enacted (domestic element) and that could be enacted (with international support) to achieve the NAMA objectives, with sufficient detail to allow for discussions on modes of implementation (somewhere between a concept note and a full technical proposal). This would allow for a flexible approach, enabling the NAMA components seeking additional support to be packaged appropriately for specific funding opportunities, and an iterative process to occur (e.g. allowing space to adapt for development banks' internal requirements). It also has the added benefit of not making public specific information that, for several reasons, the beneficiary prefers remains confidential.

Challenge: The additionality 'problem'
 When the NAMA process began, hundreds of millions of dollars were already being invested in Kenya's geothermal sector. This was to be expected, as the NAMA was intended to accelerate geothermal development. This made it difficult to articulate the added value that the NAMA would bring. The first problem was defining the scope of the NAMA and a 'business as usual' scenario so that the impacts of the NAMA could be assessed. Then there was a perception among some donors that there was no need for the additional support (as the sector already received substantial amounts from the donor community), and even if there was, the absorptive capacity of the government to manage another programme was already at its limits, as it was already pushing hard to develop geothermal.

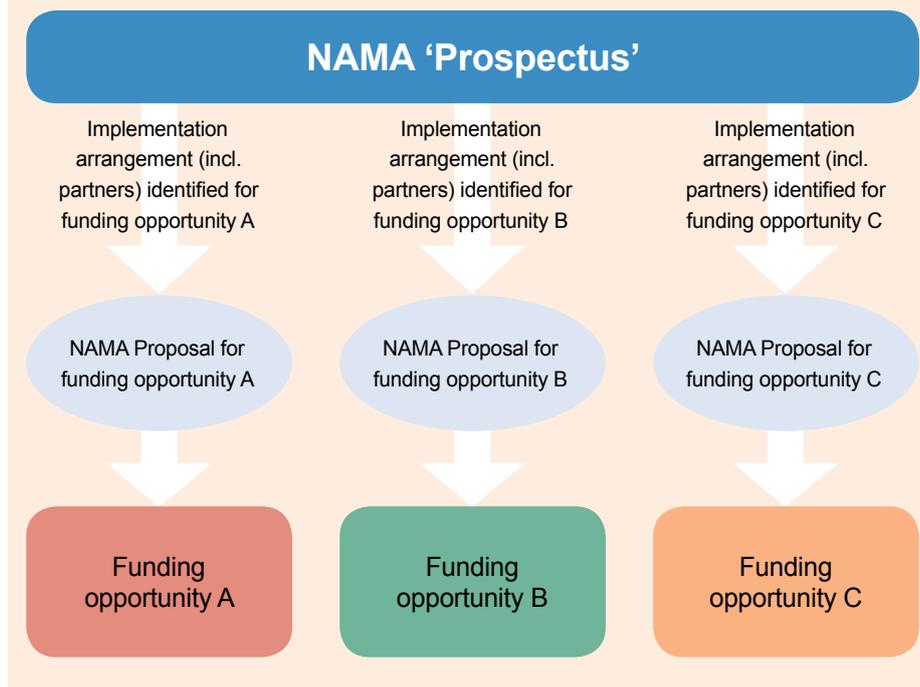
Implications: The scope of the NAMA needs to be linked with transformation of the sector, and the consequences of overcrowding in the sector need to be recognised and addressed rather than avoided

A key quality criterion to attract funding is a clear link between the additional funds and mitigation impacts. This is not possible when dealing with a more nuanced, holistic approach to transforming the sector, and ultimately donors will need to accept some uncertainty in terms of the mitigation impact of their contribution. Nonetheless, by focusing on a clear definition of the 'transformation' that would accelerate the development of geothermal beyond business as usual levels, namely increased private sector participation, it was possible to identify specific indicators that could be used as proxies for estimating emissions reductions. That said, the robustness of

this scope and acceptability to donors has yet to come under serious scrutiny.

The sector is perceived as over-crowded with actors and funds. Analysis indicated that there remains a significant funding gap, thus the perception that there is excessive funding is not entirely accurate. Nonetheless, the argument that the capacity of the government and stakeholders to absorb additional funds and another programme is limited is based on reality – human resources are at their limits, and technical staff along the delivery chain overburdened. But, rather than seeing this as a reason for inaction, this overburdening was identified as another barrier that the NAMA could address to help improve sector development, and eventually became an integral part of the NAMA programme (support for technical staff). The management of the NAMA

Figure 3: NAMA 'prospectus' or 'suite of options' approach, which provides a basis upon which to identify and prepare specific proposals for different funding opportunities; for example, the NAMA Facility, Green Climate Fund, or Development Finance Institution's internal funds.



Facility programme application was also 'outsourced' to technical cooperation partners (GIZ and AfDB) to avoid further burdening of government and beneficiaries.

Remaining challenges and next steps

The development of the NAMA is ongoing. The submission of a sub-component of the geothermal NAMA to a funding body (NAMA Facility) is seen as a first step of many by the government to take the NAMA forward. Major challenges remain before the NAMA fully matches the expectations of the government.

- Funding needs to flow in the short term – the government would like to see that the efforts in developing a NAMA bring tangible benefits.
- A robust MRV approach needs to be developed – the rather abstract scope (based on transformation of the sector) means that MRV becomes difficult.

As NAMAs could be an important basis for Kenya's Intended Nationally Determined Contribution (INDC) (a key input to the negotiations leading to an agreement in Paris, 2015), it is important that a good understanding of how to identify, measure, report and verify the climate mitigation impact of the NAMA is determined.

- Institutional management and coordination of NAMA implementation needs to be clear. In the Kenya case, institutional arrangements were clearly defined for the funding proposal to NAMA Facility (donors, ministries, agencies), but questions remain for the overall NAMA – who is to take it forward, to whom should progress be reported?

Reference

Government of Kenya (2012) *National Climate Change Action Plan Mitigation*. Chapter 5: Electricity Generation.

Endnotes

- 1 Rainfall has been extremely erratic in Kenya over the past three decades and climate change is locked in until the middle of the century, which threatens to expose Kenya's power generation assets to further changes in heat and rainfall (IPCC, 2007). IPCC (2007) *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 2007*. [Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J. and Hanson, C.E. (eds)] Cambridge, UK, and New York, USA: Cambridge University Press.
- 2 Cameron, L., Wurtenberger, L. and Stiebert, S. (2012) 'Chapter 5: Electricity Generation,' in *National Climate Change Action Plan Mitigation*. Nairobi, Kenya. Government of Kenya.
- 3 Government of Kenya (2013) 5000MW+ in 40 months prospectus. Nairobi, Kenya: Ministry of Energy and Petroleum.
- 4 NAMA for accelerated geothermal development in Kenya – Proposal (2014). Available at www.mitigationmomentum.org
- 5 For a detailed description of the NAMA, see the www.mitigationmomentum.org website.
- 6 Then the Ministry of Environment and Mineral Resources (MEMR).
- 7 Funded by Germany (Mitigation Momentum), the United Kingdom and the Netherlands (CDKN). For details, see <http://www.mitigationmomentum.org/project.html>
- 8 UNFCCC (2014) UNFCCC NAMA registry. Website: www.unfccc.org
- 9 Formerly the permanent secretary.



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