



The Sio-Malaba-Malakisi 4 clusters of prioritized investment projects

1. Background

The Sio-Malaba-Malakisi is a trans-boundary sub-basin of the Nile River with a population of about 4 million people. The sub-basin shared between Kenya and Uganda has a wide variety of ecosystems including lakes, rivers, forests, game reserves, and national parks that are home to a rich variety of fauna and flora of high tourism value. These provides opportunities and tremendous potential for social economic development. Agriculture is the major socio-economic activity in the sub-basin employing about 85% of the people in the basin. Poor agricultural practices have resulted in extensive catchment degradation, in addition, intensive land cultivation up to the riverbanks and indiscriminate sand harvesting of river banks and river beds are causing excessive sediment loads and resulting in water quality degradation. Addressing these challenges requires joint actions and investments by both Uganda and Kenya to improve the sub-basin conditions.

The two riparian countries of Sio-Malaba-Malakisi (SMM) river basin (Kenya and Uganda) have been spearheading the planning, management and development of the SMM basin since 2005 with various external support. The International Union for Conservation of Nature (IUCN) in partnership with the United Nations Economic Commission for Europe (UNECE) Helsinki Water Convention Secretariat and the Secretariat of the Inter-Governmental Authority on Development (IGAD) with funding from the Oceanic, Environmental and Scientific Affairs (OES) of the US State Department and Swiss Development and Cooperation (SDC) supported a Benefit Opportunity Assessment Dialogue (BOAD) process in the SMM transboundary basin. The main objective of the BOAD was to ensure that joint decision-making processes for shared water resources management and development yield better and more sustainable benefits across different stakeholders for multiple uses. These stakeholders represent varied interests, drawn from different sectors¹ and levels² from local to national to regional scales in the transboundary SMM setting. The BOAD process was structured as follows

1. the 1st SMM stakeholders' consultative workshop that engaged in an SMM basin visioning process i.e. analysis of challenges and opportunities for joint basin management and development. Through interactive joint assessment within a basin context, stakeholders identified different types of existing benefits as well as opportunities for additional benefits from cooperation;

2. through analytical studies and stakeholders consultations, a mapping of all relevant existing project proposals was established, and a long list of 67 investment projects in the SMM River Basin was generated and using a multi-criteria analysis³ developed and agreed upon by the stakeholders, a short list of 12 investment projects (**see the table below**) were prioritized from the long list;
3. the 2nd SMM basin interactive stakeholders' workshop using the Benefit Opportunity Assessment Tool (BOAT⁴) which is a dialogue and decision-support tool in analyzing the 12 shortlisted SMM investment projects, stakeholders selected 8 of them and came up with 4 preferred clusters of investment projects that each addressed a variety of stakeholder needs, such as infrastructure development, catchment restoration and protection, livelihoods enhancement, etc. The 4 clusters of the SMM investment projects consists of 2 clusters each in Malaba-Malakisi and the Sio sub-systems, each defining an optimized bundle of projects for that sub-basin; and
4. the 3rd SMM basin workshop to finalize the process and plan on a structured process of engaging with the key development partners in the water, sanitation and environment sector to consult on the most effective way to implement these 4 preferred clusters of investment projects in the SMM Basin.

In addition to the identification and prioritization process of the SMM investment projects, the BOAD was also used to launch the update of the 2008 SMM Investment and Development Strategy. The update was necessary because of the changes that have so far taken place in the basin as well as in the two riparian countries. The SMM basin Investment and Development Strategy consists of the SMM basin Investment Framework a draft of which has been developed through the support of this project and the SMM basin Investment Plan to be developed later, though the draft SMM Basin Investment Framework includes a roadmap for developing the SMM basin Investment Plan.

- 3 The criteria that stakeholders used in the prioritization process included: a) strong transboundary dimension – the project will promote cooperation between Kenya and Uganda or has significant positive impacts across the border; b) strongly aligned with policy objectives – at global, national, and basin level; c) not likely to encounter significant barriers to implementation - technological, social, cultural, political, or institutional; and d) likely to be financially sustainable – efforts to control costs, funding sources identified, likely cover long-term costs etc. A separate report on this prioritization process is available "note on prioritizing investment projects of transboundary relevance in the SMM basin"
- 4 BOAT is designed to help stakeholders jointly analyze whether a particular water management and development related project, or set of projects, has a positive, neutral or negative impact on a range of stakeholder groups, and how benefits to stakeholders can be enhanced through joint decision-making on more optimized combinations of activities

¹ Agriculture, Land, Environment and Natural Resources, Forestry, Water, Mining, Fisheries, Energy, Foreign Affairs, CBOs/NGOs etc
² Regional, National, County, Districts, Catchments etc

12 shortlisted SMM investment project	Estimated Cost (preliminary)	No of beneficiaries	Country	Rating	Status for each of the projects prioritized and clustered into 4
Malaba Irrigation	USD 2.2 million	32,800	Both	5.0	Identification stage
Eastern SMM Water Security and Development (combining six sub catchment management plans (SCMPs))	USD 5.2million	363,500	Kenya	4.6	Prefeasibility stage
Sio Sango Multipurpose Water Resources Development Project	USD 37 million + EIA/ESIA USD 4.5 million	28,398	Kenya	4.4	Ready for implementation
Toloso sub catchment management plan (NELSAP)	USD 9 million	300,000	Kenya	4.4	Prefeasibility stage
Lwakhakha Hotspots	USD 0.8 million	121,000	Uganda	4.2	Ready for implementation
Community-based Wetlands Management (Sio Siteko – NELSAP)	USD 8 million	5,000	Both	4.0	Ready for implementation
Angololo Multipurpose Water Resources Development Project (Angololo Dam) NELSAP	USD 44 million	12,000	Both	4.0	Prefeasibility stage
Solid Waste Management on both sides (Lwakhakha, Kenya, Lwakhakha Uganda and Bungoma, Kenya – NELSAP)	USD 9.2 million		Both	3.8	Feasibility done
Food Security	USD 22.7 million		Kenya	4.0	N.A.
Nyabanja Irrigation Development and Watershed Management Project - NELSAP	USD 24 million	12,000	Uganda	3.6	N.A.
Stormwater Drainage Master Plans NELSAP	USD 3.2 million		Both	3.4	N.A.
Bulusambu Multipurpose Water Resources Development Project	USD 82 million	7,456	Uganda	3.4	N.A.

2. Clusters 1 and 2 in the Malaba-Malakisi sub-system

2.1. Cluster 1

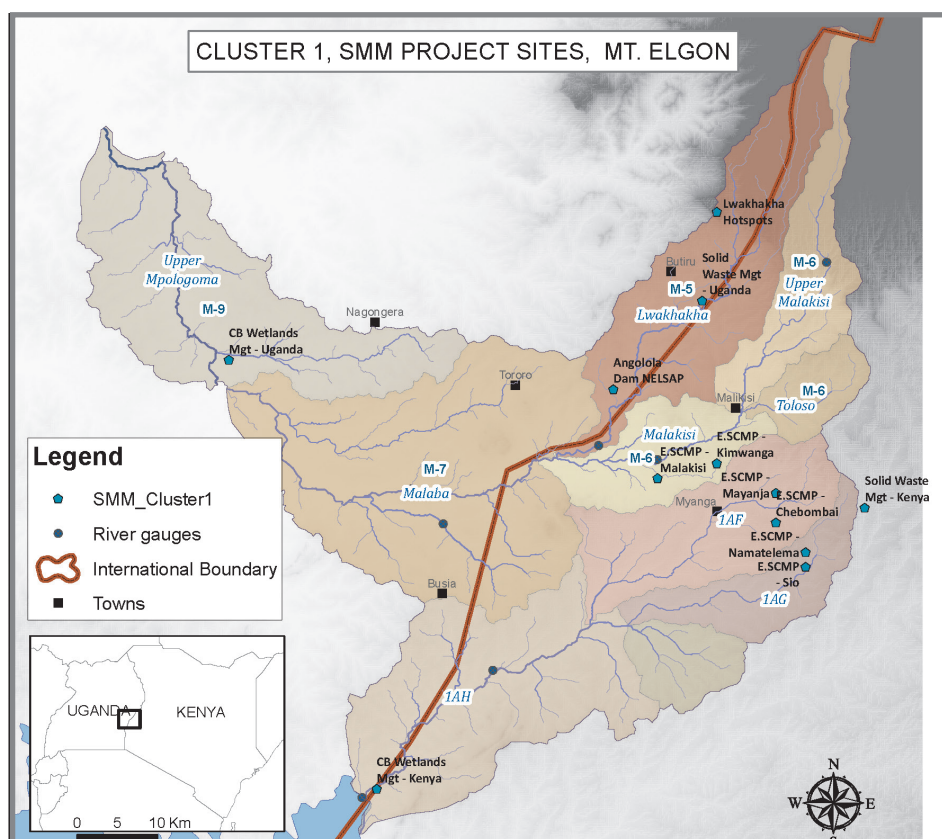
Cluster 1 is a bundles of the SMM investment projects in the Malaba-Malakisi sub-system consists of the following (see the map, cluster 1):

- Lwakhakha hotspots on Uganda side (Malaba);
- Solid waste management on both sides (Kenya and Uganda);
- Eastern SMM Water Security and Development (Chebembai and Malakisi sub-catchment management plans); and
- Angololo Multipurpose Water Resources Development Project (Angololo Dam) NELSAP.

Lwakhakha hotspots is multi-dimensional proposed project in Uganda with positive impacts on Kenya (water quality improvements, flood risk mitigation). The project aims to achieve the following: catchment management and river bank protection, infrastructure development for domestic and productive (irrigation) water supply, storm water drainage, pollution control, and promotion of sanitation and hygiene practices and livelihood improvement.

Solid waste management plans for Bungoma (Kenya) and Lwakhakha (Uganda) will serve both Kenya and Uganda (with more population directly affected in Kenya). The project will improve the collection, storage, transportation and disposal of solid waste. It will provide municipal waste management infrastructure and build institutional capacity for duty bearers by so doing reducing pollution on land and water. The project is aligned with priorities in SDGs, Kenya Vision 2030, and catchment management plans/ strategies in both countries.

The Eastern SMM Water Security and Development project (Chebembai and Malakisi SCMPs) with a beneficiary of about 89,000 will address soil conservation, catchment protection, river bank restoration, sanitation with positive impact across the border; the project will also focus on information and monitoring; infrastructure development and service delivery; institutions development – WRUAs; livelihoods enhancements; water regulations; and wetlands management.



Angololo Dam NELSAP is a proposed multi-purpose dam and irrigation development with a command area of 2,500 ha, dam capacity 13MCM, height 22m and beneficiaries of 12,000 people from both Kenya and Uganda. It will be a water infrastructure facility for irrigation, hydropower, livestock watering, domestic water supply and fishery.

The benefit of this bundle is that it takes into account the whole sub basin perspective i.e. the conservation of the catchment upstream (natural infrastructure) will reduce soil erosion and sedimentation; improved water quality and quantity, improved livelihood of the people in the basin, improved food security, strengthen the relationship of the two countries and enhance transboundary cooperation and climate change mitigation. Lwakhakha town is a hotspot itself, the town has trouble with solid waste issues as well as pollution, and therefore the solid waste management project will address these issues. This bundle provides an opportunity for achieving an integrated approach since it is based on an ecosystem or basin wide approach and not on political boundaries; the suite of project creates an opportunity for the development partners to choose which ones to support based on their priority i.e. those components of the bundles relevant to them; a programme approach of combining several projects together would contribute to management coherence and reduce the implementation and monitoring burden.

However, the project will still have some limited negative impacts especially downstream - managing biodiversity and wetlands ecosystems downstream because of infrastructural water facilities build upstream. There will also be land lost to inundation upstream of the dam. These risks will need to be addressed through careful feasibility analysis as well as environmental and social assessment with a view to ensuring that mitigation measures are developed and implemented

2.2. Cluster 2

Cluster 2 is a bundle of the investment projects in the Malaba-Malakisi sub-system consist of the following (see map on cluster 2):

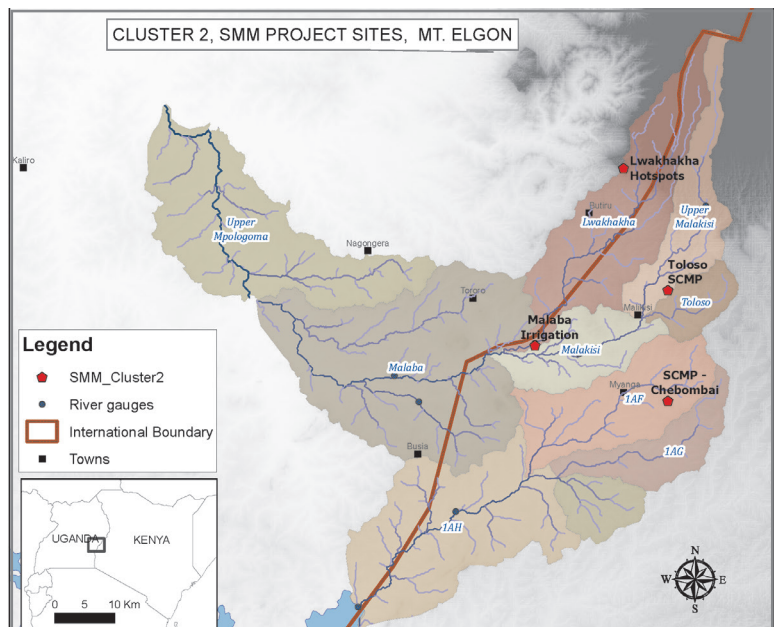
- Lwakhakha hotspot on Uganda side (Malaba) and solid waste management on both sides (Kenya and Uganda);
- Malaba irrigation; and
- Toloso sub catchment management plan.

Note: The description of the Lwakhakha hotspot and solid waste management projects have already been presented above.

The Malaba irrigation project is straddling both sides of the border, with 300 ha in Kenya and 100 ha in Uganda to cater for lowest river levels but can be scaled up fivefold with increased storage at source and greater water use efficiency. It entails construction of an infrastructure system comprising a weir to provide water for the irrigation of the 400 ha. The project will improve the food security situation, access to market and off-season food availability to boost farmer incomes. It provides an incentive for environmental conservation through ensuring continued flow and benefit sharing. It will also strengthen farmer collaboration across the border (through establishment of joint committees to manage the irrigation system) as they will be required to observe and monitor irrigation schedules.

Toloso Sub-catchment management plan will promote actions on the management of the headwaters in Kenya with a beneficial impact on the Ugandan side as a result of increased flow (quantity) as well as quality. The project aims to develop an infrastructure (though not yet fully defined by type and scale) for the provision of safe drinking water, thereby reducing water-related diseases and promoting economic growth. The project will also requires collaboration between Bungoma and Busia counties within Kenya, creating opportunity for benefit sharing between counties through for example agreeing on a water allocation plan, enforcement of permit regulation instead of competition over shared resources between them.

The benefits of this bundle is that it takes into account the whole sub basin and the conservation actions in the upstream will ensure good quality water and flood control downstream; irrigation will be beneficial to both communities in Kenya and Uganda and promote improved livelihoods and incomes. The bundles of projects will also promote improved cooperation between Kenya and Uganda in the management and development of the shared resources in addition to ecosystem and environmental restoration. Although Lwakhakha was combined with Chebombai, after due consideration, stakeholders



decided to keep Malaba irrigation as a single, stand-alone project because it already had major, collateral benefits due to its transboundary management component and because it would in any case benefit directly from the upstream catchment management projects, which would also benefit other downstream projects not included in the final bundle.

One of the disadvantages mentioned by stakeholders was low uptake of irrigation technologies due to dependency on rain-fed agriculture. Stakeholders however, noted that with a component on the training and awareness raising for the farmers, low uptake of irrigation technologies by farmers could be addressed, since the low uptake of irrigation technologies is linked to the farming system in the region – many farmers are subsistence farmers who depends on rain-fed agriculture. Similarly, access to markets and timing will promote the transformation of subsistence farmers from rain-fed agriculture to irrigation. In order to support and catalyse the transition from subsistence to value driven, market oriented agriculture, it is essential to understand the market dimensions of irrigation scheme planning. Donors and the public sector tend to push irrigation whereas markets tend to provide the essential pull factor and reward the farmers. It is possible for new irrigation to leap-frog old paradigms concerning food security and technology choices. Amalgamation of small projects into one large one could lead to sophistication and complexity in their implementation.

3. Clusters 3 and 4 in the Sio sub-system

3.1. Cluster 3

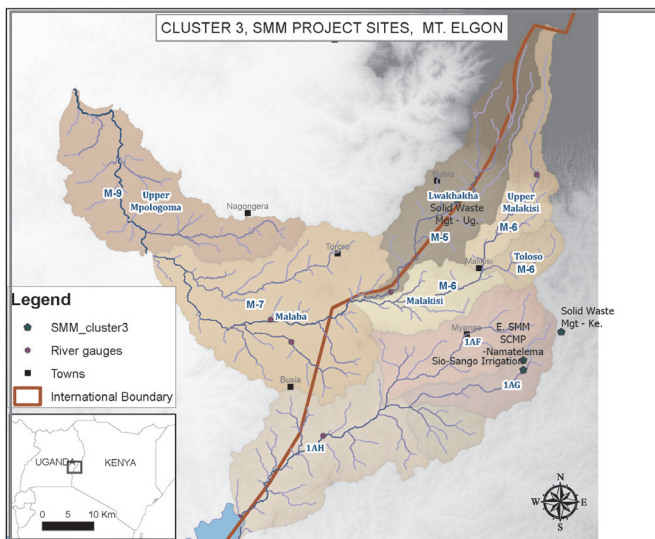
Cluster 3 is a bundles of the SMM investment projects in the Sio system consists of the (see map on cluster 3):

- Solid waste management on both sides (Kenya and Uganda);
- Sio Sango Multipurpose Water Resources Development Project; and
- Eastern SMM water security and development (Namatelema).

Solid waste management on both sides (Kenya and Uganda) has already been described in the bundles above on the Malaba-Malakisi system.

Sio Sango Multi-purpose Water Resources Development Project on the Kenyan side of SMM basin comprises three key components: 1] the dam infrastructure, 2] the Irrigation infrastructure, and 3] the watershed management. Other ancillary components include: livestock water supply, domestic water supply, and hydro power generation. It has a command area 1,700 ha, dam 3.92 MCM, height 24m and beneficiaries of 28,398 people.

Eastern SMM water security and development (Namatelema SCMP) is aimed at realizing catchment and wetland conservation and management and is targeting a beneficiary of about 5,000 people. The benefit of the bundles were noted as: improved food security from the irrigation; reduced pollution and siltation of water resources, increased flows and floods control as a result of catchment management activities. The information in the document states that the downstream impacts will not be significant. However, stakeholders noted some risks that would require mitigation measures, such as displacements/relocation/resettlement of communities, loss of biodiversity and livelihoods etc due to construction of the dam, hence the need to adhere to safeguards and guidelines during the construction and the management phases to mitigate against these negative impacts.

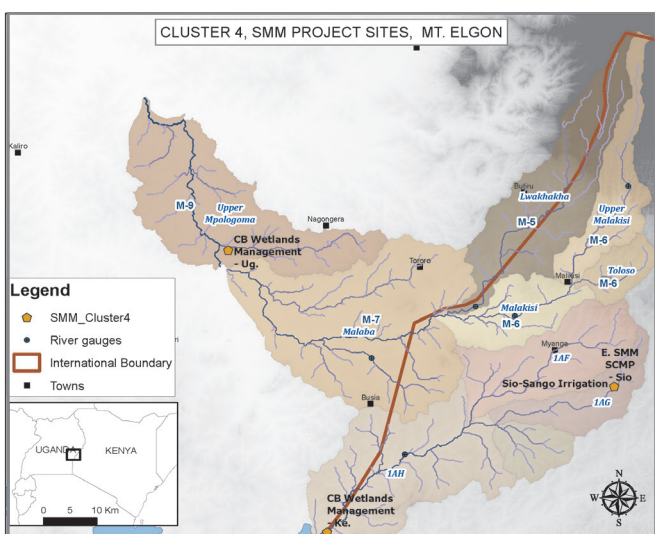


3.2. Cluster 4

Cluster 4 is a bundle of the investment projects in the Sio sub-system consists of the following (see map on cluster 4):

- Sio Sango Multi-purpose Water Resources Development Project;
- Eastern SMM Water Security and Development (Sio SCMP); and
- Community based wetlands management (Sio-Siteko) NELSAP

Sio-Sango irrigation development has been described in the above bundle. Eastern SMM Water Security and Development (Sio SCMP) is aimed at the protection and management of catchment and wetlands; information and monitoring; infrastructure and service delivery; institutions strengthening; and water resources management and regulations – water allocation plan to regulate the use of water amongst competing users etc. The community based wetland management at Sio-Siteko will improve the integrity of the wetlands so that it continues to provide its services both in terms of ecosystem and socio-economics. It will serve both Kenya and Uganda (with more wetland area in Uganda). It will address wetlands management and riverbank restoration covering an area of about 270 km² in Uganda and 35 km² in Kenya. The bundle will provide an opportunity for the management of the catchment; regulating amount of water abstracted for irrigation to ensure sustainability for downstream users through the issuance and monitoring of the water permits; integrated flood management plan in place; ensure good drainage system. The benefits of bundling these projects together includes: increased fish production from the wetlands and the dam; increased agricultural production and productivity of high value crops from the irrigation system; increased investment opportunities; increased woody and biomass due to afforestation; off-season farming.



Stakeholders noted some challenges that would require mitigation measures, such as: reduction in water resources due to abstraction for irrigation; low water use efficiency due to poor irrigation technologies (this could be improved) and increased competition for water resources use. Successful investment in irrigation system (the Sio-Sango irrigation project) depends on widespread implementation of catchment management measures upstream. This is the reason for inclusion in the bundle, the Sio Catchment Management Plan project – which is situated upstream of the irrigation project. A wide range of environmental risk reduction and performance enhancing factors were proposed for the irrigation project including the following: a system of well-enforced water permits; constructed or artificial wetlands to reduce run-off; fish ladders at the cross river structure; good drainage and incorporation of a flood management plan; continuous rotation of crops with high value and/or soil amelioration properties; and zero or minimum tillage. These measures are significant tweaks with the potential of reducing greatly, the risks often associated with new irrigation schemes.

4. Implementation framework

The two countries (Kenya and Uganda) have established a Joint Working Group on SMM Investment Strategy and Institutional Framework consisting of 6 members from each country and drawn from a wide stakeholders' representation⁵ to facilitate the coordination of the SMM activities. At the moment, the two countries are reviewing the SMM MoU signed by the two countries. The review is necessary because the current MoU merely reflects NELSAP-based institutional arrangements, and therefore the need to have an institutional framework that is not project based, and reflects a multi-level and stakeholder-inclusive basin management and development body. The stakeholder noted that the body should not only be inclusive and present multi-level stakeholders representation but also build on the existing structures from both countries, without creating parallel institutions. Some of the specific responsibilities for this joint framework as far as the implementation of the SMM Basin Investment Framework (and the future Basin Investment Plan) and its financing mechanism are outlined in the SMM Basin Investment Framework document. Since the need for sustainable financing mechanism for such joint institutional framework is important, stakeholders agreed on the need to involve (in the joint working group) representation from the Ministries of Finance from the two countries as necessary for the mobilization of financial resources, in addition, to exploring the possibility of engaging the private sectors as well.

To build capacity of SMM stakeholders in understanding institutional mechanisms most conducive to transboundary water governance, cooperation and development at the SMM basin level as well as for the sustained implementation of benefit-sharing solutions in the basin, SMM basin key stakeholder representatives were supported by the project and engaged in learning and exchange by visiting the International Sava River Basin Commission and the Rhine River Commission and participated in a special session of the IUCN-BRIDGE⁶ Academy, to learn about institutional mechanisms for multi-sectoral and multi-stakeholders cooperation and engagement on water.

<https://www.iucn.org/theme/environmental-law/our-work/water/water-law-and-governance-support-platform/learning-resources/trainingworkshops/first-sio-malaba-malakisi-basin-stakeholders%E2%80%9999-consultative-workshop>
<https://www.iucn.org/theme/environmental-law/our-work/water/water-law-and-governance-support-platform/learning-resources/trainingworkshops>
<https://www.iucn.org/news/environmental-law/201810/third-smm-stakeholders-workshop-september-25-26-2018-kisumu-kenya>

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⁵ The membership of the SMM Joint Working Group includes representatives from: the Ministry of Water and Environment, Uganda, at national level; SMM Basin and Catchment Management Units, in both countries; SMM Basin Riparian Counties (Ke); the IGAD Focal Person in the Ministry of Foreign Affairs in both countries.

⁶ BRIDGE: Building River Dialogue and Governance, an IUCN programme supporting transboundary water governance and cooperation in 6 regions and 14 basins across Africa, Asia and Latin America