

Meeting report

2nd Transition Space meeting Volta River

12-13 March 2025

DAY 1 - Tuesday 12th March 2025 (Boutique Hotel, Accra)

8:30-9:00	Registration and Coffee
9:00-11:00:	<ul style="list-style-type: none"> • Welcome - Getting to know the group • Introduction of the EPIC Africa project (for newcomers) and the role of the TS meetings • Introduction of the 3 storylines (how we arrived at them based on the output of TS1?) • Introduction of the 3 value clusters (how we arrived at them based on the output of TS1?)
11:00-11:30	Coffee Break
11:30-13:00:	<ul style="list-style-type: none"> • Group exercise: Position yourself in the space based on the values you intuitively think are best represented (exercise for each scenario) (or alternatively: values you think are 'at risk' in each scenario)
13:00-14:00	Lunch Break
14:00-16:00	<ul style="list-style-type: none"> • Subgroup exercise (1 for each scenario): Define clear (ideally measurable) objectives for each of the value clusters (to build a 'dashboard' showing potential trade-offs between different values)
16:00-16:30	<ul style="list-style-type: none"> • Closing Day 1 – Wrap up
16:30	Transition Space drinks / snacks

DAY 2 - Wednesday 13th March 2025 (Boutique Hotel, Accra)



8:30-9:00	Welcome + coffee
9:00 – 9:40	Interactive refreshing of Day 1 outcomes
9:40 – 11:00	<ul style="list-style-type: none"> • Introduction: Why modelling? How does it link to transition spaces? • Explanation of how a model works, what a model logic is, and how it can work in this context
11:00 – 11:30	Coffee Break
11:30 – 12:30	Part 1: Subgroup exercise first driver
12:30 – 13:30	Lunch Break
13:30 – 14:30	Part 2: Subgroup exercise first driver
14:30 – 16:00	Plenary sharing and enriching reflection
16:00 – 16:15	Closing and wrap up
16:15 -	Drinks and informal talks

Participants

From the EPIC Africa consortium

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Erik Laes	VITO
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Salifou Dene	VBA
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Simon Mulwa	KALRO
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External participants

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MSc Researcher on WEF Nexus
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Water Resources Commission - Black Volta
Water Resources Commission - Accra
Ghana Water Company Ltd.
Global Water Partnership
National Development Planning Commission
Council for Scientific and Industrial Research
International Water Management Institute
Ghana Atomic Energy Agency
UNER- RCEES
Global Water Partnership
VBA/UNER
National Development Planning Commission



What is a Transition Space?

Supporting transitions within the perspective of sustainable development requires an active involvement of different **quadruple helix actors** (civil society, private sector, government & administration, and knowledge institutes). All these actors have different ideas and visions regarding certain societal issues. However, to initiate and stimulate societal transitions a mutual understanding of one or more systemic issues and shared long-term actions is indispensable. A Transition Space (TS) is a way to **reframe problem perceptions** in the context of **long-term visions** of the different actors and to create a **strong interaction between the members** based on an **agreement on relevant values**. It is a systemic instrument to co-develop a **common vision**, an **agenda**, and a **supporting network** to tackle complex societal issues in a selective and strategic way. The TS members make up an innovation network, within which various perceptions of the persistent problem and possible directions for solutions can be deliberately confronted with each other and subsequently integrated.

DAY 1

Overview

The aim of the first day was to co-create sustainable future visions and pathways on a sustainable WEF system for the Volta River basin. In preparation of the meeting, a first version of three future visions was created by the EPIC Africa team with the help of a visual harvester ([Flatland Agency](#)). These future visions and storylines were displayed in the meeting room.

Opening and Orientation



Against the backdrop of climate, political, and social uncertainty, the session opened with the guiding principle: ***“The times are urgent. Let us slow down.”*** Participants were invited to momentarily step out of their daily pressures and engage in **long-term, values-driven thinking**. The space was positioned not just as a technical exercise, but as a reflective and collaborative environment in which diverse voices could be heard and shape alternative futures.

The session began with a short, guided meditation was held to foster calm and presence in the group. Participants then introduced themselves by selecting a symbolic “role” (e.g., detective, guide, mediator, magician) that best represented their contribution to the transition process. They shared personal traits that would help—or hinder—they in enacting that role. This exercise helped build mutual understanding and humanized the participants beyond professional titles.

Future Thinking and Scenario Exploration

First, the group was reminded that the future is not predetermined: ***“The best way to predict the future is to create it.”*** The EPIC Africa facilitators then introduced the three desired future states, i.e., visual and narrative depictions of potential pathways toward sustainability for the Volta Basin (cf. “Assessment of the Three Future Visions” section).

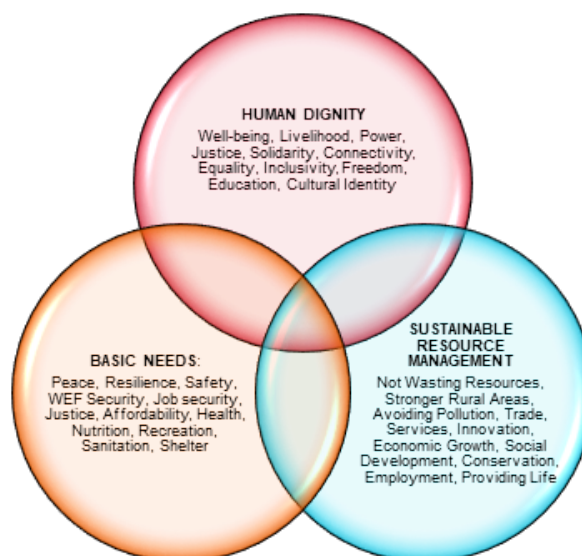


Values and Evaluation Framework

Participants were reminded of the core value clusters identified in the 1st TS meeting (Accra, 12-13 March 2024) as shown in the figure below:

- **Human Dignity:** e.g., justice, empowerment, well-being, cultural identity, spirituality
- **Basic Needs:** e.g., access to basic services including access to water, food, energy, sanitation, safety
- **Sustainable Resource Management:** e.g., long-term ecological and economic viability, local socio-economic development, equitable benefit-sharing

These values served as benchmarks to assess how well each scenario supported a sustainable and inclusive future.



Interactive Assessment: “Voting with Your Feet”

The “voting with your feet” exercise is a dynamic and embodied method used to gauge how the TS participants connected with the different future scenarios presented during the workshop. Rather



than engaging in discussion alone, participants were invited to **physically move around the room** and stand near the scenario that according to them most resonated with each of the value clusters identified in the previous TS meeting. This simple act transformed abstract preferences into **something visible and tangible**, revealing **patterns of alignment and tension** in the group. Some chose to stand squarely in front of one scenario, while others positioned themselves between two, signaling a sense of overlap or internal conflict. The exercise **sparked spontaneous reflections**, as participants shared why they moved, what drew them to a particular vision, and what trade-offs they were grappling with—be it spiritual connection, technological realism, or community cohesion. Crucially, this method created **space for intuition and emotion to play a role in decision-making**, allowing people to express preference not just intellectually but physically. It offered facilitators a richer, more immediate sense of which futures felt not only plausible, but livable, and emphasized that engagement with the future must include the body, the heart, and the social context—not just the head. The detailed assessments of the 3 future visions of a sustainable WEF system in the Volta River basin are reported in the next section.



Assessment of the Three Future Visions



Community place-based system innovation



CLEAN POWER, FOOD AND WATER TO ALL THE PEOPLE

Towards vibrant & self-reliant communities across Volta in 2063

In this scenario we envision thriving communities who have become highly self-reliant in generating renewable energy, clean water, growing and trading their own crops. Each local community owns and runs its own wind and solar park, enjoying a rock-steady supply of clean electricity. Every home has its own battery to store access energy, ready to use for those rare emergency moments. Ground pumps ensure access to clean water to all, while used water is recycled for agricultural use. Every community guards its own clean water reservoir.

Agriculture is not only sustainable but also 'smart'. Local farmers use data to ensure maximum yields. Rooftops are turned into lush green gardens, providing families with all the produce they require. Agricultural surplus not only provides for own consumption but also generates additional revenue streams. The days of manual labor are gone, the use of agricultural robots has become the norm.

By 2063 local communities across Volta thriving, because they're not only self-reliant but also closely connected to the rest of the world. Superfast and cheap mobile internet enables local entrepreneurs and farmers alike to sell crops, goods & services both nationally and internationally. And of course, a superfast mobile internet connection enables a top of the bill lifelong education for all.

Positive Aspects

- **Local Ownership & Empowerment**
 - Emphasis on self-sufficiency and community control over energy, water, and agriculture was highly appreciated.
 - Participants valued the decentralized management of resources, which allowed each community to own and manage its wind/solar power and clean water supply.
- **Technology Integration**
 - Some found the mix of data-driven agriculture, rooftop gardens, and clean energy both visionary and practical.
 - Use of agricultural robots and smart systems was seen as a modern but accessible innovation.
- **Inclusiveness & Grassroots Strength**
 - The model was praised for giving power back to the people and reducing dependency on central systems or elite control.
 - Some participants pointed out that community-led checks and balances (informal regulation) could be more effective than top-down policies.
- **Adaptability**
 - The community setup could adapt better to local contexts, values, and beliefs—including spiritual practices and cultural identity.

Concerns

- **Risk of Technocratic Framing**
 - A few participants noted that the scenario leaned heavily into technical solutions, potentially leaving less space for non-technological values (like spirituality or traditional knowledge).
- **Spirituality & Culture Underrepresented**
 - The visual and narrative lacked clear reference to spiritual spaces or cultural heritage, which are vital in many rural and traditional communities.
 - Suggestions included adding shrines, communal prayer spaces, or storytelling arenas to reflect local identity.
- **Lack of Infrastructure for Growth**
 - Some participants questioned whether this model could scale up or integrate with regional economies and urban centers.
 - Others questioned how such self-contained systems would interact with national markets, policy frameworks, and global trends.
- **Job Creation and Economic Activity**
 - It was unclear how employment would be structured beyond agriculture.
 - Some feared that automation (robots) might reduce jobs, and more emphasis was requested on diverse economic roles beyond farming.

Suggestions for Enrichment

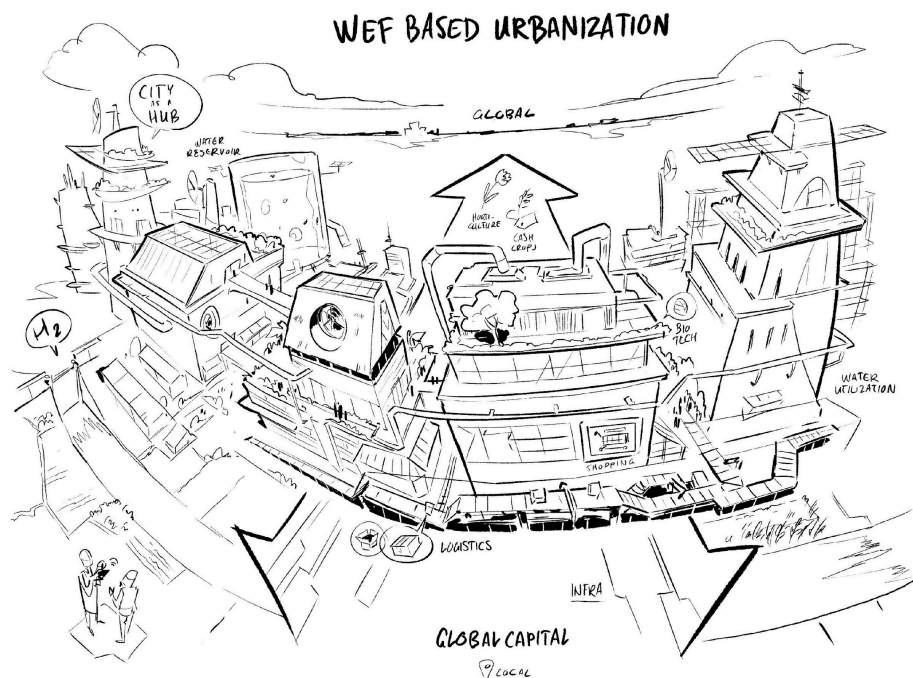
- Add **symbols or markers of spirituality** (shrines, trees, mosques, churches).
- Clarify how **education, health, and employment services** are organized in a decentralized setup.



- Incorporate **market access or trade mechanisms** to prevent isolation from the broader economy.
- Emphasize **climate resilience strategies**, like local flood control and drought resistance.
- Integrate **more green infrastructure and biodiversity corridors** to reflect harmony with nature.



WEF-based urbanization



WELCOME TO OUR CITY GARDENS OF EDEN

Towards sustainable, smart supercities across Volta in 2063.

In this scenario we envision the emergence of sustainable supercities that are closely connected with both the countryside and markets overseas. These “smart cities” are powered by wind, solar and hydrogen energy. Tall skyscrapers are covered in paper-thin solar panels that instantly process sunlight into clean electricity. New water purification technology enables steady access to clean drinking water.

The combination of a data driven approach and super soils have turned every rooftop into a lush garden full of crops, vegetables and produce. Fossil fuels and coal are banned, ensuring that smog, gridlocks and air pollution are something from the past. Small, electronic cars and a state-of-the-art public transport system make sure the city runs both cleanly and smoothly.

Because the high quality of life, these sustainable supercities have become magnets for both talent and foreign capital. The global renaissance of African culture has originated in these supercities, which are bustling with new ideas, trends and cultures from all around the continent and beyond. Good governance has resulted in an even distribution of wealth and the emergence of a new African middle class. Cheap superfast internet and a hyperloop train ensure a close connection with both overseas markets and rural areas.

Positive Aspects

- **Integrated Systems Thinking**
 - Participants appreciated the systemic integration of water, energy, and food (WEF) infrastructures in a high-density, urbanized setting.
 - The storyline demonstrated strong alignment between infrastructure, sustainability, and livability.
- **Technological Advancement**
 - The storyline showcased futuristic technologies such as hyperloop transport, solar facades, and advanced purification systems.
 - Strong emphasis on smart, connected, and energy-efficient urban environments.
- **Equity and Accessibility**
 - When upgraded, the scenario was praised for proposing an inclusive city with walkability, green corridors, and public services.
 - Emphasis on clean air, efficient public transport, and dignified living standards was well received.
- **Livelihood and Opportunity**
 - Urban setting seen as more likely to create diverse jobs and attract investment.
 - Education and lifelong learning were highlighted as built-in through digital access and connected platforms.

Concerns

- **Risk of Elitism or Exclusion**
 - Several participants feared the model could become a 'city for the rich', with others left behind.
 - Questions were raised about whether the city's tech-based services would truly be accessible to all income groups.
- **Cultural & Spiritual Gaps**
 - The design was seen as culturally neutral or sterile; lacked visible references to heritage, spirituality, or communal rituals.
 - Suggestions included incorporating shrines, cultural symbols, and inclusive spaces to reflect community identity.
- **Ecological Blind Spots**
 - Some participants questioned the sustainability of dense urban centers without robust ties to nature or food systems.
 - Concerns included: where does food come from? How is biodiversity preserved?
- **Social Isolation**
 - Despite its interconnectivity, the storyline risked fostering disconnection among individuals or communities.

Suggestions for Enrichment

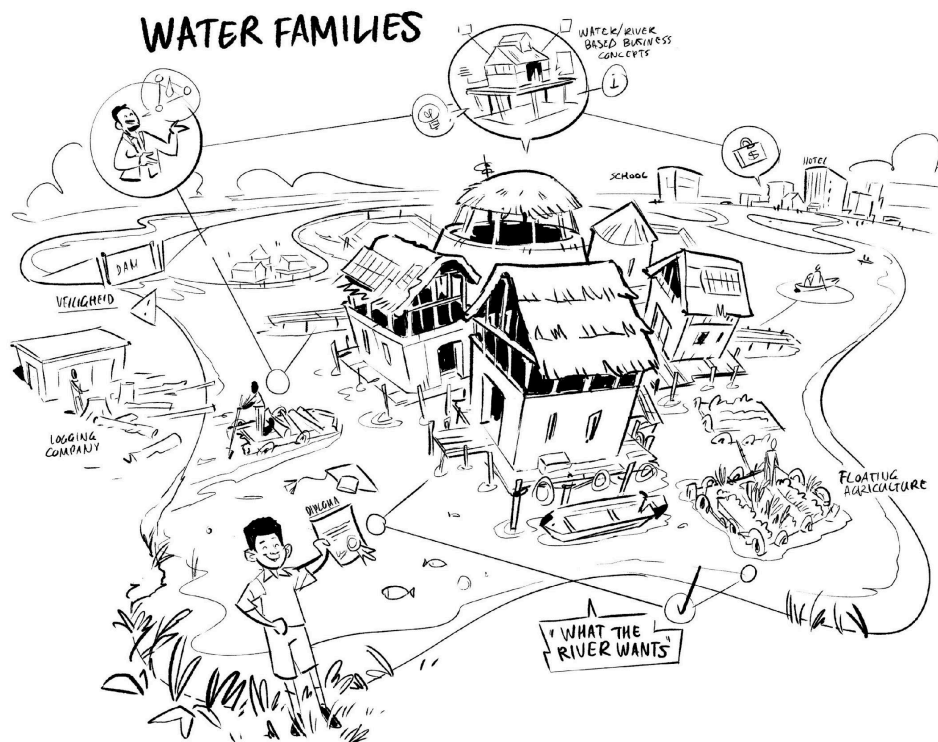
- Incorporate **diverse modes of transport**, including affordable private vehicles and nature-based commuting paths.
- Explicitly **include schools, health centers, and spiritual spaces** in the urban design.



- Strengthen **connections to peri-urban and rural food systems** to ensure food security.
- Promote **cultural representation** through public art, language, and symbolic design.
- Embrace **nature-based solutions** for pollution control, waste management, and urban cooling.



Water Families



WATER FAMILIES.

Towards interconnected water systems and communities across Volta.

Rivers are the lifelines in the Volta basin. In this scenario we envision how all stakeholders around rivers work closely together to take care of the river. No longer mankind tries to force rivers to do its bidding but rather the other way around. Main question would be: what would the river want? Logging companies and local communities work together to protect the river's eco-system and to take care of the water resources. The main idea is that all stakeholders are part of an interdependent water families, where the more affluent family members (such as logging companies) take care of the poorer family members (such as families who are affected by flooding rivers).

Positive Aspects

- **Deep Ecological Foundation**
 - Participants valued the centrality of water and rivers as lifelines connecting communities and ecosystems.
 - The concept of interdependence and shared stewardship resonated with traditional and indigenous ways of living.
- **Cultural and Spiritual Relevance**
 - Strong connection to spiritual and cultural identity, especially in rural and river-based communities.
 - Seen as a model that naturally integrates intangible values such as reverence for water, land, and heritage.
- **Community-Based Management**
 - Encouraged decentralized decision-making and local empowerment through “water family” networks.
 - Emphasized equity and mutual responsibility, where wealthier or more powerful actors support vulnerable ones.
- **Real-Life Anchoring**
 - Inspired by real-world examples like Zulezu (a floating village in Ghana), showing it’s not just conceptual.
 - Participants appreciated that elements of this scenario already exist and could be scaled or enhanced.

Concerns

- **Initially perceived as Outdated or Backward**
 - Initially seen by many as a relic of the past rather than a desirable future state.
 - Criticized for lacking modern infrastructure, robust economies, and climate adaptation strategies.
- **Incomplete Representation of WEF Nexus**
 - Participants noted insufficient attention to energy systems, technological innovation, and modern livelihoods.
- **Risk of External Dependency**
 - Questions arose about the fairness and practicality of relying on external actors (e.g., logging companies) to support others.
 - Concerns about power imbalances and lack of accountability in such models.
- **Vulnerability to Climate Risks**
 - Given their proximity to rivers, flood risks and lack of safety infrastructure were noted as serious gaps.

Suggestions for Enrichment

- Participants recommended upgrading the storyline with **climate resilience, energy access, healthcare, and tourism**.
- This storyline could be reframed as a **complementary model to the smart urbanization storyline**, especially as a place of rest, healing, and tradition.



- Add **flood management infrastructure** and **nature-based safety measures**.
- Incorporate **renewable energy systems**: solar, mini-hydro, or hybrid options.
- Build **community-based tourism, cultural preservation, and eco-services** as income streams.
- Include basic infrastructure like **healthcare, sanitation, and education facilities**.
- Formalize local governance to ensure **equitable water access and conflict resolution**.

The “Museum of the Future”

As part of the Transition Space methodology, participants were invited into a symbolic exercise: to contribute to a “Museum of the Future.” Unlike conventional museums that house relics of the past, this museum was envisioned as a living space where essential cultural, ecological, and spiritual elements are preserved — not because they are obsolete, but because they are non-negotiable foundations for any desirable future.

Cultural and Spiritual Preservation

A recurring theme was the protection of **spiritual relationships with nature, particularly water**. Participants emphasized the importance of rituals, prayers, and seasonal ceremonies tied to rivers, land, and ancestors. These practices, they noted, hold communities together and offer a deeper ethical framework for living in balance with the environment. The museum also became a space to honour indigenous knowledge systems — including oral storytelling, traditional healing, and localized weather wisdom — which risk being sidelined in future-oriented, technocratic models.

Social Values and Collective Memory

Several participants contributed values and practices rooted in interdependence: respect for elders, **communal child-rearing, collective land management, and the wisdom of slow, consultative decision-making**. These were seen as anchors in times of rapid change and uncertainty. The act of preserving these social norms also carried a political weight: it was a reminder that not all progress lies in moving forward; some of it lies in remembering what already works.

Ecological Anchors

From an environmental perspective, participants proposed safeguarding:

- Clean, flowing rivers
- Biodiverse ecosystems
- Traditional seed varieties

These contributions reflected a clear desire to embed **ecological guardianship** into every future scenario, regardless of its level of urbanization or technological advancement.

Cultural Symbols and Identity

In a continent where modernity often comes at the cost of cultural erasure, several participants argued for the **preservation** of:

- Local languages
- Festivals
- Art forms
- Traditional attire

These were described not merely as expressions of identity, but as carriers of meaning, pride, and continuity across generations.

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DAY 2

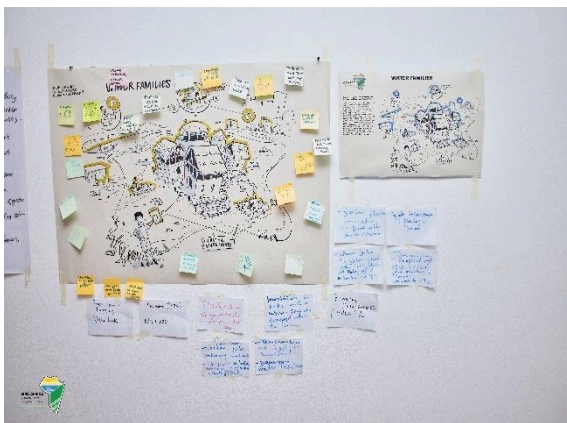
Overview

Opening Reflections

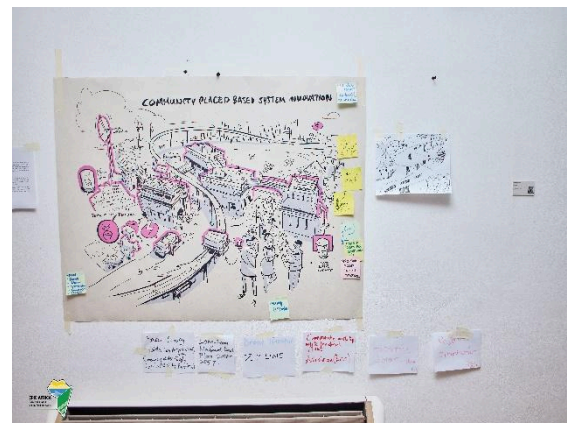
The day began with a reflective exercise: participants shared what had stayed with them after Day 1 — insights, emotions, and moments of inspiration. The facilitator emphasized the importance of holding onto the “lightness” and imaginative freedom experienced on Day 1, even as discussions moved into more technical and realistic terrains.

Connecting Vision to Reality: “Pockets of the Future”

Participants were asked to **identify real-world examples** — projects, policies, or practices already underway in Ghana or Burkina Faso — that reflect the desired future states co-created in Day 1. These were referred to as “**pockets of the future.**” Participants wrote them down and taped them under the narrative scenarios they best matched. This exercise revealed that many “futuristic” ideas are already happening — though small and fragile — showing that the imagined futures are rooted in current realities. The pockets of the future are described in the next section, under the heading of the relevant future storyline.



Pockets of the Future for the
“Community place-based system innovation” storyline



Pockets of the Future for the
“WEF-based urbanization” storyline



Pockets of the Future for the
“Water Families” storyline

Modeling for Insight, Not Prediction

Facilitators from the EPIC Africa team introduced the role of quantitative models (especially the CLEWS framework) in decision-making, with an emphasis on the following points:

- Models do not predict the future, but offer **insights into trade-offs and interlinkages** across water, energy, and food (WEF) systems.
- Modeling helps **explore the impact of policies**, such as renewable energy targets or land-use changes.
- They can simulate multiple scenarios, showing **potential pathways and consequences**.
- **Numbers matter**, especially to policymakers who prioritize cost and feasibility.
- By integrating values into numbers, the project aims to **“translate heart-based insights into head-based language”** that resonates with decision-makers.
- The ultimate goal is to equip the TS participants to influence policy by **telling stories behind the figures** — rooted in community values, justice, and ecological integrity.

One important principle should always be kept in mind: **“All models are wrong, but some are useful.”**

Examples like Uganda’s biofuel strategy illustrated how reducing wood fuel use (good for forests and CO₂ reduction) could still increase emissions via LPG use — highlighting complex, non-linear trade-offs in sustainability planning.

Participants discussed:

- How values like ecosystem services or social well-being can be integrated into models using proxies or constraints.
- The limitations of least-cost optimization and the need for broader, multi-criteria analysis.
- How model results should be communicated for policy and decision makers.

- How numbers (model results) should be communicated in a way that could be easily understandable and translated to policy scenarios.

Afternoon Session: Defining Design Criteria

Participants broke into groups aligned with the three future storylines. Each group was invited to assume the role of a high-level government commission, acting as stewards of a national or regional planning process aligned with their storyline's values and long-term vision. Their task: to define a **concrete set of design criteria** — key indicators, principles, or infrastructure priorities — across five STEEP dimensions: Social, Technological, Economic, Ecological, and Political. These had to take the form of grounded directives: what must be built, protected, supported, or regulated to make this future plausible and desirable? Using post its and shared boards, participants collaborated to articulate design elements relevant to their context. This included infrastructure types, governance mechanisms, planning standards, and social or cultural priorities. In the process, participants raised questions such as: What does inclusive service provision look like in this future? How is technology accessed and governed? What kinds of economic models are viable and equitable? What environmental protections are required? How are decisions made and by whom?





The resulting criteria were specific and diverse. Examples included community-managed energy systems, intergenerational learning centres, circular waste infrastructure, ecological buffer zones, smart farming hubs, equitable land-use regulation, and mechanisms for community participation in water governance. Some criteria reflected long-standing community needs; others drew inspiration from existing innovations and emerging practices already visible in the region. These outputs serve two main functions. First, they offer a **structured expression of each group's interpretation of what constitutes a desirable, feasible, and just future**. Second, they will be used to **inform and parameterize** the next stage of the process — a systems modelling exercise using the CLEWS framework. This approach ensures that the model does not remain purely technical but is **grounded in context-specific values and community-informed priorities**, thereby strengthening the relevance and legitimacy of the resulting scenarios.



STEEP criteria for “Water Families”



STEEP criteria for “WEF-based Urbanization”



STEEL criteria for “Community place-based system innovation”



Community Place-Based System Innovation



“Pockets of the Future”

- Participants referenced **community solar grids** and **floating solar installations**, some initiated by local cooperatives such as *RurAfrica*.
- **Hotels and small-scale businesses** were identified as early adopters of solar systems, showing a bottom-up transition to clean energy. These examples signal the growing importance of **energy autonomy and cooperative ownership** at the neighbourhood level.
- **Drone transport services** (e.g., ZIPLINE) were cited as a powerful tool for linking remote communities to urban hubs, especially for healthcare and logistics. Such innovations reflect the narrative’s focus on **smart, community-serving infrastructure** that bridges distance without relying on centralized systems.
- A key reference was Ghana’s “**Long-Term National Development Plan 2012–2057**,” pointing to existing policy frameworks that already adopt a future-oriented lens. While national in scope, this plan was seen as a potential anchor for more **locally contextualized innovation pathways**.
- The “**Offensive Agricôle**” 2023–2025 is a flagship initiative by the government of Burkina Faso aimed at achieving food sovereignty and national resilience in the face of conflict, climate shocks, and economic instability. It focuses on **boosting local food and fish production** through expanded cultivation, irrigation, mechanization, and support to smallholder farmers and cooperatives. The initiative also promotes aquaculture and seeks to **engage youth and displaced communities in productive agricultural activities**.
- One contribution referenced a **community built around a “mystic tree and market”** — in **Ashaiman**, a suburb of Accra. This example underlined the importance of **symbolic, cultural, and communal spaces** in any vision of systemic innovation. Place-making isn’t only about infrastructure — it’s about meaning, memory, and gathering.
- The final contribution emphasized **resource optimization** through a blend of **digital and physical systems**. This aligns with the scenario’s emphasis on **efficient service delivery, circular economy practices, and data-informed local planning**.

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Design Criteria

S – Social

- **Community centres (sports, recreation)** → Serve as local hubs that strengthen social ties and foster intergenerational cohesion.
- **Churches, mosques, shrines** → Reflect the integration of spirituality and cultural heritage in everyday community life.
- **Schools, clinics, hospitals** → Ensure essential services are decentralized and accessible within the community.
- **Police stations** and local government institutions → Promote local accountability and public safety grounded in community values.
- **Access to electricity for all** → Enables inclusive development and powers local livelihoods and services.

T – Technological

- **Waste and wastewater treatment** → Supports clean, self-managed living environments and circular resource use at the community level.
- **Mini hydropower** → Provides renewable, place-specific energy tailored to natural geography.
- **Waste to energy** → Turns local waste streams into usable energy, closing the loop on consumption.
- **Irrigation for cash crop farming, powered by solar pumps** → Empowers farmers to manage water and energy locally and sustainably.
- **Road and train infrastructure** → Connects communities to nearby hubs while maintaining decentralized living.
- **E-charging stations** → Encourages future-ready transport systems that are community-operated and clean.
- **Groundwater supply** → Ensures water security through locally managed and monitored sources.
- **Telecom and internet** → Links communities to the broader world while enabling digital inclusion and learning.
- **Data centres** → Host locally relevant data to support decentralized governance and services.
- **Technical schools** → Equip youth with hands-on skills for community-based innovation and self-reliance.

E – Economic

- **Markets for traditional artefacts** → Support culturally rooted economies and local creative industries.
- **Local textile industries** → Anchor economic value chains within the community, promoting self-sufficiency.
- **Microfinance companies** → Provide accessible capital to households and entrepreneurs to grow from within.
- **Hotel and restaurant businesses** → Encourage place-based tourism and service economies that reflect local identity.

E – Ecological

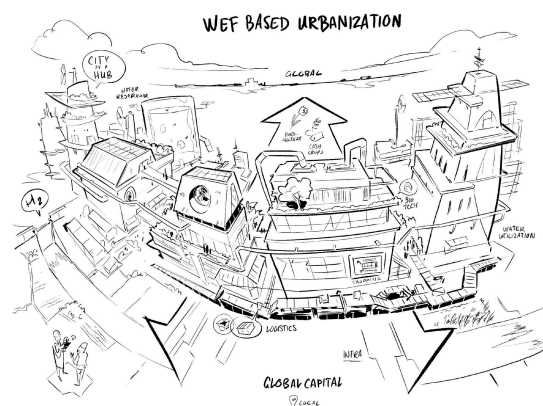


- **Wastewater treatment** → Protects local ecosystems while reusing water for agriculture or landscaping.
- **Retention ponds** → Manage flood risk and harvest water at a micro-watershed scale.
- **Forest and wildlife reserves** → Preserve biodiversity in and around communities as shared commons.
- **Wetlands** → Sustain natural water cycles and serve as buffers for climate resilience.
- **Flow regulation to keep ecosystems intact** → Ensures natural systems are maintained even as communities grow.

P – Political

- **Traditional authorities** → Play a core role in local governance, land stewardship, and conflict resolution.
- **Vertical farming** → Demonstrates innovation rooted in land-efficient, community-controlled food production.
- **PPP initiatives** → Mobilize shared responsibility between public actors and local groups for sustainable development.
- **Local government institutions and law courts** → Strengthen place-based rule of law and democratic accountability.

WEF-Based Urbanization



Pockets of the Future

- Participants noted the **promotion of renewable energy access** in both Burkina Faso and Ghana as a major enabling trend.
- Specific reference was made to initiatives for **energy sovereignty and security**, with mentions of **AER-Burkina Faso (ABER)**, working to electrify peri-urban areas, and **ANEREE**, involved in national-level energy transition programs.

- A strong emphasis was placed on **climate-smart agricultural solutions**, such as **SPIS** (Solar Powered Irrigation Systems) and **agroecological practices** tied to urban and peri-urban zones
- Participants highlighted the need to make **urban innovation inclusive and accessible**, especially for youth and lower-income groups.
- Infrastructure investments, such as **solar-powered digital platforms**, were noted for their potential to **bridge equity gaps** in urban settings.
- Participants called for **cultural spaces and spiritual reflection** to be part of future cityscapes — recognizing that material infrastructure alone cannot build liveable futures.
- The scenario inspired references to **circular resource flows** and **bioclimatic urban planning**, including water recycling and biodegradable waste treatment

Design Criteria

S – Social

- **Cycling and walking** → Ensures that city dwellers can use their private cars less.
- **Playgrounds and green public spaces** → Support liveable, healthy cities with well-being integrated into dense urban design.
- **Cultural identity and heritage inclusion** → Grounds modern city planning in local traditions, preventing cultural erasure.
- **Inclusivity for children, youth, and elders** → Designs city services and infrastructure to serve all demographics, not just the workforce.
- **Belief systems** → Changing belief systems were necessary to embrace scientific mindset (e.g. in health practices).
- **Include religious actors** → Enhances trust and outreach in city governance through community-based spiritual leadership.
- **Identity through indigenous design** → Connects urban innovation with indigenous cultural traditions.

T – Technological

- **Passive indoor cooling technologies** → Reduces urban energy demand while increasing climate resilience in dense environments.
- **Circular building technologies** → Aligns construction with zero-waste urban development goals.
- **More high-rise buildings** → Ensures efficient land use for housing purposes.
- **Integration of renewable energy technologies** → Balances modernization with sustainability in infrastructure expansion.
- **Cybersecurity**
- **Zero-carbon baseload capacity**
- **Mass transport systems** → Reduces traffic, emissions, and inequality through shared mobility infrastructure.
- **Data and digital equity** → Enable all urban citizens to participate in smart city services and planning.
- **Rainwater harvesting systems** → Strengthens urban water security and reduces pressure on central supply.

- **Technical education and innovation training** → Prepares urban youth for future-facing jobs in the WEF-tech economy.

E – Economic

- **Enhanced economic inclusion (especially for women and youth)** → Ensures urban development benefits marginalized groups via access to green jobs.
- **Optimize agricultural value chains** → Links peri-urban producers to city markets, minimal losses along the value chain.
- **Affordable access to housing** → Guarantees basic housing quality across income levels.
- **Affordable renewable energy** → Guarantees access to decentralized RE solutions for everybody.
- **Mass transport** → Supports public transport as a climate-friendly solution.
- **Youth employment** → Ties job creation to ecological restoration in and around urban zones.

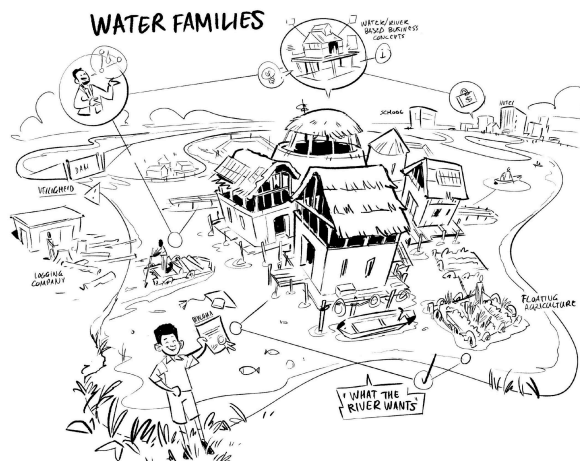
E – Ecological

- **Treatment and recovery of wastewater** → Enables water reuse within dense urban systems, reducing pressure on freshwater sources while supporting food and energy flows.
- **Solid and liquid waste treatment** → Ensures hygienic living conditions and enables circular urban metabolism by converting waste into usable resources.
- **Intelligent irrigation** → Optimizes water use in urban and peri-urban agriculture, aligning food production with limited water availability and smart infrastructure.
- **Minimal water flow to ensure survival of ecosystems** → Maintains ecological balance even in urban regions by preserving environmental flow requirements in rivers and wetlands.

P – Political

- **Adoption of policies that link climate, water, food, and energy (nexus thinking)** → Institutionalizes the WEF logic into city planning and regulation.
- **Community co-management of natural resources** → Shares urban WEF governance with residents and prevents elite capture.
- **Participatory and inclusive decision-making** → Builds legitimacy and long-term buy-in for complex urban systems.
- **Cost-benefit analysis to guide investment** → Supports prioritization of sustainable, high-impact urban WEF investments.
- **Integration across ministries and governance levels** → Prevents siloed decision-making on interlinked water, food, and energy issues.

Water Families



Pockets of the Future

- **Floating aquaculture cages** on the Volta Lake are enabling new income streams and food security through fish farming in water-dependent communities.
- **Swamp-based logging and natural resource use** along the Volta illustrates both a livelihood and a management challenge that must be addressed through sustainability practices.
- **Solar-powered floating irrigation systems** have been piloted in both the Black Volta regions of Burkina Faso and Ghana, enabling more climate-resilient agriculture.
- The **Pwalugu Multipurpose Dam** was noted as an example of regional efforts to improve **water independence** and integrate hydropower, irrigation, and flood control.
- Participants emphasized the link between **solar and wind systems, basin-wide water planning, and job creation**—pointing to a future in which ecological infrastructure generates both sustainability and employment.
- The phrase “green jobs” was repeatedly associated with water systems and decentralized planning.
- **Transboundary cooperation and conflict management systems** were cited as essential for effective and equitable governance of the shared Volta Basin.
- A call for **stakeholder engagement** in project design and budget processes highlighted the importance of inclusive governance mechanisms.
- The **artistic school in Nzulezu**—a stilt village in Ghana’s western region—was mentioned as a symbol of community identity, innovation, and culture rooted in water-centric living.

Design Criteria

S – Social

- **Education** → Strengthens intergenerational knowledge transfer, including ecological and cultural relationships with rivers.

- **Health services, hospitals** → Ensures well-being in remote, water-centred communities that may be distant from urban infrastructure.
- **Dialogues on reasons behind taboos on fishing in certain rivers** → To take away unjustified prejudices about why certain river areas would be 'off limits' for fishing activities.
- **Develop shared 'river spirituality'** → Reinforces community identity and stewardship through collective reverence for rivers as living entities.
- **Preservation of housing styles, combining traditional elements and modern technology** → Reflects cultural continuity and adapts local architecture to modern needs without erasing heritage

T – Technological

- **Develop soilless agriculture** → Enables sustainable food production in flood-prone or land-scarce riverine environments.
- **Technology and policy must work together to guarantee equal access** → Ensures that innovation supports, rather than bypasses, community equity in river-based systems.
- **River transportation infrastructure** → Builds mobility systems that follow the natural logic of river life and connect dispersed communities.
- **Combine science and traditional knowledge in developing 'appropriate' technology** → Aligns innovation with local values, river ecologies, and ancestral expertise.

E – Economic

- **Develop the informal economy around the river using local materials** → Supports livelihoods rooted in the river's natural offerings and craft traditions.
- **Enhance access to clean drinking water** → Addresses one of the most basic needs for river-based communities and sustains public health.
- **Establish priority rule for water use in the following order: domestic use, agricultural use (irrigation), energy production (hydropower), other uses** → Reflects the river families' ethic of placing people and food security before profit-driven extraction.
- **Develop integrated WEF farms** → Creates resilient, self-sufficient systems tailored to the interdependence of water, energy, and food in riverside settings.

E – Ecological

- **Develop solar power to reduce pressure on hydropower plants for producing electricity** → Protects river ecosystems by reducing the need for large-scale energy extraction from water flows.
- **Decentralized PV production for households** → Supports energy access without disrupting river habitats or creating dependence on central grids.
- **Develop ecological farms** → Encourages farming methods that regenerate river ecosystems instead of depleting them.

P – Political

- **Enforce existing regulations** → Safeguards rivers from overuse and pollution by strengthening protective governance.

- **Invest in clean water infrastructure** → Fulfills the right to water for river communities through durable, local systems.
- **Create an enabling environment for the private sector to invest** → Attracts responsible actors to co-invest in river-friendly solutions aligned with community values.
- **Use cost-benefit analysis systematically to protect the river** → Makes river protection an economically visible and justifiable priority.
- **Develop a new metric for access to drinking water from the tap (not from plastic drinking bottles)** → Redefines water security in terms of sustainable, locally managed delivery systems.

Conclusion and Future Work

The 2nd Transition Space meeting for the Volta River Basin marked a significant step forward in **co-creating inclusive, values-driven pathways for sustainable water-energy-food (WEF) systems**. Over the course of two days, the TS participants engaged in scenario evaluation, participatory modelling, and collaborative design. The process reaffirmed that diverse stakeholders can align around long-term visions when these are **grounded in shared values and cultural meaning**. The exercise of “voting with your feet” revealed that preferences are not just intellectual but deeply intuitive, emotional, and context dependent. The three narrative future visions — *Community Place-Based System Innovation*, *WEF-Based Urbanization*, and *Water Families* — each resonated differently across value clusters, sparking critical reflection on trade-offs, complementarities, and blind spots. Importantly, participants emphasized that **no single future can stand alone: hybrid and context-specific combinations may be necessary to meet the Volta region’s complexity**. Through “pockets of the future,” participants demonstrated that many elements of these imagined scenarios already exist — albeit at small scale. These examples of emerging innovation, grounded in real practice, will serve as important anchors for further work. Additionally, the **STEEP design criteria** developed during Day 2 provide a concrete foundation for translating storylines into parameters for modelling and policy dialogue. These criteria — spanning social cohesion, appropriate technologies, local economies, ecological safeguards, and inclusive governance — reinforce the central insight that sustainable WEF systems are **as much about values and relationships as they are about infrastructure**.

Looking ahead, the EPIC Africa team will begin **integrating these narratives, criteria, and insights into its modelling work using the CLEWS framework**. This model will help explore systemic trade-offs, test the feasibility of the visions, and surface key leverage points for transition. The results will be used to initiate **deeper policy engagement with national and regional authorities**. Future Transition Space meetings will build on this work by exploring convergence across scenarios, deepening cross-border collaboration in the Volta Basin, and identifying pathways for implementation and investment that are just, resilient, and grounded in local realities.



Annex 1 – Modelling presentation