SCOPE NEWSLETTER

ESPP SCOPE Newsletter
n° 157 November 2025

European Sustainable Phosphorus Platform

8th Sustainable Phosphorus Summit

Over 100 participants met for three days in Accra Ghana, for SPS8, the 8th global Sustainable Phosphorus Summit (30 Sept. – 2 Oct. 2025), plus over 500 participants online. The conference included 40 presentations and 20 posters.

SPS8 website: *https://www.upcyclelakes.org/sps8africa*

SPS8 post-conference summary: *here*.

The next Sustainable Phosphorus Summit, SPS9, will be organised in Japan in 2027 or 2028, led by **Kazuyo Matsubae, Tohoku University**.

Previous Sustainable Phosphorus Summits:

- 2010 Linköping, Sweden
- 2011 Tempe, USA
- 2012 Sydney, Australia
- 2014 Montpellier, France
- 2016 Kunming, China
- 2018 Brasilia, Brazil
- 2022 Raleigh-Durham, USA

Photos: (1) conference organising committee (from left to right): Bryan Spears (UKCEH), Adelaide Asante (CEH West Africa), Collins Tay (CSIR), André Bationo (International Fertilizer Development Centre IFDC), Erica Zaja (UKCEH), Phil Haygarth, Lancaster University UK, Harry Dixon (UKCEH). (2) Conference Manager, Erica Zaja, UKCEH. (3) Project leaders: Bryan Spears, UKCEH and Adelaide Asante, CEH West Africa.

SPS8 was sponsored by GEF (Global Environment Fund), the uPcycle project, APNI (African Plant Nutrition Institute), Ragn-Sells, SDU (University of Southern Denmark), DBU (Development Bank Ghana) and STEPS (Science and Technologies for Phosphorus Sustainability).

SPS8 was convened by the Ghana Council for Scientific and Industrial Research (CSIR), the Forum for Agricultural Research in Africa (FARA), the UK Centre for Ecology & Hydrology West Africa Office, Lancaster University UK, and Rothamsted Research UK with support from a Local Organising Committee and an International Expert Working Group (see SPS8 website).

Photos: conference plenary, traditional Ghana drums and danse welcome by Odikro Royals

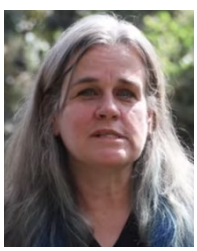
SPS8 aimed to discuss global challenges pre-identified by the organising committees:

- Phosphorus is critical in supporting global food security,
- Access to phosphorus varies across the world: need to improve fertiliser access where needed, e.g. in Africa,
- Phosphorus pollution of water can result in biodiversity loss and human health impacts,
- There are complex interactions between phosphorus, nitrogen, carbon and climate,
- Sustainable mining and phosphorus recycling are essential to preserve phosphorus for future generations,
- We need to improve phosphorus management locally and globally.

The conference was opened by **Collins Tay, CSIR Soil Research Institute Ghana**, Chair of the Local Organising Committee. He emphasised the United Nations Environment Assembly's recognition of the need to reduce nutrient pollution without compromising efforts against hunger. He underlined the importance of phosphorus in food production and the need to use it more efficiently, to develop reuse and recycling and to reduce losses to surface waters. Dr Tay bemoans the low phosphorus input in soils in sub-Saharan Africa resulting to low agricultural productivity, increased poverty and poor livelihoods. He concluded by noting that SPS8 aims to increase knowledge towards improving soil heath generally in Africa to support sustainable income and increased food and nutrition security in Africa.

Photos: Above: SPS8 Organising Committee. Below: group photo of all conference participants.

Progress in policies worldwide



Doreen Robinson, Deputy Director, Ecosystems Division, United Nations Environment Programme, in a video message underlined that UNEP is "deeply committed to tackling nutrient pollution", including both nitrogen and phosphorus. This requires coordinated and shared action, from the global to local levels, to ensure the health of both the world population and the environment. The UNEP Executive Director's report (May 2025) to the Seventh Session of the United Nations Environment Assembly (UNEA7), which will be held from 8 to 15 December 2025 in Nairobi, Kenya, highlights that sustainable nutrient management brings important co-benefits including soil health, food security, resource recovery, green energy generation, water security and climate resilience.

Ning Liu, United Nations Environment Programme, explained that the Global Partnership on Nutrient Management brings together governments, academia, industry, international organisations and NGOs to work together to forge a common agenda by mainstreaming best practices and integrated assessments, with the aim of ensuring that policymaking and investments are effectively 'nutrient-proofed'. Membership / affiliation is free and is open to any entity working on nutrient management, by completing the membership form here*. GPNM currently has 145 members from 117 organisations. The list of members is here*. GPNM's actions are proposed by a Steering Committee, as specified in the Partnership's Charter here*.

** information currently missing due to an ongoing website update. The information may be available on the 'old' GPNM website here https://www.nutrientchallenge.org/*

Ning Liu explained that to date the United Nations Environment Assembly (UNEA) has adopted two Resolutions concerning nitrogen, in 2019 (see SCOPE Newsletter n°33) and in 2022 (SCOPE Newsletter n°67). The 2022 UNEA Resolution mentions the impacts of, and need to reduce losses of, both nitrogen and phosphorus, but decides the development of national action plans for sustainable nitrogen management of nitrogen only, and of a UNEP Working Group on Nitrogen, and does not propose actions on phosphorus or other nutrients. Consequently, nearly 100 countries have to date designated National Contact Points on Nitrogen to UNEP to participate in data collation, preparation and communication of National Nitrogen Action Plans (of these countries, around one third from Africa, one third from Europe).

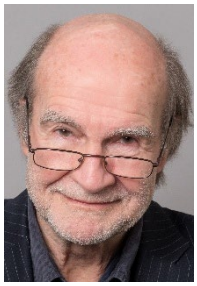
The UNEP Director report to UNEA7 proposes that the Member States "convene an ad hoc open-ended working group to provide future guidance on work on sustainable nutrient management … consider placing a greater focus on phosphorus …". However, without a Resolution proposed by a Member State and then adopted by UNEA, phosphorus will not be the object of formal and coordinated inter-State action as for nitrogen.

***ESPP has written to the European Commission and to the 27 EU Member States requesting that the EU submit a Resolution on phosphorus to UNEA7**, coherent with the objectives of the recently adopted revised Urban Waste Water Treatment Directive 2024/3019 and Critical Raw Materials Act 2024/1252.*
See letter here: www.phosphorusplatform.eu/regulatory

Panel on policy (left to right) Vincent Aduramigba-Modupe (Regional Hub for Fertilizer and Soil Health for West Africa and the Sahel / IITA), Malika Mezeli (Lancaster University, UK), Linda May (UKCEH), Bryan Spears (UKCEH), Jordan Roods (University of Technology Sydney, Australia), Chris Thornton (ESPP), Ning Liu (United Nations UNEP).

Chris Thornton, European Sustainable Phosphorus Platform (ESPP), summarised policy developments in the EU since the first EU Directives on water quality in 1991 (Urban Waste Water Treatment Directive, setting requirements for P and N removal from sewage; Nitrates Directive, addressing agricultural nitrate water pollution). 2013 saw the 1st European Sustainable Phosphorus Conference (ESPC1), a declaration for the launch of a European Phosphorus Platform, and the European Commission Consultative Communication on sustainable phosphorus use. Just over a decade later, in December 2024, the revised EU Urban Waste Water Treatment Directive (2024/3019) specifies that 'Phosphorus reuse & recycling rates' will be fixed in Europe within 3 years.

In 2020, the EU Farm-to-Fork Strategy COM(2020)381 and Biodiversity Strategy COM(2020)380 set targets to reduce nutrient losses by -50% whilst ensuring no deterioration in soil fertility. In 2022, this -50% nutrient loss reduction target was adopted by the United Nations Kunming-Montreal Global Biodiversity Framework (see SCOPE Newsletter n°74).



Ludwig Hermann, Proman, ESPP Board, noted that phosphorus management addresses several UN Sustainable Development Goals: health, food and hunger, sanitation, water, biodiversity. Phosphorus reuse and recycling from sewage will be obligatory in the EU within three years, full-scale implementation of technologies, enabling full-scale demonstration and cost optimisation. In Africa, a key challenge today is collection and treatment of sewage. Ghana joined the global objective to treat all sewage by 2030, but today only around 20% is treated. Where sewerage and sewage works are installed, they may not operate because of maintenance and energy costs. Low-cost sewage treatment technologies need to be developed (such as growing algae, valorised for energy and as fertiliser) and approaches which optimise cost-recovery by recycling water, thermal energy, carbon (to methane) and nutrients.

Maja Arsic, CSIRO Research, Australia, noted that Australia has a net-zero 2050 greenhouse emissions policy (with intermediate target of 62-70% below 2005 levels by 2035). Agriculture contributes nearly 20% of Australia's greenhouse emissions. Australia also has policy to double circularity by 2050 ("Australia's Circular Economy Framework. Doubling our circularity rate", 2024). This policy refers to Australia's preexisting (2023) objective to reduce "preventable" food waste by 2030, valorisation of agricultural wastes (e.g. as biofuels), protein production from wastes (e.g. fermentation, insects), fisheries, recycling of organic wastes (e.g. composts).

Ken Irvine, IHE Delft, emphasised the complexity of phosphorus management in surface waters, in particular for lakes. The WWQA (World Water Quality Alliance) White Paper on Lakes 2023 calls for a new sustainable approach to lake management, based on ecosystem protection and restoration and emphasises the impacts of nutrients from agriculture and wastewater.

In some cases, reducing phosphorus inputs may not be sufficient to prevent continuation of algal blooms in lakes because of unavoidable phosphorus losses from agriculture or release of phosphorus stored in sediments. In some cases, food web interactions such as harvesting small fish (which eat *Daphnia* and other crustaceans which graze on algae) can be part of management. Understanding of the ecology and food web interactions in lakes can help support management actions. Phosphorus management challengers will be accentuated by climate change, which causes warming of temperature of water bodies and increases storm rainfall events and flooding-drying cycles, both of which increase phosphorus losses from land.

ESPP notes that Reducing P losses to zero is generally incompatible with productive agriculture (e.g. Vadas in SCOPE Newsletter n°128).

ESPP note: see United Nations Environment Assembly Resolution on Sustainable Lake Management UNEA 5/4 March, 2022.

Summary of interactions between phosphorus, eutrophication and climate change: see SCOPE Newsletter n°137.

From phosphate mining to global food security

The special session organised by APNI (African Plant Nutrition Institute) provided information on global phosphate demand and supply, addressing sustainability challenges in phosphate mining and processing, and on phosphorus use efficiency in agriculture.

Kaushik Majumder, African Plant Nutrition Institute (APNI), underlined that infrastructure and market issues are obstacles to increased use of fertilisers by small farmers in much of Africa despite many studies showing that increasing P fertiliser inputs to Africa's low P soils leads to considerable crop yield increases.

Gerald Steiner, Danube University, Krems, Germany, underlined the importance of phosphate rock supply for global agriculture and food security. Sustainable phosphorus management requires data on how much phosphorus we need to feed the world, on phosphorus flows, on phosphate rock resources and reserves and on other sources of phosphorus (reuse and recycling).

A 2025 paper shows that around 220 million tonnes of phosphate rock are mined annually (2020), containing around 16 - 28 MtP/y (based on 17-31% P_2O_5 content of rock). This quantity of phosphate rock would fill a goods train 1.3x the length of the earth's equator. Part of the phosphorus in mined phosphate rock is not recovered during extraction and onsite beneficiation (from Prud'homme, CRU / British Sulphur 'Phosphates 2010' conference presentation). Over 90% of mined phosphate is used in food production (fertilisers, animal feeds).

The Herfindahl-Hirschman-Indices (HHI) for phosphate rock is medium, both for Weighted Country Risk (GLR) and Country Concentration (HH). The ratio of Resources/Reserves is around 1300 years (resources = known deposits - versus reserves = economically exploitable under current conditions), see Scholz et al. 2025. The number of operators with identified 'reserves' has increased from 11 to 23 over the last 25 years. These numbers suggest that phosphate rock is unlikely to 'run out' in the foreseeable future, assuming a +40% increase in food system phosphate use over coming decades. Although extraction costs (and so prices) may increase as currently uneconomic resources are tapped, phosphate rock is expected to be available at affordable prices for over a thousand years taking into account expected population and demand increases.

Overall, only 5 – 10% of phosphorus in mined phosphate rock (going to food systems) reaches the plate for human consumption (TPU = total phosphorus efficiency). This reflects losses throughout the system, from mining and agriculture to food processing and waste. There is both a need and opportunities to considerably increase overall system phosphorus use efficiency and phosphorus reuse and recycling.

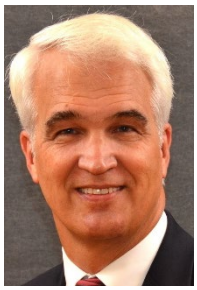
Mostafa Benzaazoua, University Mohammed IV Polytechnique (UM6P), Morocco - Geology and Sustainable Mining Institute (GSMI), presented OCP's actions to improve management of Morocco's phosphate rock resources and the sustainability and efficiency of phosphate mining.

Knowledge of phosphate rock deposits is important to optimise both mining, ore processing and waste management. OCP has engaged a systematic drilling campaign and sample core multi-technique characterization program to enable 3D digital mapping of phosphate rock deposits: phosphate resources, physical rock parameters, other elements of potential value (of potential positive or negative benefit) in the ore deposit.

Studies are underway to try to mine phosphorus from past mining wastes. The later are available in large volumes, however they are mixed with non-phosphate-containing materials. Among these mining wastes, the pre-enrichment by-products have significant phosphate contents and are being studied for possible phosphorus extraction at the pilot scale through a lab-validated screening and sorting flowsheet. Today, mining waste materials are deposited separately with record-keeping to enable possible future P-extraction from materials considered presently uneconomic to process.

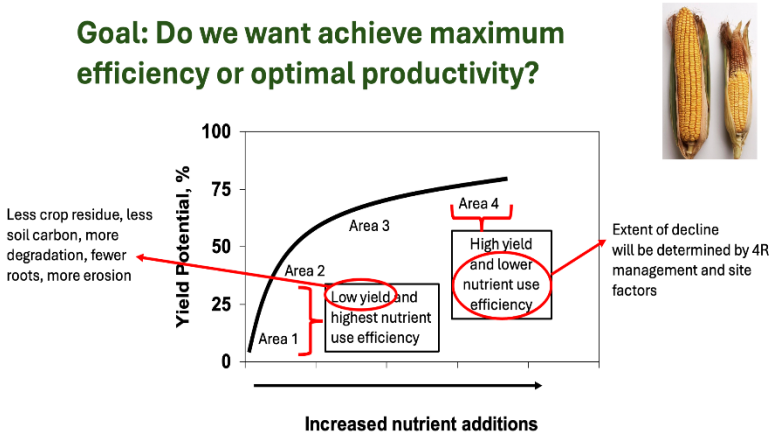
Another challenge being investigated by GSMI teams is valorisation of materials not containing phosphorus which could be separated during the exploitation through selective extraction or during waste reprocessing through screening and ore sorting. The aim is for re-use purposes as construction materials or road foundations.

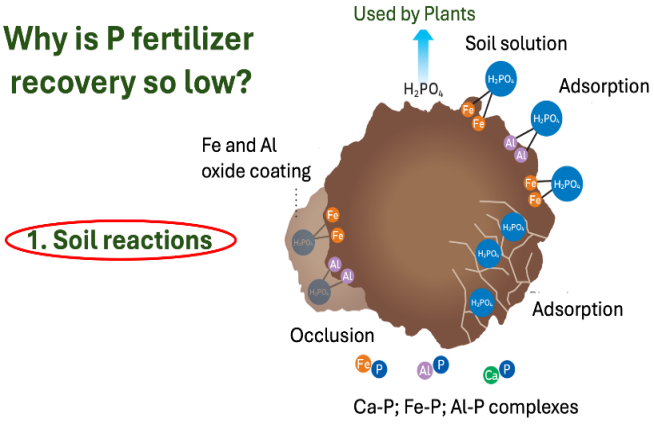
OCP is also addressing the challenges of water consumption during phosphate rock processing (beneficiation = washing, flotation, enrichment). Dewatering is carried out through a flocculation-thickening process. This allows to recycle presently more than 80% of the process water in order to minimise the surface of the tailings storage and consequently water loss by evaporation. Moreover, OCP's Khouribga mine and Jorf-Lasfar - El Jadida phosphoric acid complex are engaged through a national program to produce water through desalination and sewage water treatment to cover its current needs.



Rob Mikkelsen, APNI (African Plant Nutrition Institute) underlined the need to maintain sufficient levels of phosphorus in soils to support agricultural productivity: at least 0.2 ppm P. Plants need available phosphorus in soil over the whole growing season in order to maintain the root hair and rhizosphere system necessary for phosphorus uptake. These agronomically necessary phosphorus concentrations are often higher than natural soil P levels, so are liable to unavoidably result in higher levels of P-loss to surface waters than from a non-modified ecosystem (e.g. primary forest).

He underlined the difficulties of defining and measuring PUE (Phosphorus Use Efficiency) for agricultural systems. The traditional method for expressing PUE is the "Balance" PUE (crop uptake as % of fertiliser P applied) and generally shows only around 20 – 30 %. The "Difference" PUE (Difference between crop P uptake on fertilised and unfertilised soil as % of fertiliser P applied) can be 70 – 90 %.





The crop yield *vs* P-fertiliser curve shows that PUE is highest at low fertiliser application levels (adding a little phosphorus makes significant difference to crop uptake), whereas high crop yields require significantly higher fertiliser application levels, corresponding to low PUE.

African soils are 'phosphorus hungry' because they have high contents of minerals which 'trap and hold' phosphorus (iron, aluminium, magnesium, calcium). These mineral P-fixing capacities need to be filled up before applied P fertiliser is efficiently crop available (see diagram).

The 4R's (right source of fertiliser, right application rate, right place – e.g. spot placement by crop roots, and right time of application) are essential to optimise crop yield with minimum P loss (fertiliser purchase going to waste and eutrophication risks for surface waters).

Phosphorus and Africa

Shamie Zingore, APNI (African Plant Nutrition Institute), emphasised the critical issue of phosphorus deficiency in much of Africa's soils. He highlighted the need for increased phosphorus use and improved management to enhance food security on the continent. Phosphorus fertilisers often yield better crop responses than nitrogen fertilizers, and contribute 30-60% of the yield response in cereal crops in Africa.

African soils rank among the most phosphorus-deficient globally, with low fertility and high fixation rates reducing phosphorus availability. Insufficient phosphorus application continues to deplete soil reserves, contributing to declining fertility and lower yields. The negative balance of approximately -9 kg P/ha/year underscores the urgency of implementing replenishment and efficiency practices (balance of fertiliser + organic inputs – offtake in crops and residues).

The 4R Nutrient Stewardship Framework—applying the Right Source, Right Rate, Right Time, and Right Place—details an approach to optimize phosphorus management. The balance of P with other macro and micronutrients is essential. An Integrated 4R Phosphorus Management Framework combining biophysical, economic, and policy dimensions is essential for guiding research and implementation. Sustainable phosphorus management will require collaboration among researchers, policymakers, and private sector partners to develop effective solutions that support soil health and food security in Africa

André Bationo, International Fertilizer Development Centre (IFDC), summarised the situation of agriculture and phosphorus soil needs in Africa. The continent's population is today around 1.5 billion and Africa currently spends 50 billion €year on food imports to feed this population. If current trends continue, Africa will only be able to itself feed just over 10% of its population by 2050.

Eighty percent of the soils in Africa are P deficient and Africa's food production could be multiplied up to 6 times compared to today, by improved agricultural practice and fertiliser use. There is also widespread soil loss, which could be reduced by avoiding bare soil (use of cover crops). The situation is however highly variable between different regions. Sub-Saharan Africa uses 1.6 kg P/ha of cultivated land compared to 7.9 and 14.9 kg P/ha respectively for Latin America and Asia. Despite the acute P deficiency of soils, local farmers use very little P fertilisers because of high costs and problems with availability.

Africa has around three quarters of the world's phosphate rock reserves. The International Fertilizer Development Center (IFDC) for many years coordinated research on the direct use of African phosphate rock in Africa. For some countries, direct use of unprocessed African phosphate rock could be an alternative to imported P fertilisers. Whereas most phosphate rock is unreactive and not suitable for direct application, in a few cases, such as Minjingu in Tanzania, Tilemsi in Mali and Tahoua in Niger, phosphate rock can be used for direct application. Various methods can be used to improve the agronomic effectiveness of phosphate rock. The most promising technologies from IFDC research are processing of the rock by partial acidulation or activation by small quantities of water-soluble P.

ESPP notes that Africa's food challenge is also related to the surface of cropland per capita: 0.2 ha/person for Africa, compared to 0.4 in Europe and 0.1 in Asia 2021, FAO). But this indicator is deteriorating most rapidly in Africa (-25%).

Kwame Agyei Frimpong, African Plant Nutrition Institute (APNI) and University of Cape Coast, reinforced these messages. Most African soils are lacking phosphorus, because of low soil pH, high iron and aluminium oxide and hydroxide content, rendering phosphorus not plant available. High rainfall in humid regions leads soil erosion and soil phosphorus losses. The situation is exacerbated by high fertiliser prices for farmers due to infrastructure, distribution and transaction costs. The result is widespread low crop yields, as well as low crop nutritional quality.

The Abuja Declaration on Fertilizer for the African Green Revolution (Nigeria, 2006) recognised the problem and set the objective to increase average fertiliser use in Africa to 50 kg(fertiliser)/ha/y. But today, Africa is still at 6 kg/ha/y, compared to a global average of 130 kg/ha worldwide.

In order to increase economic benefits and minimise nutrient loss, which causes water pollution, increased fertiliser use must be accompanied by soil testing and improved application practice (4R's) and recycling of nutrient-rich wastes where possible.

The SPS8 parallel sessions on phosphorus in Africa concluded that the principal 'phosphorus challenge' in Africa is to increase fertiliser use, especially for phosphorus because of the 'phosphorus hungry' nature of many African soils. A key obstacle to adequate fertilisation in Africa is farm-gate prices of fertiliser for farmers, which are mainly the consequence of inadequate physical infrastructure (storage, roads), the structure of agriculture with many small farmers, and inadequately organised fertiliser distribution systems (high transaction costs related to lack of coordinated purchasing and delivery). Structuring of farmers' groups (e.g. cooperatives) is seen as a priority, in order to organise and share purchasing, logistics, information. Farmer information and education (e.g. outreach, peer-to-peer farmer communications) is another major reason for non-use of fertilisers, or use lower than levels needed to optimise crop productivity.

This confirms previous positions and Africa institutional declarations, including:

- Abuja Declaration on Fertilizer for the African Green Revolution (African Union Development Agency / New Partnership for Africa's Development https://www.nepad.org/ - 2006)
- Lomé Declaration on Fertilizers and Soil Health in West Africa and the Sahel (ECOWAP/CAADP, Economic Community of West African States / African Union Comprehensive Africa Agriculture Development Programme, 2023)
- Nairobi Summit on Food Systems and Soil Health (African Union, May 2024): "African Fertilizer and Soil Health Action Plan: 2023-2033"

Other points identified included the importance of micronutrients for crop health in Africa, synergies with implementation of sewage treatment for nutrient recycling, local opportunities for local nutrient recycling (e.g. manure) and the major challenges posed by climate change (need to develop local climate change predictions to inform farming systems). The importance of collaboration was underlined, between scientists, and with industry, agricultural organisations and decision makers.

ESPP notes that Africa is also expected to lose around 3.3 million hectares of farmland (of which cropland more than half) to peri-urbanisation by 2050 (De Vos et al. 2024) whereas conversion of land to cropland is mostly more than 100 km from major roads (Akinyemi et al. 2022) so accentuating the logistics/cost challenge for fertiliser access.

African Platform for Phosphorus for Food Security

It was noted that an "**African Platform for Phosphorus for Food Security" was launched on 3rd September 2025** (LINK). This Platform was launched during the Africa Food Systems Forum 2025 in Dakar, Senegal, by the Global Phosphorus Institute (GPI), with support of the African Union (comprised of 55 African States), CEDERO-ECOWAS (African regional inter-State groupings for economic development), AGRA (Alliance for a Green Revolution in Africa), IFDC (International Fertilizer Development Center), FARA (Forum for Agricultural Research in Africa) and APNI (African Plant Nutrition Institute).

African Sustainable Phosphorus Network

SPS8 also included a parallel session which discussed establishment of an "**African Sustainable Phosphorus Network**" (ASPNet). This followed stakeholder engagement meetings already organised before SPS8. The aim was stated as to establish a tool for "*collaboration, networking and knowledge co-creation and exchange … to generate robust scientific evidence to underpin effective supporting policies*". This had already been announced before this SPS8 conference in a paper which summarises the SPS conference series, analysis of scientific literature on sustainable phosphorus research in Africa, phosphorus challenges in Africa and the aims of SPS8 (Manzeke-Kangara et al. July 2025). This paper concludes: "*Extensive research on phosphorus use in arable cropping has been widely implemented in Africa, albeit with room for improvement on collaborative research on phosphorus sustainability and on environmental impacts*" and underlines the importance of soil phosphorus biochemistry, and consequent crop availability and fertiliser needs, and projections of worsening phosphorus losses to ecosystems.

Participants at SPS8 discussed the African Sustainable Phosphorus Network (ASPNet) as centred around science and research, in order to facilitate exchange between scientists and development of research projects, including in cooperation with universities outside Africa. It was agreed that the network would be hosted by FARA with support from UKCEH and other organisations (to be defined).

The press release announcing the creation of this **African Sustainable Phosphorus Network** (ASPNet) is pending publication. An initial steering committee was announced: **Collins Tay, CSIR Soil Research Institute Ghana; Kwame Agyel Frimpong, scientist at APNI (African Plant Nutrition Institute); Oluwole Fatunbi, FARA; Adelaide Asante, UKCEH West Africa Office; Enam Gbekor, agronomist consultant**.

The ASPNet network aims to organise a first Africa Sustainable Phosphorus Summit in 2026.

Photo: launch of the African Sustainable Phosphorus Network at SPS8. Photo: Phil Haygarth.

Conference follow-up

Parallel session workshops at SPS8 will be followed-up by ongoing work on:



- Establishing tools to support ea**rly career scientists working on phosphorus** (funding, exchanges and joint publications, mentoring). To participate contact (*photos*) Grace Kangara grace.kangara@rothamsted.ac.uk, Malika Mezeli m.mezeli1@lancaster.ac.uk and Kasper Reitzel reitzel@biology.sdu.dk


- Writing of a **white paper on global phosphorus management**, combining water quality and food security. If you want more information, contact us (*photos*) Will Brownlie and Issy Lewis UKCEH Will Brownlie wilown@ceh.ac.uk .

Conference conclusions

Final concluding comments from the SPS organising group:

Written by: Dana Cordell, Jim Elser, Phill Haygarth, Michael Miyittah, Bryan Spears.

"SPS8 put sustainable phosphorus firmly at the centre of the African agenda, set in a wider global context with African and international participation. It was exciting to see the launch of the African Sustainable Phosphorus Network (see above)*, and whilst great progress has been made, this is only the start. We look forward to watching the Network continue to grow and develop to support sustainable P management in Africa. We noted that the P challenge for Africa is markedly different to other parts of the world where previous SPSs have been held. In Sub-Saharan Africa, many farmers lack access to fertiliser markets, and many agricultural soils are still in receipt of sub-optimal levels of new phosphorus, leaving 80% soils phosphorus deficient. Phosphorus is thus key to food security in future Africa and if used appropriately, can potentially increase crop yields and farmer livelihoods to make a significant difference. Of course, this must not be at the expense of Africa's lakes, rivers, and ocean water quality and there is a great opportunity to learn from progress, and errors, made in a wider world context when considering balancing food security and ecosystem health. Looking ahead, we hope that SPS8 will contribute to foster long standing collaborations and partnerships across the continent, including African Governments, NGOs, industries and academia."*

"SPS8 also progressed approaches to tackling the wider global phosphorus challenge. Participants agreed on the collective goals of soil security, nutrient productivity, access to fertilisers, food security and clean water. SPS8 debated and proposed different pathways to achieve these goals, including: responsibility sharing between different actors in the phosphorus value chain to ensure fertiliser access and clean waters, the role of financial incentives, harnessing phosphorus in mine waste piles, the importance of bio-based fertilisers. In an era of multiple crises, ranging from climate change to increasing geopolitical tensions and unprecedented biodiversity loss, SPS participants also identified ways to scale up action on phosphorus sustainability by linking to existing policy and industry priority agendas. Examples include: demonstrating how investing in phosphorus recovery from wastewater and manure can help businesses meet their GHG emission reduction targets, generate heat, fertiliser and electricity, divert nutrients from water and waste from landfill, and generate revenue. SPS8 was a great reminder of the many synergies between phosphorus and other sustainability goals."

Site visits

SPS8 offered three possible site visits:

Field Visit to the Cocoa Research Institute of Ghana (CRIG)

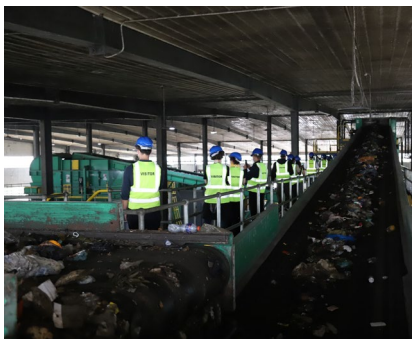


The Cocoa Research Institute of Ghana (CRIG) at Tafo is a premier centre for research on cocoa and related crops. The visit began with a presentation by the Deputy Director and his team, outlining the centre's history, mandates, and ongoing research in sustainable cocoa production and soil fertility management. Participants then took a guided tour of the institute's cocoa farm, where sustainable farming and nutrient management practices were demonstrated.

The tour continued to the product development laboratory, where staff showcased various value-added products such as cocoa-based lotions, soaps, and creams. This was followed by visits to the cocoa fermentation and drying beds, the chocolate production laboratory, and finally, the store where CRIG's research-based products are displayed. The visit provided participants with an in-depth understanding of how scientific research supports Ghana's cocoa value chain, emphasising efficient phosphorus use, nutrient recycling, and sustainable agricultural practices.

Summary by Richard Kwasi Padi, CEH West Africa, Ghana

Accra Compost and Recycling Plant (ACaRP)


The Accra Compost and Recycling Plant (ACARP) is one 36 Zoomlion Ghana Limited operations and is a leading facility in Ghana dedicated to sustainable waste management and organic compost production. Joseph Siaw Agyepong, Executive Chairman of the Jospong Group of Companies and founder of Zoomlion Ghana Limited, presented ACARP's mission, operational processes, and contributions to environmental sustainability and circular economy development. The site visit saw new facilities ready for commissioning, the waste receiving bay where incoming waste is sorted, the magnetic conveyor belt for metal separation, automated and manual sorting and the composting chambers where biodegradable materials are processed. The site produces valuable outputs including organic compost and liquid organic fertilisers. The visit also included the analytical laboratory, where all output products undergo rigorous testing for chemical composition, safety, and usability before distribution. The ACARP enabled understanding of Ghana's innovative approaches to waste management, nutrient recovery, and environmental protection through large-scale composting and recycling operations.

Summary by Innocent Muhwezi, ISSER University of Ghana.

Volta River Authority (VRA)

SPS8 participants visited the Volta River Authority (VRA) offices and Lake Volta to explore issues including nutrient recovery and recycling, aquatic plant management, water quality, and greenhouse gas emissions. Lake Volta is the world's largest man-made water body and lies within a transboundary river basin. The VRA is Ghana's leading power utility, with over 60 years of experience dedicated to providing reliable energy and the sustainable management of the Volta River system. The visit began with an overview by VRA officials, outlining the authority's operational footprint, including its hydro, thermal, and solar generation assets, and its central role in the nation's progress. The tour focused on VRA's innovative control and management strategies. Officials demonstrated the use of heavy marine equipment (photo), such as a floater-mounted excavator, which harvests approximately 300 tons of aquatic weeds daily. The visitors were also briefed on the composting initiative, where the harvested weeds are transformed into compost. In collaborative research with the Volta Invasive Species Transformation Alliance, biochar production from the aquatic weeds is being investigated, as a sustainable fuel source. The visit provided participants with a clear understanding of how the VRA is tackling a significant environmental challenge through integrated management, technological innovation, and collaborative partnerships, turning a problem into an opportunity for sustainable resource management and community benefit.

Summary prepared by Issy Lewis and Bryan Spears, UK CEH, and Louis Tetteh, VRA Lead Field Visit Coordinator. Photo: Bryan Spears.

ESPP stay informed

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