

ReLISA Joint Technical Meeting between the ReLISA Consortium and the Government of South Africa (GoSA)

9 - 10 February 2026, CSIR International Convention Centre, Pretoria



Summary of Day I – 9 February

1. High-level Opening & Welcome Remarks

Dr. Brian Mantlana (Impact Area Manager, Holistic Climate Change, CSIR) opened the ReLISA Joint Technical Meeting by welcoming participants and expressing appreciation for the strong turnout, noting that it is valuable for the ReLISA consortium and stakeholders to meet in person after extensive virtual engagement. He highlighted that the ReLISA programme brings together the core pillars of people, environment, and climate, all underpinned by science. Together, these pillars form the foundation of the project's theory of change.

Dr. Mantlana emphasised that a central focus of the workshop would be Measurement, Reporting and Verification (MRV), which CSIR would cover in more detail on the second day, describing it as a critical and highly visible component of ReLISA. He briefly traced the origins of MRV to global climate processes as a trust-building mechanism designed to ensure transparency and accountability in emissions reductions and climate action. In the ReLISA context, MRV is key to demonstrating what impacts are being achieved, how they are achieved, for whom, at what cost, and with what investment. He underscored that the purpose of the upcoming discussions is to ensure that the programme's impact can be credibly quantified, verified, and communicated, enabling ReLISA to clearly demonstrate its value and results.

Images: CSIR

Mr. Sydney Nkosi (Deputy Director General: Biodiversity, at the Department of Forestry, Fisheries and the Environment, DFFE), speaking on behalf of the

Acting DDG for Biodiversity and Conservation, delivered opening remarks on behalf of the Government of South Africa. He described the meeting as a significant milestone in the implementation of the ReLISA programme, reflecting strong partnerships and a shared commitment to restoring landscapes at scale. He emphasised that ReLISA contributes directly to



national priorities including biodiversity conservation, climate change mitigation and adaptation, poverty alleviation, job creation, and the empowerment of youth and women. **Mr. Nkosi** noted the successful launch of ReLISA at the G20 Ministerial meeting in Cape Town (October 2025) and the signing of the MoU between the Government of South Africa and UNEP, which together signal strong political support and partnership for the initiative.

Providing national context, he highlighted that South Africa is a megadiverse country facing significant environmental pressures, with 30% of terrestrial ecosystems classified as threatened and increasing risks of ecosystem collapse, alongside challenges such as water scarcity, drought, land degradation, and biodiversity loss. These challenges reinforce the need for landscape-level restoration interventions, particularly in strategic water source areas (SWSAs) and biodiversity hotspots. He further noted that ReLISA is well aligned with key national frameworks and commitments, including the National Biodiversity Strategy and Action Plan (NBSAP), Land Degradation Neutrality (LDN) targets, the Global Biodiversity Framework (GBF), and South Africa's NDCs, as well as policies such as the White Paper on Biodiversity and Ecosystem-based Adaptation (EbA) strategies. The project's focus on the grassland, savanna, and thicket biomes directly supports these national priorities.

On behalf of the Government of South Africa, **Mr. Nkosi** expressed appreciation to the Government of Germany (BMUKN/IKI), UNEP, and ReLISA consortium partners for their collaboration and support. He reaffirmed the Government's strong commitment to supporting ReLISA implementation and encouraged productive, solution-oriented discussions over the course of the technical meetings to strengthen alignment, stakeholder engagement, and implementation modalities.

2. ReLISA Project Presentation

Dr. Salman Hussain (ReLISA project lead, and Head: Economics of Nature Unit, Ecosystems Division, UNEP) set the scene by reflecting on the origins, current status, and strategic direction of ReLISA, now just over one year into implementation. He recalled the strong political momentum behind the initiative, including its high-level launch at the G20 Ministerial meeting in Cape Town, which signalled clear government and international partnership. While the project has built momentum since its inception, he emphasised that it is now entering a phase where strategic choices and implementation challenges must be addressed head-on.

Dr. Hussain revisited the original problem statement underpinning ReLISA, which remains highly relevant: 1) there is still limited awareness of how economic systems depend on ecosystems; 2) viable restoration business opportunities remain largely off the radar; and 3) coordination failures persist between government, communities, civil society and the private sector. ReLISA's response to this is to combine biophysical and economic valuation, stakeholder engagement, on-the-ground restorative action and business model development to unlock restoration investment, while ensuring that interventions deliver both ecosystem and livelihood benefits.



Dr. Hussain outlined how the consortium is structured to deliver this, with modelling and MRV led by CSIR; Natural Capital Accounting, coordination and communications led by UNEP; private-sector engagement and investment readiness supported by Unique and C4 EcoSolutions (C4ES); and stakeholder engagement and on-the-ground implementation jointly led by UNESCO, the Endangered Wildlife Trust

(EWT) and UNDP. Across all components, he stressed that credible MRV systems and Natural Capital Accounting are essential, both to demonstrate impact and to underpin investment cases.

A key evolution over the past year has been the growing centrality of finance mechanisms, particularly carbon markets, alongside biodiversity credits, water funds and other ecosystem service payment mechanisms. While biodiversity and hydrological benefits remain core, he noted that carbon finance is likely to act as a primary entry point for scaling restoration investment. Drawing on lessons from the first year, **Dr. Hussain** presented a set of strategic propositions for discussion. In essence: i) the project must prioritize scale of impact over geographic spread; ii) the target of 100,000 hectares can only be achieved through leveraged co-financing, with ReLISA acting as a catalytic platform rather than a sole funder; iii) restoration should prioritize functional ecosystem recovery and livelihood benefits, rather than strict historical ecological purity; and iv) implementation should build on existing initiatives, investments, and local capacity, rather than starting from zero. He also emphasised the importance of private sector “**anchor tenants**”, i.e. demand from local landowners and/or users and other stakeholders for carbon, biodiversity, water (or supply-chains) that can drive large-scale investment.

Dr. Hussain then highlighted emerging opportunities across the three target biomes. In thicket systems, carbon markets present strong potential but are currently constrained by market access and enabling conditions. In grasslands, opportunities lie in improved fire regimes, grazing management and soil carbon. In savannas, interventions around invasive clearing, bush encroachment and biodiversity credits are promising. He also flagged biochar as an emerging cross-cutting opportunity to convert invasive biomass into value streams, subject to ongoing feasibility work.

In closing, **Dr. Hussain** reflected on the challenges ahead. These include a temporal disconnect between the fast-moving private sector and slower public processes; a larger-than-anticipated research requirement to de-risk investments and provide evidence for MRV and finance mechanisms; and the complexity of multi-level governance, given the number of municipalities and institutions involved. Despite these challenges, he emphasised that ReLISA remains an ambitious and highly innovative flagship restoration programme, with strong foundations and significant potential to deliver impact at scale. He encouraged participants to use the meetings to identify synergies, guide strategic choices and strengthen alignment as the project moves into its next phase of implementation. (PPT available [here](#)).

2.1 Discussion and Q&A session



The discussion then focused on implementation balance, scaling pathways, governance alignment and socio-economic outcomes, reflecting the strong interest from government and partners in how ReLISA will translate into impact on the ground. A question from **UNDP (Ms. Deshni Pillay)** underscored the importance of balancing research and implementation, particularly in light of requirements under the current IKI funding call. In response, **Dr. Hussain** clarified that only a relatively small proportion of the total €15 million

budget is directly managed by UNEP for implementation activities (approximately €1 million), with a significant share of this supporting policy-relevant research and evidence generation. He emphasised that research within ReLISA is not academic for its own sake, but is directly in service of MRV systems, investment readiness, and policy relevance, particularly through the work of CSIR and partners.

From **DPME (Mr. Phendukani Hlatshwayo)**, a key point raised was the potential role of extension services, particularly given their reach in former homeland areas where land degradation is most pronounced. The suggestion was that involving these extension officers in ReLISA pilot sites could enable knowledge transfer and scaling of restoration practices into rural communities, effectively creating “boots on the ground” to translate research into implementation at scale. This was recognized as a valuable pathway for scaling impact beyond pilot sites.



DFFE (Mr. Barney Kgope) provided two technical reflections. First, he noted the need to consider both grazing and browsing dynamics, particularly in savanna systems, as these strongly influence vegetation structure and restoration outcomes. Second, he welcomed the concept of private sector “anchor tenants”, suggesting that ReLISA could build on emerging standards and platforms for carbon and biodiversity markets and align with recent IPBES Nexus assessment

findings and evolving CBD guidelines on ecosystem-based approaches. He highlighted the opportunity for ReLISA to inform national and global implementation frameworks going forward.

From **DFFE (Mr. Sydney Nkosi)**, the discussion shifted to the broader policy and political interface. He raised the importance of understanding how ReLISA contributes to CBD targets such as 30x30 and other effective area-based conservation measures, and more broadly how the programme contributes to national development priorities including job creation, poverty reduction and inequality. He stressed the need for clear, evidence-based messaging and metrics that can demonstrate who benefits, where, and how, particularly in the context of South Africa's land ownership dynamics and socio-economic priorities. He noted that the programme must be able to respond convincingly at a political level to questions about its contribution to national development outcomes.

In response, **Dr. Hussain** highlighted that the project is already engaging a broad set of national departments and agencies through the PSC meeting scheduled to take place later that very same day, including DPME, DFFE, DALRRD, COGTA and others, to ensure high-level alignment and ownership. He noted that ReLISA's monitoring framework will include metrics on job creation, gender, and benefits to indigenous peoples and local communities, in line with IKI requirements, even though the project's formal targets are framed in terms of hectares restored. He emphasised that linking restoration outcomes to socio-economic benefits will be critical for sustaining political buy-in and scaling the initiative.

Overall, the discussion underscored the importance of ensuring that ReLISA delivers credible scientific evidence, scalable implementation pathways, and tangible socio-economic benefits, while aligning closely with national policy priorities and global biodiversity and climate commitments.

3. Stakeholder Engagement Panel: Key elements of ReLISA Implementation

Dr. Hussain introduced the panel segment to make the consortium's roles 'tangible' for stakeholders, outlining the core building blocks of implementation – from MRV and investment logic to on-the-ground delivery, community mechanisms, and capacity building.

CSIR - MRV, Restoration Strategies and Evidence for Impact

Dr. Shingirirai Mutanga (Research Group Lead, Climate Services, CSIR) explained that CSIR's core role in ReLISA is to strengthen and help operationalise South Africa's MRV system for landscape restoration, not reinventing the wheel, but identifying gaps and improving what exists. Within ReLISA, MRV is framed broadly: i) quantifying impacts (soil carbon, above-ground biomass, carbon baselines across the three biomes; and co-benefits including water, biodiversity and socio-economic outcomes);



ii) enabling adaptive management by tracking ecological and social outcomes over time; and iii) producing the type of robust evidence required for international climate commitments and reporting and for private sector confidence. **Dr. Mutanga** emphasised that transparency and accountability depend on scientific rigour, and that MRV must align with key standards (e.g., IPCC guidance and carbon market verification requirements), while still being sufficiently context-specific for South Africa's landscapes. He noted practical progress already underway, including fenceline contrast work and Earth Observation efforts (e.g., hyperspectral drone applications) to generate empirical evidence for restoration outcomes.

Unique and C4 EcoSolutions (C4ES) - Private Sector Investment and Research Needs

C4ES and Unique made the case that IKI funding is designed to be catalytic – public money can pilot, prove, and de-risk, but scaling depends on private finance. As such, **Dr. Till Pistorius (Head, Climate Department, Unique)** stressed that the most mature mechanism with real “pull” remains the carbon market, even if the ultimate national priorities are broader (e.g. water security, jobs, invasives management, biodiversity). He described a changing global landscape in which nature-based carbon is increasingly relevant across voluntary and compliance-adjacent spaces (e.g., CORSIA/Article 6 pathways), and argued that ReLISA must move fast enough to seize market windows and tap into opportunities as South Africa competes with other countries on still limited private climate finance. He also highlighted the project's intention not to rely on a single mechanism, but to develop additional pathways where viable – biochar being a key example of an innovation that could convert invasive biomass into revenue and restoration benefits if the business model and evidence stack are strong.



Mr. Ruan van Mazijk (Technical Coordinator, Climate Mitigation; C4ES ReLISA Project Lead) then unpacked what “research needs” means in investor terms: it is the proof-of-concept evidence that standards, validators and financiers demand before capital flows. He explained that the key gaps are often unglamorous but decisive e.g., permanence, performance, variability and management rules that determine investibility. Overall, the message was consistent: carbon may “pay the bills,” but investors and standards increasingly reward credible co-benefits, provided they are measured and defensible.

EWT - Protected Area (PA) Expansion

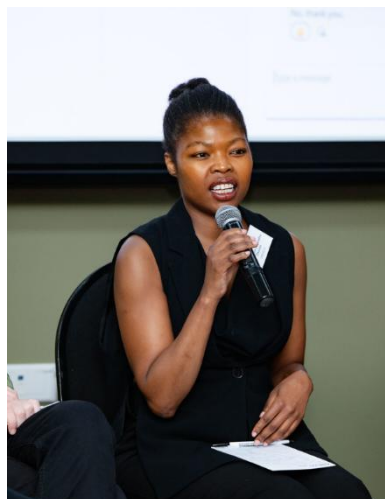
Mr. Christopher Hooton (EWT Project Manager for ReLISA)

described EWT's role as a lead on-the-ground implementer, focused particularly on protected area (PA) expansion using the biodiversity stewardship model. This involves working with landowners and communities to declare and operationalise stewardship sites, supported by practical land management (improved grazing and land-use management, plus invasive alien plant control). **Mr. Hooton** linked this to the proposed Northern Drakensberg Biosphere Reserve pathway, positioning PA expansion and stewardship as a mechanism that can simultaneously secure biodiversity and water source areas while creating enabling conditions for future finance tools (carbon and water fund models) to help sustain conservation and restoration over time. He finally emphasised that water security risks are real even after good rainfall years – poor land management and invasive spread in headwater systems threatens downstream supply and resilience.



UNESCO - Community-led Water Funds

Dr. Prudentia Zikalala (UNESCO co-project coordinator for ReLISA) positioned Biosphere Reserves as practical “living laboratories” where people and nature are managed together through multi-level governance (communities, municipalities, provincial and national stakeholders). She outlined ReLISA-linked implementation across Magaliesberg, Waterberg, and Kruger to Canyons (K2C) Biosphere Reserves, with Northern Drakensberg also explored as a future Biosphere Reserve landscape. The core financing mechanism presented was the Water Fund model, where downstream users (the “customers”) help finance upstream restoration and



management actions that improve water yield and reliability – often through alien invasive plant (AIPs) clearing and landscape management that increases water infiltration and soil moisture. **Dr. Zikalala** referenced the Western Cape Water Fund as proof of concept and noted similar structuring is being advanced in K2C. Waterberg was framed as an especially relevant pilot given its strategic groundwater role, and Northern Drakensberg was linked to the broader uThukela Water Fund logic and major downstream buyers such as Rand Water. She also stressed that while water is often the primary entry point, the model increasingly needs to integrate and quantify biodiversity and carbon co-benefits, requiring close linkage with CSIR, C4ES and Unique for measurement and valuation.

UNDP - Stakeholder Dialogues, Capacity Development and Practical Implementation

Mr. Lehman Lindeque (Technical Advisor, UNDP) emphasised UNDP’s role in grounding ReLISA in implementation realities, learning from what has (and has not) worked in South Africa’s restoration space over the last decades rather than “starting from scratch.” **Mr. Lindeque** framed UNDP’s focus areas around four elements: i) coordinating with national agencies and facilitating cross-sector dialogue to unlock resources and identify what makes restoration succeed or fail in practice; ii) supporting a national investment plan for scalable restoration that expands nature-based value streams and improves socio-economic outcomes for vulnerable communities; iii) directing the bulk of its ReLISA resources into on-the-ground implementation (described as the major share of UNDP funding), with demonstration sites intended to generate learning and momentum across the three biomes; and iv) supporting environmental education and outreach, with a strong emphasis on job creation and real community benefit, paired with the need to measure and evidence impacts credibly.



4. Reflections and Discussion: (a) Relevance of ReLISA to PoWs; and (b) Alignment / Synergies to be Established

In kickstarting the discussion that followed, **Dr. Hussain** clarified that although ReLISA is funded with public money, it is not delivering work for private actors. Instead, it fills key public-good evidence and coordination gaps (e.g. baseline evidence, methodologies, peer-reviewed knowledge) that enable the broader restoration sector to attract investment and scale. He gave thicket as a concrete example: research outputs funded through ReLISA would benefit the entire restoration community working in the biome, not only ReLISA focus areas.

Mr. Barney Kgope (DFFE) emphasised the need to better align science and policy in an “era of extremes” and urged ReLISA to adopt a strong nexus approach, integrating carbon, water and biodiversity, rather than focusing narrowly on carbon. He also flagged biochar as a particularly promising opportunity because it links value chains to soil restoration and stable carbon, and suggested ReLISA should explore how climate variability (e.g., El Niño/La Niña cycles) affects carbon permanence and expected returns – questions that matter both for investors and for policy credibility. He also noted interest in what long-term datasets (e.g., thicket plots and planting density evidence) might reveal. **Dr. Pistorius** agreed on the broader benefits and positioned biochar and similar nature-based climate solutions as potential scalable finance pathways, provided there is solid evidence and bankable business models as well as market eligibility. **Dr. Mutanga** reinforced the importance of linking MRV, science and policy under climate variability, while **Mr. van Mazijk** agreed with the framing that using public funds to close evidence gaps is appropriate because the gaps are largely biome- and sector-wide, not project-specific. He added that long-term datasets like the Thicket-Wide Plots could be especially valuable for exploring how restoration outcomes vary under different climatic conditions over

time – an angle which becomes important as investors react to year-to-year variability and uncertainty. **Dr. Hussain** reiterated that ReLISA is fundamentally a nexus project, but must also respond to where real finance flows exist, meaning carbon often remains the most viable entry point. At the same time, he stressed the need to develop additional mechanisms (e.g. Water Funds) and ensure the project delivers scale and impact, given it is still early in the 5-year timeline.

Dr. Christo Marais (Waterberg BR) then proposed thinking in terms of “anchor products”, particularly water and carbon, and asked whether combined water-carbon value propositions could be structured for investors (e.g. mines). **Dr. Pistorius** responded that such blended models are promising and can command premiums, but only once robust evidence and business cases are in place. **Dr. Michelle Hiestermann (GIZ)** asked whether private sector actors/champions have already been identified, and how ReLISA will engage them.



The consortium responded that there is substantial private sector interest globally, and that the consortium is already aware of potential interlocutors but stressed that engaging investors too early can be counterproductive. In **Dr. Pistorius'** view, projects effectively get “one serious shot” with an investor: ReLISA will only move into active pitching once it has bankable propositions backed by clear answers on questions investors will ask: examples include carbon efficiency, certification pathways, risks and standards, likely after one to two years of further evidence generation. The message was that the project is in relationship-building phase and is intentionally delaying active investor engagement until the technical foundation and evidence base are in place.

Dr. Hussain then broadened the conversation to reassure the room that consortium partners are already embedded in, and working through, existing stakeholder structures rather than starting from scratch. **Mr. Hooton** explained that EWT participates in the Drakensberg Collaborative (monthly) and is already engaging local communities (including the AmaZizi), and partners such as Wild Trust and TNC, with learning flowing both ways given other initiatives are further advanced. He listed a wide stakeholder network spanning private landowners, communities, universities, traditional authorities, conservation agencies and municipalities, with upcoming engagement planned with SANParks and other actors. **Dr. Zikalala** echoed that UNESCO's biosphere work similarly requires engagement “from community to government,” noting the mix of private land (e.g., parts of Magaliesberg BR) and communal land (e.g., Waterberg BR) and emphasising the importance of full stakeholder chains to enable adoption from local practice to national-level uptake.

Mr. Lindeque described UNDP's intention to begin with a desktop survey and stakeholder analysis to map what already exists, understand what has worked or not worked, and identify practical entry points (including issues like post-declaration support for stewardship/protected environments). He noted examples such as conservancy platforms in the Eastern Cape thicket landscape and positioned this mapping as essential to avoid duplication and target gaps.



A further question from **Ash Seetal (CSIR)** asked how Water Fund approaches link to existing policy/legislative instruments (e.g., water resource management charges under the National Water Act), and whether biosphere work is also leveraging linkages to World Heritage site governance frameworks. **Dr. Zikalala** acknowledged that Water Funds are currently strongest on streamflow/yield quantification, with

limited progress in quantifying biodiversity/carbon or broader benefits – reinforcing why additional monitoring and evaluation support (including CSIR) is needed. **Mr. Hooton** noted active discussions with protected area managers and highlighted practical funding constraints in heritage/protected landscapes, with increasing collaboration emerging (e.g., with Wild Trust) to align restoration and alien clearing efforts inside and outside formal protected areas. **Dr. Marais** added that the Greater Cape Town Water Fund model benefits from strong legal water rights frameworks supporting sustainability and suggested similar approaches could be explored via water-sector entities and partnerships (including bonds), potentially relevant for savanna landscapes.

Prof. Sue Walker (ARC) then raised a concern that agriculture appeared sidelined, noting many target landscapes are productive and that ARC holds relevant capabilities (biochar, soils/disease mobile labs, remote sensing/GIS, agroecology and sustainable farming systems). She urged stronger integration with agricultural production realities. **Dr. Hussain** and the panel welcomed this and **Mr. Lindeque** emphasised that this link is indeed critical and that ReLISA's landscape approach includes cultivated land, erosion and sustainable food systems, and pointed out that existing legislation is not the issue so much as implementation and coordination. **Mr. Hooton** reinforced that Northern Drakensberg work is predominantly within agricultural landscapes, engaging farmers on grazing, cropping and erosion while also targeting biodiversity hotspots.

The discussion then broadened into institutional reflections as **Mr. Zhakele Mdlalose (DPME)** emphasised that ReLISA must be judged by defined outcomes and impacts, and that achieving these requires deliberate partnership coordination across government programmes, SOEs,



research bodies and external partners – rather than parallel initiatives. He highlighted the need to identify “convergence points” in priority landscapes, coordinate tools and resources to scale interventions beyond pilots, and ensure a legacy after the project ends. He also pushed for thinking beyond national boundaries, noting environmental impacts are transboundary and South Africa has a leadership role regionally, while acknowledging this raises resourcing questions and strengthens the case for mechanisms like carbon finance to scale action. **Dr. Hussain** responded by underscoring UNEP’s role as the coordination backbone – nationally and with a wider regional/global reach – drawing on

precedents such as South Africa’s leadership in Natural Capital Accounting and the opportunity for ReLISA learning to inform broader processes (including G20 and other global initiatives). He reiterated that scaling would depend on building on existing stakeholder networks and government programmes (including “Working for” approaches and blended finance) and encouraged stakeholders to proactively share initiatives and reports rather than waiting to be approached.

Ms. Dorah Kiki (SALGA) then noted strong alignment between ReLISA and SALGA’s ongoing work, including an ecosystem-based disaster risk reduction programme with SANBI, urban heat action planning with the World Bank, and municipal stewardship/tree-planting initiatives. She highlighted potential for collaboration and knowledge exchange (including learning from other countries’ experience). **Dr. Hussain** again, encouraged follow-up via ReLISA contact channels (ReLISA.org) and reiterated that the consortium brings significant international experience that can be applied to South Africa’s context.

Mr. Barney Kgope (Lead, Climate Change & Biodiversity Programmes - Biological Invasions & Biosafety, DFFE) then gave a snapshot of recent international and national policy/science developments to show why ReLISA is highly timely and well-aligned with South Africa’s priorities. He noted that the world is now past the halfway mark of the UN Decade on Ecosystem Restoration 2021-2030, and that countries are actively implementing the KM-GBF with ReLISA aligning especially strongly to **Target 2** (restoration), while also contributing to other targets such as invasive species (**Target 6**) and resilience/maintaining ecosystem function (**Target 8**).

On the national policy side, he highlighted that key frameworks have advanced since ReLISA was conceptualised, including the 2023 White Paper on the Conservation and Sustainable Use of South Africa’s Biodiversity, the revised NDC submitted in October 2025, and the ongoing finalisation of the NBSAP and NAP, all of which elevate restoration as a central agenda item. He summarised the White Paper’s overarching goals and emphasised that restoration is explicitly embedded, particularly under the biodiversity conservation goal. **Mr. Kgope** then turned to the science base: DFFE and partners have mapped restoration opportunity areas (noting estimates

are conservative), spanning the same priority biomes ReLISA targets – grasslands, savannas and subtropical thicket – and translated expected benefits, including carbon but also critical adaptation benefits. He presented newer climate-biodiversity modelling work that projects impact across time horizons under contrasting emissions futures, using a vulnerability index to show which biomes are most at risk. The message was that ReLISA’s biome focus closely matches where vulnerability and intervention needs are highest.

Mr. Kgope concluded by highlighting the shift toward climate-smart protected and conservation areas (e.g., connectivity/corridors rather than isolated “islands”) and argued this logic must extend into climate-smart restoration – restoring not just for today, but for conditions decades ahead, using adaptive management and realistic expectations about resilience. He linked this to emerging global thinking on transformative change (IPBES), emphasising whole-of-society / whole-of-government approaches, inclusion, and moving beyond business-as-usual, while building on the extensive body of work already completed nationally. (PPT available [here](#)).

4.1 Discussion / Q&A

Dr. Hussain welcomed the framing and added a technical reflection: “climate-smart” outcomes are likely to be non-linear – improving resilience does not automatically translate into proportional gains in water, biodiversity and carbon. He suggested this is exactly where CSIR’s modelling (including future climate scenarios) becomes critical to understand trade-offs and realistic performance in different parts of the country.

Ms. Mpume Ntlokwana (Department of Agriculture) welcomed the ReLISA project and stressed strong alignment with agriculture’s mandate to protect landscapes. She referenced relevant legislation (including the Preservation and Development of Agricultural Land Act, PDALA) and ongoing/planned programmes that could connect to ReLISA, including communal rangeland restoration, biochar work with ARC, agroecology initiatives, and interventions on bush encroachment and invasives. She emphasised the need to break out of siloed implementation, learn from past multi-stakeholder restoration projects, and focus on collective impact on the ground. A representative from DFFE reinforced this, arguing that what makes landscape initiatives succeed is working through embedded landscape “champions” – people and organisations already rooted in local context – rather than “parachuting” into areas without those relationships.

Dr. Hussain agreed and noted that the long list of sites was deliberately chosen so that at least one partner already has an established foothold in each landscape.

Dr. Meseret Teklemariam Zemedkun (Head of UNEP in Southern Africa) closed the segment by emphasising that the purpose of the meeting was to hear from government and stakeholders about priorities and contributions, and to ensure ReLISA builds on existing work rather than duplicating it. She highlighted ReLISA’s alignment with national priorities (NDC, nature-based solutions linked to water/energy/food security) and global commitments (KM-GBF Target 2), and noted that within the UN



Country Team’s “Delivering-As-One” approach, ReLISA could serve as a flagship. She stressed the project’s catalytic intent – leveraging private sector finance by reducing risk through evidence – and the importance of synergy, complementarity and regional leadership, while inviting stakeholders to continue sharing inputs and opportunities for collaboration.

5. Private Sector Financing & Investment—Synergies, GEF and GCF

Opportunities and Barriers, Institutional Arrangements and Partnership Opportunities

Dr. Pistorius (Unique) set the scene: private capital is essential for scale, but in reality it takes time, confidence, and evidence before investors sign. Investor appetite and markets can shift quickly, so ReLISA wants additional financing pathways – especially the Green Climate Fund (GCF) because of its strong adaptation orientation. The pitch is: if the right SA institutions (like DBSA) are interested, a fast Concept Note could be developed, and GCF could help scale in contexts where a purely private-sector “mitigation story” is weaker or where tenure/communal land complexities make private investment slower.



Ms. Mookho Mathaba (Climate Finance Specialist, Development Bank of Southern Africa, DBSA) then explained DBSA’s role and why it matters for ReLISA. DBSA is owned by the government of South Africa, but operates across sub-Saharan Africa, with a mandate to support development through infrastructure (water, energy, transport, Information and Communication Technology (ICT) and social infrastructure). In practice, a large part of DBSA’s portfolio is public sector, especially municipalities, partly because many municipalities are not bankable and struggle

with the capacity to prepare and implement projects. DBSA therefore supports the full “value chain”: helping plan and shape infrastructure pipelines, funding project preparation (feasibility studies, technical work, environmental and social work, consultations), supporting implementation through in-house expertise, and staying engaged to ensure assets perform and are maintained. Her point was that lack of ‘incubation support’ is exactly where climate and nature projects often fail – not because the idea is wrong, but because the project never becomes properly structured and investable.

Ms. Mathaba described how DBSA built its climate finance capability from early national support (the Green Fund capitalised through DFFE), which helped create a pipeline and track record and ultimately enabled DBSA to become accredited to both the Global Environment Facility (GEF) and the Green Climate Fund (GCF). That accreditation is important because it allows DBSA to bring in concessional finance and grants that can absorb early risk, generate evidence, and pilot approaches, especially relevant in nature and adaptation where uncertainty is higher and financiers are wary. The underlying logic was consistent throughout: where there is limited information, risk is higher. Concessional funding is therefore used to fill key evidence gaps, strengthen project design, and position projects to attract larger-scale investment once they are sufficiently developed.

She highlighted instruments DBSA is using to make nature investable in practice, not just in theory. Outcome-based bonds were presented as a way to mobilise institutional investors for conservation and resilience outcomes by linking returns to performance – citing work like the Water Bond tied to catchment rehabilitation in the Western Cape, and a Heat Resilience Bond under development with CSIR and IISD aimed at cooling interventions in informal settlements and cities. She framed these as useful partly because they force collaboration across actors who don't usually work together, and because they help create demonstrative proof that can later be scaled. Alongside this, **Ms. Mathaba** described guarantee structures where concessional funders can take first-loss positions, DBSA can take second-loss, and commercial banks are then willing to lend into markets they would normally avoid.

On the opportunity side, she described DBSA's programmatic approach to GCF: rather than returning repeatedly with single projects, DBSA develops larger facilities that can support multiple projects and then uses GEF for piloting and GCF for scaling. She also mentioned a broader GEF pipeline across themes like SME energy efficiency guarantees, capacity building around fire management, support to smallholder farmers for climate-smart practices, biodiversity offset-style revolving funds, and emerging interest in carbon-linked opportunities such as the Miombo biome.

The overall intersection with ReLISA was that DBSA can help turn landscape restoration ambitions into a structured pipeline by financing the “homework” phase, absorbing early uncertainty with concessional funds, and creating bankable, de-risked deals that municipalities and private lenders can actually participate in. In a single programme logic, the UN agencies and technical partners help define outcomes, evidence, safeguards and MRV; DBSA structures and channels finance through GEF/GCF and blended instruments; and government and landscape institutions provide enabling conditions and implementation capacity so ReLISA can move beyond pilots and into scaled, financeable restoration across its landscapes. (PPT available [here](#)).

5.1 Q&A and Discussion

Dr. Hussain challenged how DBSA can borrow from markets (with pricing influenced by South Africa's sovereign rating), while also lending into higher-risk spaces like SMEs and municipalities and sometimes taking a subordinated position to attract commercial lenders. **Ms. Mathaba's** answer was that this is precisely why blended finance matters: grants and concessional funding from GEF/GCF are catalytic and accept a higher risk appetite, allowing DBSA to blend cheaper capital with its own more expensive market-raised capital. That blended structure lowers overall pricing and improves terms (including longer tenors), gives DBSA headroom to take risk that commercial banks won't, and makes it easier to bring commercial banks in by letting them sit senior, be repaid earlier, or be protected through guarantees.

Ms. Mathaba then continued to clarify how projects get into their pipeline and what they look for. She explained that there isn't one fixed “call for proposals” or annual application window, but projects are typically co-developed with partners, especially in the nature/restoration space where projects are complex and need design support. The selection criteria depend on the

funding source: for DBSA's own balance sheet, projects must be bankable and repayable, while for GEF/GCF-funded windows the lens shifts to high environmental and social impact, additionality, and catalytic value – i.e. projects that wouldn't move without concessional support.

On communal and land-reform areas, she acknowledged that DBSA doesn't yet have a ready-made project pipeline in those landscapes; such projects would need to be developed collaboratively with stakeholders, defining the outcomes and interventions together. On informal settlements, the response was that investments are guided by national and regional adaptation planning frameworks, so interventions target already-identified resilience priorities rather than encouraging uncontrolled expansion.

There was also interest from DPME in DBSA's Western Cape water bond work; **Ms. Mathaba** confirmed that it is still at an early stage with NGO partners, and that there is room for government to engage and join as partners as the stakeholder base is strengthened.

5.2 Land Bank Intervention

Mr. Litha Kutta from the Land Bank positioned the bank as a long-standing Development Finance Institution (DFI) focused specifically on land and agriculture, with a strong mandate to support farmers, drive transformation, and invest in communal and land-reform areas where private finance is limited. **Mr. Kutta** emphasised that climate change and land degradation are already visible in their portfolio – declining yields, flood impacts, and deteriorating land quality – and that the bank cannot shift away from agriculture even as risks increase.



Like DBSA, Land Bank uses blended finance, combining market-raised capital with public grant components (often 40–60%) to support farmers who lack collateral. A major challenge they highlighted is the absence of patient capital to finance the early years of land restoration or regenerative agriculture, the “J-curve” period before productivity improves, making it hard to invest in land rehabilitation even when it is clearly needed.

Their core message was that restoration and climate-smart land management are not optional but essential for their business model: they need healthier land in order to safely continue lending. **Dr. Kutta** expressed strong interest in partnering with ReLISA, DBSA and others to develop financing instruments and technical solutions that restore degraded land, improve productivity and protect food security. He also emphasised their role in connecting farmers to markets, input suppliers and knowledge, and their interest in bringing scientific and restoration knowledge down to community level.

6. Wrap-up of Day 1

Dr. Hussain closed the day by noting that it had been highly productive, with valuable inputs on partnerships, finance pathways, and how ReLISA can align with existing government and institutional programmes. He highlighted that a Project Steering Committee meeting would take place immediately after and that outcomes from that would be shared back with participants. Looking ahead, he outlined that the next morning would focus on CSIR's MRV work, which underpins the project's data and metrics, and on research partnerships, before the consortium moves into field visits at potential ReLISA sites. He also emphasised the importance of knowledge management, ensuring that modelling outputs, biome-level restoration strategies, and analysis generated by the project are accessible and useful to partners like DBSA and Land Bank.

The final exchanges reinforced two key themes: 1) the need to translate high-level knowledge and data into practical tools for farmers and local practitioners; and 2) the importance of building strong, visible partnerships on the ground so that restoration, climate resilience and financing solutions are understood and adopted by communities. **Dr. Hussain** closed by thanking participants and encouraging continued engagement as the project moves into implementation and scaling.

Summary of Day II – 10 February

1. Opening & Recap

Dr. Salman Hussain (UNEP) opened the second day by welcoming participants back and briefly recapping the Day I discussions. He reminded the group that ReLISA is now roughly one year into implementation, and that the project is moving from establishing its rationale towards demonstrating how restoration can be scaled in practice, particularly through private sector investment. The central task is therefore to build a convincing economic case for restoration, grounded in measurable ecosystem service benefits such as carbon sequestration and wider co-benefits, while responding directly to the needs of stakeholders on the ground.



He emphasised that the type of evidence required must be driven both by what local actors need to implement restoration and by what investors require in order to engage. This includes clearer de-risking approaches, credible data on additionality, and metrics that are robust enough to underpin investment decisions. The work undertaken over the past year across the 11 selected landscapes has therefore focused on building this evidence base while simultaneously engaging stakeholders to understand site-specific priorities and constraints.

Dr. Hussain then reflected on the Project Steering Committee meeting held the previous day, co-chaired by DPME and DFFE. While much of the discussion focused on institutional processes and participation, he noted that this reflected the high level of importance the Government of South Africa places on the project. ReLISA is seen as potentially catalytic, with the potential to develop a model for restoration implementation and investment that could be replicated beyond the life of the project. UNEP will follow up on the PSC outcomes, including clarifying departmental roles and ensuring consistent engagement across government stakeholders.



He also addressed the selection of the 11 priority landscapes, explaining that this was the result of a detailed project preparation phase (PPP) that combined stakeholder consultation with analysis of national datasets and policy priorities. The evidence underpinning these decisions will be shared with the PSC, and while the current list of landscapes provides the foundation for implementation, further refinement is envisaged. In response to PSC discussions, UNEP will also undertake additional analysis to better align ecological priorities with areas of greatest livelihood vulnerability, ensuring that restoration delivers tangible benefits to communities most affected by degradation.

Dr. Hussain also reflected briefly on the financing discussions from Day I, noting emerging opportunities to scale the project through blended finance and future funding windows, including potential engagement with the Green Climate Fund. These longer-term financing pathways are central to ensuring that ReLISA can catalyse investment beyond its initial project lifespan. Finally, **Dr. Hussain** noted ongoing discussions on the potential for South Africa to engage more actively in international carbon markets, particularly through CORSIA. UNEP will prepare a briefing for government outlining the opportunities and implications of participation, as part of broader efforts to unlock new financing streams for restoration.

2. South Africa's Measurement, Reporting and Verification (MRV) System and Impact Monitoring; Methodological Approach across the three Biomes

Turning to the focus of Day II, **Dr. Hussain** gave the rationale of the MRV work being led by CSIR. It is expected not only to support monitoring and validation of restoration outcomes within ReLISA sites, but also to strengthen national MRV capacity in South Africa more broadly. In this sense, the MRV work represents a significant co-benefit of the project, contributing to national systems for tracking climate, biodiversity, and restoration outcomes. He stressed that credible, fit-for-purpose metrics are essential for building investor confidence and underpinning the business case for restoration.

The MRV session was then opened by **Dr. Brian Mantlana (Impact Area Manager, Holistic Climate Change, CSIR)**, who positioned MRV as a rapidly evolving field. He noted that while MRV has traditionally focused on greenhouse gas accounting and mitigation outcomes, its scope has broadened significantly in recent years to include adaptation impacts. With new globally agreed indicators now emerging for adaptation, MRV is no longer limited to emissions, but increasingly captures wider resilience and ecosystem outcomes, aligning closely with sustainability and ESG considerations for the private sector. **Dr. Mantlana** also emphasised the policy relevance of MRV in the South African context, particularly the link between Article 6 carbon market mechanisms and the national carbon tax framework. He stressed that the MRV work under ReLISA is directly relevant to both processes and can help strengthen national systems for carbon accounting and market participation.

Ms. Tirusha Thambiran then introduced the ReLISA MRV component, explaining that the past year has focused on building the foundations of a land-sector MRV system and identifying key national gaps, including in relation to voluntary carbon markets. She outlined that the session would present the draft MRV framework and use group discussions to gather feedback, with the aim of refining the system and guiding its further development under the project.

Mr. Fredrick Mokua (GHG Accounting/MRV Consultant, CSIR) presented the draft concept for an integrated, multi-standard MRV system for ReLISA, explaining that restoration projects span multiple domains – mitigation, adaptation, biodiversity and livelihoods – and therefore require an MRV approach that can capture all of these dimensions simultaneously. He emphasised that the intention is to design a framework that aligns with multiple carbon and sustainability standards (including Verra, Gold Standard and Plan Vivo) while also supporting South Africa's national MRV and transparency requirements.

The system is structured around four core monitoring pillars: 1) carbon; 2) biodiversity; 3) hydrology and 4) socio-economic outcomes. On the **carbon** side, the MRV framework focuses on soil organic carbon and biomass (both above and below ground), with attention to restoration methodologies and emerging interventions such as biochar. **Biodiversity** monitoring is designed to track ecosystem health, species richness and habitat connectivity, with alignment to international standards such as Climate, Community and Biodiversity (CCB) criteria and national biodiversity reporting systems. The **hydrology** component looks at water flows, erosion, water quality and ecosystem functioning, with the potential use of modelling and sensor-based monitoring over time. The **socio-economic** pillar focuses on livelihoods, gender inclusion and community safeguards, ensuring that restoration delivers tangible benefits and avoids unintended negative impacts.

Mr. Mokua stressed that one of the main objectives of the system is to harmonise data requirements across standards, thereby reducing the reporting burden on communities and lowering transaction costs for project developers. The MRV design therefore combines field-based measurements, remote sensing, laboratory analysis and digital data management, with dashboards that enable real-time tracking of project performance, modelling of future restoration gains and assessment of uncertainty. He also highlighted ongoing work on traceability systems, particularly for biochar, where digital tracking (potentially using blockchain-type approaches) could ensure transparency from production to application.

A central feature of the approach is its strong integration with national systems. The MRV work is intended to help address known gaps in South Africa's national reporting, including uncertainties related to land-use change, soil carbon in grasslands, fire emissions and vegetation-specific allometric equations. By collecting higher-resolution data and applying improved methodologies, the ReLISA MRV system can contribute directly to national GHG inventories, Article 6 reporting and broader environmental monitoring frameworks, including SANBI and earth observation systems.



In terms of implementation, **Mr. Mokua** outlined a phased approach. The first phase has involved a gap analysis and the development of a draft MRV methodology, which was presented during the session. This is being tested through “site profiling” (stress-testing) in the field, with initial work already undertaken in Eastern Cape grassland restoration sites focused on alien invasive plants (AIPs) removal and sustainable land management (SLM). Further field data collection will be used to calculate emissions reductions through AIPs removals and SLM, model future scenarios and assess uncertainties. The final outputs of this process will include a practical MRV manual and a

prototype digital MRV platform (with dashboards), designed to support replication across ReLISA sites and provide long-term monitoring capacity for communities and implementing partners.

Mr. Mokua concluded by emphasising that the MRV system is intended not only to support ReLISA implementation, but also to create a scalable, nationally relevant framework that can strengthen South Africa's overall restoration monitoring and carbon accounting landscape. (PPT available [here](#)).

2.1 Q&A

Dr. Marais (Waterberg BR) raised a question on whether the MRV system would be able to differentiate between soil types, noting that the effectiveness of interventions such as biochar for water retention varies significantly between sandy, loamy and clay soils. He stressed that this level of differentiation is important for developing credible Water Fund Business Cases, as claims around water retention and ecosystem benefits must be grounded in robust science. In response, **Mr. Mokua** explained that the MRV system is designed to capture detailed soil data through field sampling and laboratory analysis, including soil type and condition, using both disturbed and undisturbed samples. While the system does not prescribe where specific interventions such as biochar should be applied, it aims to generate evidence across different ecological conditions so that impacts can be assessed and compared.

Dr. Pistorius then reflected on the intended use of the MRV system, noting that it is particularly valuable for national-level MRV and reporting towards international commitments, as well as for early-stage carbon scoping and feasibility assessments. However, he cautioned that the system, as currently framed, may not be sufficient on its own for project-level carbon market certification, where standards require highly site-specific measurements and detailed verification. He suggested that the MRV system should be positioned as a supporting tool for early-stage analysis and national reporting, rather than a full replacement for project-level MRV requirements. He also recommended considering and defining a strategy early on how the developed system is integrated into competent institutions, to ensure relevance and use beyond the ReLISA project lifetime.

3. Breakout session on MRV methodologies and investment relevance (facilitated by CSIR)

Ms. Thambiran transitioned the workshop into small-group discussions to interrogate the approach in practical South African contexts. Participants were split into four groups and asked to reflect on: 1) the opportunities and constraints of implementing the proposed MRV methodologies; 2) how they could integrate with national and ReLISA systems; 3) where synergies in data collection could be built across stakeholders; and 4) what lessons existing carbon projects could offer, and 5) how the MRV system could strengthen the case for increased private sector investment in carbon and restoration projects.

When the groups reported back in plenary, one of the strongest cross-cutting messages was that ReLISA's MRV approach must remain grounded in the project's core purpose – restoring natural landscapes rather than pursuing “carbon-only” outcomes. Group 1 emphasised the value of combining different tiers of evidence – remote sensing alongside direct measurement and sampling – to move from small plot-level data to a site scale that is meaningful for carbon

markets. They highlighted a practical challenge: robust “fenceline contrast” and long-term change detection typically require long time horizons, often closer to a decade, which does not align neatly with project timelines and investor expectations. Their suggested solution was to use layered observation approaches and continuously improve/train models so that credible estimates can be produced more quickly and at lower cost. The group also noted that monitoring and auditing are often among the most expensive components of carbon projects, and that reducing these costs through improved models and smarter use of remote sensing would directly improve investibility. This point was reinforced in discussion, with an observation that technological advances, especially in remote sensing and spectral analysis, are already reducing costs and enabling more granular measurement at larger scales.

A recurring theme across other groups was that MRV is not only about carbon; it can be designed to capture the wider “triple bottom line” needed for credibility and legitimacy. Group 2 framed this through Community–Climate–Biodiversity considerations, arguing that methodologies should support multiple outcomes simultaneously and, where possible, link to water-related co-benefits and downstream impacts. They stressed that private sector confidence depends heavily on credible baselines, yet baseline data gaps are common and need to be addressed through partnerships and shared platforms already operating in the landscapes. Their discussion also surfaced the reality of trade-offs and contested land uses, including cases where AIPs removal intersects with other economic or ecological functions. Biochar was highlighted as a potential opportunity, but with a cautionary note that its feasibility is highly context-specific – access to biomass, harvesting economics, and the suitability of different biomass types can constrain scale-up, and assumptions about utilising invasive biomass at scale should be realistic.

There was also a strong focus on how a national MRV “backbone” could reduce fragmentation and duplication. Group 3 underscored that a consolidated system could help ease national “reporting fatigue” by enabling the same core datasets to serve multiple reporting needs across biodiversity, climate, hydrology and livelihoods, and potentially support obligations under multiple international frameworks. At the same time, participants recognised the complexity of integration – existing reporting structures have different requirements and are not always interoperable, meaning the value lies in identifying overlap rather than forcing full uniformity. Another challenge raised was technical and methodological – how to extrapolate from site-based measurements and models to larger scales without losing validity, given the high heterogeneity within and across biomes.

Several interventions pointed towards learning from existing projects, particularly those already navigating carbon methodologies, verification cycles and cost pressures. Participants noted that monitoring frequency should be indicator-specific: land use change may not need frequent re-measurement where change is absent, while biodiversity and hydrology often require seasonal or continuous data to distinguish restoration impacts from natural variability. In response to questions about whether CSIR had already engaged with on-the-ground initiatives, CSIR colleagues explained that the prototype is being developed with field engagement already underway, including work with a community in the Eastern Cape, and that the design aims to accommodate multiple intervention types and core datasets such as biomass and soil organic carbon that are relevant across project models.



In closing, **Ms. Thambiran** summarised the main threads emerging across groups – the importance of high-quality data and models that can scale, the value of streamlining scattered information systems, and the need to balance competing interests and safeguard local communities while seeking investment. Shingi reinforced that CSIR’s intention is an integrated approach that goes beyond carbon alone, leveraging long-term observation datasets and predictive modelling while remaining sensitive to spatial variability and project time constraints. **Dr. Hussain** then stepped back to the “bigger picture”, clarifying

that CSIR plans to visit sites to collect hydrology, biodiversity and carbon information to feed into the national MRV work, and he acknowledged the important question of sustainability beyond the project period. He suggested that, as with other large system-building initiatives, ReLISA funding is primarily enabling the foundational architecture and consultation work, with the expectation that the resulting system can be maintained and updated over time. He also noted that the consortium would continue discussing how the MRV work can be tweaked to be even more directly useful for real-world carbon and non-carbon projects, strengthening the link between national-level systems and investable interventions on the ground.

4. Research & Research Needs - What will be achieved Biome-by-Biome

4.1 Thicket Research - Stellenbosch University (SUN) and Nelson Mandela University (NMU)

Dr. Cathy Clarke (Department of Soil Science, Stellenbosch University) presented (virtually) the thicket-focused research that ReLISA will commission. Speaking on behalf of herself (Soil Science, Stellenbosch University) and **Prof. Alistair Potts (Botany, Nelson Mandela University)**. She explained that their collaboration is deliberately cross-disciplinary – soils and ecology – and that Dr. Potts’ close work with carbon companies in the Eastern Cape has given them a clear view of where the industry is currently struggling, where the evidence gaps sit, and how targeted research could consolidate knowledge so it becomes shared sector infrastructure rather than fragmented, company-by-company learning.

She framed her core message around the principle “carbon for soils, not soils for carbon”: the point of rebuilding soil carbon is first and foremost ecosystem recovery and soil health, with carbon sequestration as a powerful co-benefit. In her view, carbon markets can be one of the most tangible pathways to large-scale restoration because they create an economic incentive for private finance to flow into restoration. At the same time, she warned that the credibility of carbon-based restoration is under pressure internationally because of highly visible failures, projects that over-claim sequestration, misunderstand ecological and social context, underinvest in monitoring, struggle to scale, or are destabilised by shifting rules. These failures

generate investor uncertainty and reputational risk, and she described this as one of the biggest threats to ecosystem restoration efforts anchored in carbon finance.

Against that backdrop, **Dr. Clarke** argued that building confidence is ultimately about rigorous understanding and quantification, without shortcuts. Investors will expect clarity on ecosystem-specific drivers, realistic restoration pathways, and the social conditions for success, especially community buy-in and livelihood safeguards. She emphasised that quantification must be based on credible, peer-reviewed measurement, particularly on realistic sequestration rates and timelines, and that permanence needs to be treated honestly, because of soil carbon cycles (not all carbon is stored on the same timescales). The crucial question is not simply whether carbon increases, but how stable different pools are over 10, 20, 100 years or even longer horizons.

Dr. Clarke positioned thicket restoration as both globally high-profile and highly exposed – it is often presented as a flagship, but it is not a guaranteed success. Private investment is already moving, projects are underway, and practitioners are sometimes learning in real time, most visibly where planted spekboom cuttings fail to survive. For her, this makes ReLISA particularly timely because it can provide the science needed to “guide the flagship”, reduce failure risk, and strengthen the credibility required for future investment. She was explicit that, reputationally and practically, this flagship cannot afford to fail.

Dr. Clarke then explained why spekboom thicket is scientifically unusual and therefore both exciting and challenging. In classical soil science, high-carbon soils are typically associated with cool, wet, acidic conditions that slow microbial decomposition, yet thicket soils can hold exceptionally high carbon despite being hot, dry and near neutral conditions that would normally favour rapid breakdown. She described this as “bucking the trend” and noted that the mechanisms for this persistence are not yet fully understood. She also underlined the scale of degradation – around 1.2 million hectares – arguing that this creates both a major restoration imperative and a large “carbon bucket” that could potentially be refilled, which helps explain the intensity of market interest.

Her outline of the ReLISA-supported research programme focused on three linked goals: 1) establishing robust, biome-wide evidence for carbon loss and recovery; 2) addressing practical bottlenecks that are slowing restoration success at scale; and 3) curating and safeguarding existing datasets so they can actually be used to build credible investment cases. She described planned work to reconstruct historical thicket extent using older imagery to better quantify degradation and associated carbon loss, and to measure carbon return under restoration across above-ground biomass, below-ground biomass and soil carbon, with particular attention to roots as a potentially under-accounted pathway. A major emphasis was on determining accumulation rates – how fast carbon returns and over what timeframe in an arid environment – because this is central to investor expectations about returns and project viability. In parallel, she highlighted ongoing and near-term work on permanence, including detailed analysis of labile versus stable soil carbon pools through research nearing completion.

A substantial portion of her presentation focused on the practical realities of scaling, especially nursery production and planting protocols. **Dr. Clarke** described an industry that is currently operating with limited coordinated guidance, where nursery managers are often forced into trial-and-error decisions that can become expensive to reverse once operations scale. Her example

was the mismatch between large commercial nursery systems geared around small cuttings and emerging evidence that larger, thicker cuttings survive better – an operational shift that can cascade into changes in pot sizes, transport crates and logistics, creating cost and risk for investors funding the rollout. She also illustrated the ecological harshness of degraded sites compared with the sheltered, moist micro-environments under intact spekboom canopies, arguing that this gap helps explain variable survival and points to unanswered questions about nutrients, microbial associations, litter-layer functions, and optimal planting density. The research aim, she said, is to translate these unknowns into practical propagation and planting protocols that improve survival and reduce risk.

Beyond carbon, she argued that building a stronger business case will also require better evidence on co-benefits and “value-add”, including biodiversity return. She pointed to feasible monitoring approaches – such as bio-acoustics for birds, bats and frogs, alongside faunal indicators, to enrich impact narratives and potential future crediting approaches where relevant. She also stressed the importance of rescuing and consolidating legacy datasets, especially the Thicket Wide Plot Programme established in the late 2000s. These plots are now reaching an age where they could reveal carbon recovery trajectories, but many have been lost due to poor resourcing, landownership changes and insufficient communication with landowners. **Dr. Clarke** framed plot curation, metadata management and remeasurement as unglamorous but essential work for producing credible sequestration rates and investable evidence.

She closed by linking the research agenda directly back to MRV and investor confidence. While soil carbon measurement is complex and prone to methodological pitfalls, she sees remote sensing as increasingly central to monitoring at scale, yet data-intensive and dependent on strong ground-truthing. She expressed strong interest in collaborating with CSIR so that thicket field data can feed into model development and national-level MRV architecture. Her final message returned to urgency and coordination: the research must serve the existing projects already in motion, help practitioners succeed at scale, consolidate knowledge for the whole sector, and catalyze collaboration among companies rather than fragmented competition – because the opportunity is too large, and the consequences of failure too significant. (PPT available [here](#)).

Q&A and Discussion

The discussion that followed **Dr. Clarke’s** presentation focused on how thicket restoration can work in practice, both ecologically and economically, and what conditions are needed for land users to adopt it at scale. **Mr. Lindeque** raised the importance of socio-economic factors, asking whether the research would also consider opportunity costs, fencing requirements, and the practical reasons why farmers may or may not adopt spekboom restoration. **Dr. Clarke** agreed these issues are critical, including how restored land can support livelihoods in the long term, but noted that socio-economic research sits somewhat outside the current scope and budget of her team. **Dr. Hussain** added that ReLISA had intentionally prioritised the “public good” scientific evidence that de-risks restoration overall, such as robust carbon and ecological data, while more site-specific cost and livelihood decisions would ultimately need to be assessed at project level, often by private sector partners.

Mr. Pieter Botha (EWT) then challenged the implicit model of fenced, high-density thicket restoration, arguing that farmers need a “living landscape” that supports production and livelihoods, rather than an enclosed system optimised purely for carbon. This sparked a constructive exchange and **Dr. Marais** clarified that restoration efforts in the Eastern Cape have always worked with farmers on private land, and that fencing is often a temporary necessity to allow young plantings to establish. **Dr. Clarke** reinforced this, explaining that spekboom acts as an ecosystem engineer but needs a protected establishment phase; once a critical mass is reached, biodiversity and productivity can return, and grazing can potentially be reintroduced under sustainable management.

Dr. Pistorius emphasised that adoption by farmers is non-negotiable – if restoration approaches are not viable for land users, they will not scale. He noted that some farmers are already restoring thicket for practical reasons such as erosion control, and that the purpose of the ReLISA research is to provide the robust evidence needed to convince both farmers and investors. He also highlighted that complementary biodiversity monitoring and data collection would be pursued alongside the core research, helping feed into MRV and strengthen the investment case.

Further questions explored collaboration and scientific approaches. A question was asked about how the work would align with existing thicket and carbon initiatives (including Rhodes University), and **Dr. Clarke** confirmed that collaboration is planned where possible, though initial priorities had to be narrowed due to budget constraints. **Mr. Kgope** raised whether understanding spekboom’s evolutionary strategy could help improve establishment success, while **Mr. van Mazijk** added insights from evolutionary biology, noting the plant’s unusual combination of succulent regenerative behaviour (and potential compensatory growth responses to browsing) and ecosystem engineering (as a tree).

In closing the session, **Dr. Hussain** highlighted the importance of the multi-university collaboration behind the research and its role in building a strong, shared evidence base for the sector. He then transitioned the session to the next presentation.

4.2 Fenceline Contrast Study on High-Density vs. Conventional Grazing in Grasslands and Savannas - University of Pretoria (UP)

Dr. Cathy Clarke (Department of Soil Science, Stellenbosch University) then introduced the second research stream under ReLISA, presenting on behalf of **Mr. Frits van Oudtshoorn (University of Pretoria)**, whose PhD focuses on the impacts of high-density (regenerative) grazing on soil carbon, soil health and grassland biodiversity. The purpose of the study is to generate robust, field-based evidence on whether regenerative grazing systems can restore degraded grasslands while also enhancing carbon sequestration and ecosystem function.

The core concept behind high-density grazing is to mimic natural herd movements – animals are concentrated in a small area for a very short period, graze intensively and non-selectively, and then the land is left to rest for a long recovery period (often a year or more). In contrast, conventional grazing typically allows animals to roam over large areas for longer periods, which encourages selective feeding on palatable species and can lead to degradation over time. By forcing less selective grazing and returning large amounts of manure and urine to the soil, high-

density systems aim to rebuild soil organic matter, stimulate microbial activity and rebalance plant competition, ultimately improving biodiversity and productivity.

To test this in a scientifically robust way, **Dr. van Oudtshoorn** is using fence-line contrast – comparing neighbouring farms on either side of a fence where one uses conventional grazing and the other has implemented high-density grazing for at least ten years. This approach allows comparisons under nearly identical environmental conditions (soil type, slope, rainfall), which is particularly important for soil carbon research where many variables can confound results. **Dr. van Oudtshoorn** has identified six such sites across South Africa, spanning both grassland and savanna systems and a range of rainfall zones.

At each site, the research involves detailed measurements on both the soil and vegetation components. Soil analyses include: total soil organic carbon and nitrogen; carbon-to-nitrogen ratios; bulk density; water infiltration rates; root biomass and a suite of soil health indicators such as active carbon and potentially mineralizable nitrogen. Vegetation assessments include: species composition and diversity (for both grasses and forbs); grazing capacity; biomass production and forage quality; as well as indicators such as field condition scores. In parallel, CSIR is collecting remote sensing data to support future MRV integration and scaling of results.

Dr. Clarke shared observations from recent fieldwork illustrating stark visual differences between the two grazing systems. After roughly a decade of regenerative management, high-density grazing sites show noticeably greater vegetation cover, higher species diversity and healthier soil structure compared to adjacent conventionally grazed land, where palatable species are often depleted and unpalatable “grazing lawn” species dominate. Preliminary data from one site already indicates substantially higher species richness, improved field condition scores, higher forb density and greater biomass production under high-density grazing. Soil carbon data is still being analysed, but initial field indicators suggest improved soil function and organic matter.

She also highlighted the growing interest from the private sector, noting that a start-up carbon company (Horizon) is investing its own resources to support soil carbon sampling alongside the research, reflecting the strong perceived potential of regenerative grazing for carbon markets. At the same time, **Dr. Clarke** emphasised that farmers often face a financial dip during the transition phase before productivity improves, underscoring the importance of financial support mechanisms, such as concessional finance or risk-sharing instruments, to enable adoption at scale.

Dr. Clarke concluded that regenerative grazing shows strong promise as a restoration pathway, particularly for degraded grasslands, but that outcomes will vary across ecological contexts and rainfall zones. The ReLISA-supported research will provide the rigorous, comparative evidence needed to determine how scalable and investable these systems are, and how they can contribute to both restoration outcomes and credible carbon projects. (PPT available [here](#)).

Q&A and Discussion

The discussion following the grasslands presentation focused on the economic viability, scalability, and broader relevance of high-density grazing as a restoration pathway. A first question from UNESCO was around how long it takes farmers to recover their investment when

shifting to high-density grazing systems. **Dr. Clarke** explained that she does not yet have precise figures, but that farmers typically experience an initial financial dip before benefits become visible. She noted that several structural barriers complicate adoption, including market challenges (for example, smaller indigenous cattle sometimes not being accepted by abattoirs) and broader value-chain constraints. She suggested that, in the long term, premium markets for grass-fed or regenerative products could improve returns but stressed again the need for multidisciplinary work and financial support mechanisms, such as those from the Land Bank, to help farmers through the transition period.

Further questions focused on the transferability of results beyond the specific study site in Reitz. **Dr. Clarke** explained that the study deliberately includes a range of sites across grassland and savanna systems and different rainfall zones to capture variability and allow cautious generalisation within similar ecological contexts. The selected farmers are leaders in their communities, and their demonstration of positive outcomes can help catalyse uptake by neighbouring land users. **Dr. Hussain** reinforced that, although the study sites are opportunistic (based on where suitable fence-line contrasts exist), the research is designed to produce evidence that can be generalised and used by the private sector, rather than being purely academic. This point led to a broader reflection from **Dr. Hussain** that the ReLISA research portfolio is intended to produce fit-for-purpose outputs for investment and implementation, not only academic publications. The expectation is that findings from these studies will be translated into guidance and evidence that can help inform restoration projects and unlock financing.

Dr. Ashwin Seetal (CSIR) highlighted that the regenerative grazing work fits strongly within ReLISA's overall objectives, as it effectively mimics natural ecosystem processes and can reverse degradation trends caused by conventional grazing systems. **Dr. Hussain** agreed, noting that similar research streams are being explored for other biomes, including savanna systems, following the same principle of identifying interventions that can credibly support restoration at scale.

Dr. Mutanga then described how the MRV system and remote sensing work will integrate with the grassland study. CSIR is already supporting the fieldwork by collecting remote sensing data, with the aim of combining ground measurements (soil carbon, biomass, biodiversity indicators) with spatial datasets to develop models that can be extrapolated across landscapes. This will help answer the central question of how results from individual sites can be scaled and applied more broadly within the savanna and grassland regions.

The session closed with **Dr. Hussain** emphasising the value of collaboration between universities and CSIR, noting that this integrated research–MRV approach strengthens both the scientific credibility and practical usefulness of the work for policy and investment. He thanked **Dr. Clarke** and the research team for their contribution and then transitioned the meeting to closing remarks from the German Ministry representative.

5. Final Remarks from BMUKN

Ms. Ruth Irlen, speaking on behalf of the German Ministry (BMUKN), delivered concluding remarks, joining virtually from Berlin, reflecting positively on the structure of the discussions. She emphasised the value of the multi-stakeholder format – bringing together scientists, government,

NGOs and practitioners – as a critical space where actors contribute to a shared restoration agenda. Even remotely, she noted the strong energy and practical orientation of the discussions, particularly the focus on real-world challenges in soils, ecosystems and implementation.

Drawing parallels with Europe, **Ms. Irlen** highlighted that many of the issues discussed in ReLISA such as MRV systems, carbon removal standards, and integrating biodiversity, adaptation and mitigation objectives, mirror ongoing debates within the EU. She described recent progress on Europe's carbon removal certification framework, including methodologies for biochar and upcoming work on carbon farming, and noted that European forestry systems are also grappling with climate impacts such as drought and pest outbreaks. In this context, she stressed that the kinds of data systems ReLISA is developing – covering soil carbon, hydrology and biodiversity – are not only relevant for carbon markets, but equally critical for adaptation planning, ecosystem management and biodiversity outcomes.

She welcomed the emphasis on synergies across the Rio Conventions (CBD, UNFCCC, land degradation) and the effort to harmonize indicators and data systems, noting that this is a major priority internationally but remains challenging and costly. She also highlighted growing investor interest beyond carbon markets, where nature-based investments increasingly require robust reporting on ecosystem impacts, including water and biodiversity. In this regard, she suggested that ReLISA's integrated MRV approach could position South Africa well in emerging international initiatives, including platforms for nature investment and other mechanisms. **Ms. Irlen** concluded by encouraging the ReLISA team to continue building strong restoration monitoring systems and to engage with evolving global frameworks and financing opportunities. She expressed appreciation for the discussions and reaffirmed BMUKN's continued support and interest in following the project's progress.

6. Closure and Way Forward

Dr. Hussain responded by noting that **Ms. Irlen's** remarks closely aligned with the strategic direction discussed in the PSC meetings, including the importance of global public goods, transboundary considerations and opportunities to link ReLISA to global platforms such as COP30 and emerging climate finance mechanisms. He reiterated that ReLISA aims to contribute not only nationally but also to broader international restoration and climate agendas.

In closing the Day II session (thereby marking the end of a productive two-day joint technical meeting between the ReLISA consortium and the government of South Africa), **Dr. Hussain** thanked CSIR for hosting the event and acknowledged the contributions of the organizing team. He emphasised that the workshop had generated valuable inputs that would be consolidated and shared with participants and encouraged continued engagement through the ReLISA platform. He also indicated that the project team would continue field visits and site engagement in the coming days to deepen understanding of on-the-ground realities. The workshop concluded on a positive and collaborative note, with a clear sense that ReLISA is building both a technical evidence-base and a multi-stakeholder platform that can support restoration, investment and policy alignment at national and international levels.

Annex

Joint Technical Meeting: Day 1 Agenda

	Item	Responsibility
09:00 – 09:15	High-level Opening Welcoming Remarks Opening Remarks	• Dr. Brian Mantlana, Impact Area Manager, Holistic Climate Change (CSIR) – Welcoming • Ms. Mukondi Matshusa, Acting DDG, Biodiversity and Conservation, Dpt. of Forestry, Fisheries and the Environment (DFFE) Opening
09:15 – 09:30	ReLISA Project Presentation	• Dr. Salman Hussain – ReLISA project lead, and Head: Economics of Nature Unit, Ecosystems Division (UNEP)
09:30 – 10:30	Stakeholder Engagement Panel: Key elements of ReLISA Implementation	• CSIR MRV, Restoration Strategies and/or Conservation Approaches • C4ES Private Sector investment in restoration • UNIQUE Research and Research Needs • EWT Protected Area (PA) Expansion • UNESCO Community-led Water Funds • UNDP Stakeholder Dialogues, Skills and Capacity development
10:30 – 12:00	Reflections: (a) relevance of ReLISA to PoWs; and (b) Alignment / Synergies to be established	• GoSA Respondents: Department of Planning, Monitoring and Evaluation (DPME), Department of Forestry, Fisheries and the Environment (DFFE), Department of Water and Sanitation (DWS), Department of Agriculture (NDA), Department of Land Reform and Rural Development (DLRRD), Cooperative Governance and Traditional Affairs (CoGTA), South African Local Government Association (SALGA), South African National Biodiversity Initiative (SANBI), South African National Parks (SANParks), Agriculture Research Council (ARC), Water Research Commission (WRC), South African Environmental Observation Network (SAEON), South African Weather Services (SAWS), Indigenous Peoples of Africa Co-ordinating Committee (IPACC), Sicelo Kunene Agricare (SK Agricare), Universal Greening Organisation (UGO), Rural Women's Assembly (RWA), South African Youth Biodiversity Network (SAYBD), South African Disability Alliance (SADA)
12:00 – 13:00	LUNCH BREAK	
13:00 – 15:00	Private Sector Financing & Investment—Synergies, GEF and GCF	• Development Bank of Southern Africa (DBSA) Presentation

	Opportunities and Barriers, Institutional Arrangements and Partnership Opportunities	Discuss/Explore: (a) possible Concept Notes for GEF, GCF or other climate/nature finance windows; and (b) where DBSA's existing and planned activities intersect most strongly with ReLISA's landscapes; (c) how DBSA can partner with UN agencies in a single programme.
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Joint Technical Meeting: **Day II Agenda (Half-Day)**

	Item	Responsibility
08:30 – 09:00	Opening & Recap	ReLISA Project Lead – Opening, Recap and Day II Agenda
09:00 – 11:00	Discussion on South Africa's Measurement, Reporting and Verification (MRV) system and Impact Monitoring to support international reporting for voluntary carbon markets and co-benefits—gaps, challenges, opportunities for system enhancement; Methodological Approach across the three Biomes, etc.	CSIR
11:00 – 11:30	TEA BREAK	
11:30 – 12:50	Research & Research Needs (what will be achieved, Biome-by-Biome)	- Nelson Mandela University (NMU) & Stellenbosch University (SUN) Thicket Univ. of Pretoria Fence-line contrasts
12:50 – 13:00	Closure and Way Forward	Dr. Salman Hussain – ReLISA project lead, Head Economics of Nature Unit, Ecosystems Division (UNEP)
13:00 – 14:00	Lunch	All

Focal points:

- Mr. Zakhele Mdlalose – Chief Sector Expert for Rural Economy and Environment, Department of Planning, Monitoring and Evaluation (DPME), Zakhele.Mdlalose@dpme.gov.za
- Ms Thizwi Rambau – Director, Land Degradation and Desertification, Department of Forestry Fisheries and the Environment (DFFE) | UCCD National Focal Point South Africa, tsrambau@dffe.gov.za
- Mr. Stanley Tshitwamulomoni – Director, Strategic Water Sources and Wetlands, Department of Forestry Fisheries and the Environment (DFFE), stanleyt@dffe.gov.za
- Dr. Salman Hussain – ReLISA project lead, Head Economics of Nature Unit, Ecosystems Division (UNEP), salman.hussain@un.org

Nr	Entity / Institution	Name	Position / Title
1	Agricultural Research Council (ARC)	George Chirima	Research Manager
2	Agricultural Research Council (ARC)	Goodman Jezile	Soil Science Department
3	Agricultural Research Council (ARC)	Joseph Sello Kau	Manager: Agricultural Economist; Lead on Agroecology Framework work packages
4	Agricultural Research Council (ARC)	Lianda Lotter	Soil Sciences Programme Researcher
5	Agricultural Research Council (ARC)	Sue Walker	Natural Resources & Engineering, Principal Researcher: Agrometeorology
6	C4 EcoSolutions (C4ES)	Reinhardt Hauptfleisch	Senior Manager, Climate Mitigation
7	C4 EcoSolutions (C4ES)	Ruan van Mazijk	Technical Coordinator, Climate Mitigation; C4ES ReLISA Project Lead
8	Crocodile River Reserve	Sifiso Makoko	GIS Technician
9	CSIR	Ashwin Seetal	Specialist, Strategic Water Management
10	CSIR	Brian Mantlana	ReLISA Project Team
11	CSIR	Juanette John	Environmental Health Scientist
12	CSIR	Linda Luvuno	Researcher
13	CSIR	Sameera Kissoon	MRV Team Member
14	CSIR	Shingirirai Mutanga	Research Group Leader, Climate Services
15	CSIR	Tirusha Thambiran	MRV Specialist
16	Department of Agriculture (DoA)	Mpume Ntlokwana	Deputy Director
17	Department of Forestry, Fisheries and the Environment (DFFE)	Asivhanzhi Makhale	Control Biodiversity Officer. Directorate: Land Degradation & Education, Biodiversity & Conservation Branch
18	Department of Forestry, Fisheries and the Environment (DFFE)	Barney Kgope	Lead, Climate Change & Biodiversity Programmes (Biological Invasions & Biosafety)
19	Department of Forestry, Fisheries and the Environment (DFFE)	Stanley Tshitwamulomoni	Strategic Water Source Areas & Wetlands Component Lead
20	Department of Forestry, Fisheries and the Environment (DFFE)	Sydney Nkosi	Chief Director: Protected Areas Systems Management, Biodiversity & Conservation Branch



21	Department of Land Reform and Rural Development (DLRRD)	Zongezile Bango	Environmental Planning Services
22	Development Bank of Southern Africa (DBSA)	Mookho Matheba	Representative
23	Development Bank of Southern Africa (DBSA)	Thuledu Ntshingila	Portfolio Management Specialist
24	Department of Planning, Monitoring and Evaluation (DPME)	Malebogo Khwinana	Assistant Sector Expert
25	Department of Planning, Monitoring and Evaluation (DPME)	Pendukhani Hlatshwayo	Director
26	Department of Planning, Monitoring and Evaluation (DPME)	Rozani Mashangu	Sector Monitoring (Environment)
27	DPME-Comms	Suzan Motseo	Communications
28	Department of Planning, Monitoring and Evaluation (DPME)	Zakhele Mdlalose	Chief Sector Expert: Rural Economy and Environment
29	Endangered Wildlife Trust (EWT)	Christopher Hooton	EWT ReLISA Project Manager
30	Endangered Wildlife Trust (EWT)	Pieter Botha	ReLISA Team Member
31	Endangered Wildlife Trust (EWT)	Charl Fick	ReLISA Field Officer, Northern Drakensberg
32	GIZ	Christelle Beyers	Senior Technical Adviser: Climate Finance
33	GIZ	Michelle Hiestermann	Technical Advisor
34	Land Bank	Fezile Nondonga	
35	Land Bank	Litha Kutta	
36	Project Biome	Khanya Mtshali	Partnerships Lead
37	SALGA	Dorah Kiki	Climate Change, Environmental Management & Sustainability Unit
38	SANBI	Dan'sile Cindi-Mavimbela	Biodiversity Information & Policy Advice; Lead, Catchments & Communities of Practice
39	SANBI	Mthobisi Nzimande	
40	SANParks	Mmoto Masukelele	Scientist
41	TreAdvisory GmbH	Fredrick Ogoro Mokua	Climate Change Lead
42	UNDP	Deshni Pillay	Head, Nature, Climate and Energy Team
43	UNDP	Tapelo Motebo	ReLISA Project Team

44	UNDP	Lehman Lindeque	Technical Advisor
45	UNEP	Brian Mubiwa	Stakeholder Engagement & Project Coordination Support, ReLISA
46	UNEP	Lucy Cockerell	Project Support Consultant, ReLISA
47	UNEP	Meseret Teklemariam Zemedkun	Head, UNEP Southern Africa Sub-Regional Office
48	UNEP	Otae Mkandawire	Communications Consultant
49	UNESCO	Prudentia Zikalala	ReLISA Project Coordinator
50	UNESCO	Prudence Maluleke	ReLISA Project Coordinator
51	UNESCO / Magaliesberg Biosphere	Belinda Cooper	Implementing Partner (Magaliesberg Biosphere)
52	UNESCO / Magaliesberg Biosphere	Liane Erasmus	Magaliesberg Biosphere Representative
53	UNESCO / Waterberg Biosphere	Christo Marais	Representative (supporting UNESCO implementation)
54	Unique Land Use	Till Pistorius	Head, Climate Department
55	DFFE	Mukhoni Matshusa	Acting DDG, Biodiversity and Conservation, DFFE
56	CSIR	Nsovo Bilankulu	
57	DFFE	Farryn Sherman	Control Environment Officer
58	DFFE	Nombuso Nyembe	
59	DFFE	Thando Kunene	Geoinformatics and Climate Change
60	NDA	Segwatibe Mekobe	Resource Conservation Officer; LandCare Programme
61	DPME	Khumbuleni Sibiya	
62	Sustainability and Environmental Consultant	Mukundwa Phalandwa	Managing Director & Senior Environmental Consultant
63	UJ and RandWater	Prof. Mbangiseni Nepfumbada	Co-Director of the JRC for Water and Environmental Science and Technology at UJ; Manager for Special Priority Programmes at RandWater
64	Project Biome	Khanya Mtshali	Partnerships Leads
65	Crocodile River Reserve	Sifiso Makoko	GIS technician