UNITED NATIONS ENVIRONMENT PROGRAMME

Background Guide

Topic: Climate Reparations and Loss & Damage

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Message from the Chairs

Greetings delegates!

We warmly welcome you to the United Nations Environment Programme (UNEP) at NMMUN 25'. This year we will focus on **Climate Reparations and Loss & Damage**, a subject that has risen to the forefront of climate diplomacy. While mitigation and adaptation remain essential, the undeniable impacts of climate change require mechanisms to address irreversible harm. Communities across the globe are facing floods, rising seas, droughts, and cultural loss.

This committee is tasked with evaluating both the principle and practice of reparations. Delegates should consider the balance between **historical responsibility** and **current capacity to act**, while exploring innovative and practical solutions. Your role is not only to debate responsibility but also to propose realistic pathways for funding, transparency, and delivery.

We encourage you to approach the discussion with fairness, creativity, and a strong sense of justice. Our hope is that debates in this room inspire meaningful, forward-looking solutions.

Best wishes,

Zarah & Arya

Chairs of UNEP

Explanation of the Topic

The concept of **Climate Reparations and Loss & Damage** reflects a growing recognition that climate change produces harms beyond adaptation and mitigation. Loss & Damage refers to unavoidable impacts: rising sea levels that engulf land, extreme weather destroying homes, and cultural heritage lost to shifting environments. Reparations seek to address the injustice that those least responsible—particularly **small island developing states (SIDS)** and **least developed countries (LDC...**

Debates hinge on responsibility and feasibility. Should obligations stem from **historical emissions** or present financial capacity? Developed countries often resist language implying liability, preferring voluntary contributions framed as solidarity. Meanwhile, vulnerable nations argue that without concrete support, the Paris Agreement's promise of fairness remains hollow.

The **Loss and Damage Fund**, agreed at COP27, was hailed as a breakthrough, but questions remain: Who will contribute? How will disbursements be managed? Will private actors like fossil fuel companies bear costs? UNEP's role includes supporting sustainable mechanisms that align with climate justice principles while ensuring ecological resilience.

Historical Background

Discussions on **Loss & Damage** began as early as 1991, when the **Alliance of Small Island States (AOSIS)** proposed an international insurance mechanism for climate impacts. For decades, developed countries resisted such proposals, fearing they implied legal liability. As a result, the topic remained sidelined while negotiations focused on mitigation and adaptation.

The **Warsaw International Mechanism (2013)** marked the first formal recognition, though without binding commitments. The **Paris Agreement (2015)** gave Loss & Damage a dedicated article, but excluded liability and compensation at the insistence of developed nations. This compromise acknowledged vulnerability but limited the reparations dimension.

Momentum shifted at **COP26 and COP27**, driven by devastating climate disasters in vulnerable states. At COP27 in Sharm el-Sheikh, nations agreed to create the **Loss and Damage Fund**, a milestone in climate justice. Yet, progress has been uneven: COP28 initiated discussions on governance and financing, but questions about adequacy and equity persist.

This history reveals both resilience and inequity: vulnerable states persisted for decades to gain recognition, while developed countries largely sought to limit obligations.

Current Situation

The discussion around Climate Reparations and Loss & Damage has become a major focus in recent international climate talks. Many developing countries, especially Small Island Developing States (SIDS) and Least Developed Countries (LDCs), are suffering the most from climate change, even though they have contributed the least to it. Rising sea levels are swallowing coastlines, storms and floods are destroying homes, and droughts are affecting food and water supplies. These nations are demanding financial support and justice from wealthier, industrialized countries that have been the main contributors to greenhouse gas emissions over the past century.

In 2022, world leaders at COP27 agreed to create a Loss and Damage Fund to help vulnerable countries recover from climate-related disasters. This was seen as a historic moment and a step toward global climate fairness. However, even today, there are many debates about how this fund should actually work — for example, who will provide the money, how much each country should pay, and which nations should receive it first. Richer countries like the United States, the United Kingdom, and members of the European Union have promised to contribute but are careful not to call it “reparations,” since that would make it sound like they are legally responsible for causing the damage.

Meanwhile, developing countries argue that climate justice means more than just aid — it means taking responsibility for the harm already done. The current situation shows both progress and disagreement: while countries are finally talking about compensating the most affected communities, there is still a long way to go before promises turn into real action and financial help reaches those who need it most.

Case Studies

Several case studies illustrate the urgency of climate reparations:

1. **Pakistan Floods (2022):** One-third of the country was submerged, displacing millions and causing over $30 billion in damages. Pakistan contributes less than 1% of emissions but faces catastrophic impacts.

2. **Small Island States:** Nations like Tuvalu and Kiribati face existential threats from sea level rise, losing land, livelihoods, and cultural identity. Their advocacy has been crucial in pushing Loss & Damage into negotiations.

3. **Cyclone Idai (2019):** Mozambique, Zimbabwe, and Malawi faced devastating losses to infrastructure and agriculture, exposing the limits of humanitarian aid for climate-driven disasters.

4. **Heatwaves in Europe (2022):** Even developed nations face severe damages, underscoring that Loss & Damage is a global concern, though burdens fall unevenly.

These examples show that climate impacts transcend borders, but their effects are disproportionate. Reparations and the Loss & Damage Fund are attempts to bridge this gap between responsibility and vulnerability.

Steps Taken

Several steps have been taken to institutionalize Loss & Damage:

Warsaw International Mechanism (2013): Established a framework for dialogue and knowledge sharing.

Paris Agreement (2015): Recognized Loss & Damage under Article 8, but excluded liability and compensation.

Santiago Network (2019): Aimed to provide technical support, though operationalization lags.

COP26 (2021): Elevated political attention but failed to create a dedicated facility.

COP27 (2022): Landmark agreement to establish a **Loss and Damage Fund**.

COP28 (2023): Discussions advanced on initial financing and governance, though questions remain about adequacy and

accountability.

These measures reflect incremental progress. However, financing remains inadequate, governance structures are unclear, and developed nations remain divided on obligations. The challenge for UNEP delegates is to evaluate how to strengthen these mechanisms, ensuring they deliver timely, just, and transparent support.

Areas for Improvement

1. **Establish Predictable and Adequate Contributions to the Fund**

   One of the biggest challenges facing the Loss and Damage Fund is the *lack of consistent and guaranteed financial support*. Currently, contributions depend on voluntary pledges, which often fall short or arrive too late to make a real difference. To make the fund effective, countries need to agree on a system that ensures regular, predictable, and sufficient contributions from developed nations — ideally based on their historical emissions and economic capacity. This would help vulnerable countries plan ahead instead of waiting for uncertain aid after disasters strike.

2. **Expand Financing Sources, Including Private Sector Levies**

   Relying only on government donations will never be enough to meet the rising costs of climate disasters. The international community should look into *alternative sources of funding*, such as levies on carbon-intensive industries, aviation, shipping, or fossil fuel companies. Private sector involvement — through green bonds, corporate climate funds, and partnerships — can make the Loss and Damage mechanism more financially stable and sustainable in the long term.

3. **Ensure Transparent Governance and Equitable Access**

   Transparency is crucial to make sure that funds actually reach the

communities that need them most. A clear, fair, and accountable

governance structure should be established, including representation from developing nations and affected communities. Decisions about which projects receive funding should be made openly and without political bias. This would build trust and prevent wealthier countries or large organizations from dominating the process.

4. **Link Loss & Damage with Broader Sustainable Development Goals (SDGs)**

   The fight against climate change is deeply connected to other global goals, such as eradicating poverty, ensuring food and water security, and promoting equality. Loss and Damage measures should not just focus on repairing harm, but also on helping countries *build long-term resilience*. For example, rebuilding homes after floods should include making them more climate-resistant, and restoring farmland after droughts should include promoting sustainable farming practices. Integrating the Fund with the SDGs ensures that recovery also leads to growth and sustainability.

5. **Address Non-Economic Losses Such as Cultural Heritage**

   Not all losses from climate change can be measured in money. Many communities are losing their cultural traditions, ancestral lands, and historical sites to rising seas or changing environments. These *non-economic losses* — like the destruction of sacred places or the displacement of indigenous groups — are just as devastating. The international community must create ways to recognize and protect

cultural and social heritage as part of the Loss and Damage discussions, not just focus on financial compensation.

6. **Strengthen Capacity-Building in Vulnerable Nations**

   Many developing countries lack the technical expertise and institutional capacity to accurately assess climate damages, apply for funds, and manage adaptation projects. Providing training, technical assistance, and access to climate data would empower these nations to make full use of global financial mechanisms.

7. **Improve Coordination Among International Bodies**

   There are overlaps and gaps between institutions like UNEP, UNFCCC, and the Green Climate Fund. Stronger coordination can prevent duplication of work, streamline funding channels, and make support more accessible to vulnerable countries.

8. **Encourage Technology Transfer for Resilience**

   Developed countries can aid vulnerable nations by sharing green technologies that enhance disaster preparedness, water management, and renewable energy production. This reduces dependency and long-term costs while fostering self-reliance.

9. **Enhance Monitoring and Accountability Mechanisms**

   To ensure funds are effectively used, transparent systems must be established for tracking where money goes, how it’s used, and what outcomes it produces. This prevents corruption and builds global trust

in the Fund.

10. Increase Inclusion of Local and Indigenous Communities

Local and Indigenous populations are often the most affected by climate loss and damage but are rarely involved in policymaking. Their inclusion ensures that traditional knowledge and local needs are reflected in climate resilience strategies.

Possible Solutions

1. Operationalizing the Loss and Damage Fund

Make the fund set up at COP28 effective with the right mechanisms for disbursing assistance.

Give direct access to the fund for most-affected nations such as SIDS and LDCs to prevent bureaucratic hold-ups.

Design a monitoring system to see where the funds are going and how they're being used.

2. Diversifying Financial Sources

Break away from voluntary state contributions — incorporate levies on fossil fuel industries, airline taxes, or a world carbon tax.

Encourage private sector investment, where businesses donate a portion of profits to climate damage restoration funds.

Explore green bonds or climate impact investment programs to attract environmentally friendly capital.

3. Developing Climate-Resilient Infrastructure

Investment in climate-resilient infrastructure, including flood protection, drought-proof agriculture, and coastal protection.

Enable transfer of technology to developing nations — swapping innovations in renewable energy, waste management, and sustainable agriculture.

4. Strengthening Early Warning and Response Systems

Strengthen regional disaster management networks to issue real-time alerts for storms, floods, and droughts.

Use AI and satellite-based systems to anticipate risks and minimize losses before the occurrence of disasters.

5. **Community-Centered Rehabilitation**

Structure community-led recovery interventions that address social and cultural loss, in addition to economic loss.

Combine psychosocial support, heritage protection, and livelihood restoration in post-disaster efforts.

6. **Alignment of Policies with Sustainable Development Goals (SDGs)**

Incorporate Loss and Damage policies within the SDGs, specifically Goals 13 (Climate Action), 14 (Life Below Water), and 15 (Life on Land).

Foster national climate legislation mandating environmental accountability and restorative measures.

7. **Transparent Governance and Accountability**

Create a UN-overseen oversight body that ensures inclusive representation of developing countries in decision-making.

Provide for annual reporting and auditing of contributions and expenditures to maintain donor confidence and transparency.

8. **International Legal Frameworks**

Strengthen the legal frameworks dealing with historical responsibility for emissions.

Consider creating a Climate Justice Tribunal under UN auspices for the settlement of disputes or claims for reparations.

9. Public Awareness and Education

Launch global campaigns on climate justice and shared responsibility.

Encourage youth participation through environmental education programs and demonstration projects at school and university levels.

Suggested Moderated and Unmoderated Topics

Moderated Topics:

1. Governance structures for the Loss and Damage Fund.
2. Sources of finance: public vs. private sector contributions.
3. Balancing historical responsibility with current capacity.
4. Role of UNEP in supporting transparency and accountability.

Unmoderated Topics:

1. Drafting regional cooperation frameworks.
2. Mechanisms for addressing non-economic losses.
3. Linking Loss & Damage with climate adaptation strategies.

Guiding Questions

1. How should responsibility for Loss & Damage finance be allocated?
2. What mechanisms ensure transparency and timely disbursement?
3. Should private sector actors be obligated to contribute?
4. How can the Fund include cultural and non-economic losses?
5. How can UNEP complement other institutions in this work

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Topic: Tackling Global Water Scarcity Through Sustainable Management and Innovation

Message from the Chairs,
Distinguished delegates,

Welcome to this plenary session of the United Nations Environment Programme. The crisis of global water scarcity is one of the epochal challenges of our time, a crucible in which the destinies of environment, economy, equity, and peace are inextricably entwined. The intellectual rigour you will deploy, the resolutions you will architect, and the paradigms you will recalibrate may well become the compass points for planetary hydric stewardship. We urge you to approach this issue with a blend of sagacity, audacity, and a deep respect for both the majesty and vulnerability of our planet's freshwater systems.

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1. Introduction

Water is often opined as the solvent of civilization; it is more than merely a molecule, but the axis around which ecosystems, economies, and existential realities revolve. As of 2025, the planet reels under the multiple burdens of population growth, climatic disarray, profligate extraction, and a governance deficit that together precipitate a crisis hitherto unseen in both magnitude and reach.[1][2]

Only about 3% of Earth's water is freshwater, and of this, just a fraction is accessible for use by ecosystems and contemporary societies. This conundrum is not abstract: currently, 2.2 billion people lack safe drinking water, and 4.5 billion suffer from inadequate sanitation. Projections intimate a scenario where, by 2025, up to two-thirds of humanity may face chronic water shortages.[2][3][4][5]

This guide aspires to be an encyclopaedic and yet accessible resource, providing you with the depth, data, and analytical arsenal needed for nuanced debate and judicious solutions.

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2. The Hydrospheric Context: Definitions and Global Overview

Water scarcity is multifaceted — a condition both biophysical (absolute lack) and socio-economic (inaccessibility due to poverty or infrastructural malaise). Often, distinguishing between **physical water scarcity** (e.g., Sahelian Africa, Middle East deserts) and **economic water scarcity** (e.g., parts of rural sub-Saharan Africa, South Asia) is essential for diagnostics and solutions.[6]

According to the UN World Water Development Report (2025), over 2 billion people are already experiencing high water stress, defined as regions where withdrawals exceed 25% of available renewable supply. By 2050, more than half the global population may be living under water-stressed conditions.[1]

****Key definitions**:**
- **Renewable Internal Freshwater Resources**: This metric quantifies annual river flows and groundwater generated from endogenous precipitation.
- **Baseline Water Stress**: Ratio of total annual water withdrawals to total available supply.
- **Water Use Efficiency**: Assessment of how much water is used per unit of GDP or crop produced.

****Global distribution**:**
- Only 3% of the world's water is fresh, and two-thirds of this is locked in glaciers or unavailable aquifers.[4]
- Over 1.1 billion people experience water scarcity at least one month per year.[4]

- Freshwater ecosystems—the planet's arteries—are under assault: over half of wetlands have disappeared, rivers are dammed and run dry, aquifers are overdrawn.

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3. Underpinnings and Drivers of Water Scarcity

a) Climate Change and Variability

- **Changing Precipitation Patterns**: Intensification of both droughts and floods; erratic rainfall exacerbates both scarcity and unpredictability.
- **Glacial Retreat**: The Himalayan glaciers—source for a billion people—are receding, threatening perennial river flows in South Asia.
- **Sea-Level Rise**: Intrusion of saltwater into coastal aquifers compounds scarcity.

b) Demographic Pressures and Urbanization

- Global population is projected to reach 8.5 billion by 2030; water demand will rise accordingly, placing pressure on already stressed basins.[2]
- Urban migration intensifies stress on decrepit, underfunded municipal water systems.

c) Industrialization and Agricultural Consumption

- Agriculture accounts for ~70% of global freshwater withdrawals.[6][4]
- The “water-energy-food nexus” highlights the interdependencies causing trade-offs between sectors.
- Industrial use, especially in emerging economies, is rising precipitously.

d) Pollution and Environmental Mismanagement

- Pollution—industrial effluents, agricultural run-off, microplastics—renders vast volumes of water unfit for use.
- Inefficient water pricing and subsidies perpetuate waste.
- Wetland destruction reduces the planet’s capacity to both store and purify water.[4][6]

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4. The Political Ecology of Water: Governance and Conflict

Access to water is deeply entwined with questions of sovereignty, conflict, and cooperation. More than 260 river basins are transboundary. Hydro-political stress is especially acute in the Nile (Egypt, Sudan, Ethiopia), Mekong (Southeast Asia), Jordan (Middle East), and Indus (India/Pakistan) basins.[7]

Conflicts range from “water wars” (rare) to chronic “water stress diplomacy”: Nile Basin disputes, Jordan Valley negotiations, and Central Asian contestations over the Amu Darya and Syr Darya rivers. Hydrodiplomacy mechanisms and transboundary institutions are critical but often under-resourced.

Domestic governance is no less consequential. In India, for example, competition between states (Tamil Nadu and Karnataka over the Cauvery River) mirrors and amplifies the failures of water allocation, data transparency, and accountability.[6]

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5. Socio-Economic and Health Impacts of Water Scarcity

Health:

- **Infectious Disease:** Scarcity leads to reliance on unsafe water, driving diarrheal disease (kills over 500,000 children under five annually).
- **WASH Shortfalls:** Lack of clean water and sanitation impedes disease control.

Economy:

- Water scarcity is estimated to shave trillions off global GDP by 2050 if unaddressed.[8]

- Water insecurity undermines livelihood systems (agriculture, manufacturing), and impedes education by pulling children, especially girls, from school to fetch water.

Society:

- Vulnerable groups—women, minorities, rural poor—bear the greatest burdens.
- Water scarcity precipitates involuntary migration and urban overcrowding, compounding social tensions.

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6. Case Studies from Across the Globe

Sub-Saharan Africa

Over 400 million people lack basic water services. The Sahel and Horn of Africa are particularly at risk. Water scarcity exacerbates food insecurity: droughts have precipitated famine in countries like Somalia and Ethiopia. Solutions have included borewell drilling, solar-powered pumps, and water committees, but funding and maintenance gaps persist.[2][4]

India

India holds just 4% of global freshwater but supports 18% of the world's population. Over half its districts are currently water-stressed, with a projected 50% deficit in supply by 2030 if usage patterns persist. Intensive groundwater pumping for agriculture has led to dramatic aquifer depletion; the per-capita availability of water has fallen by 75% since 1947. The 2019 Chennai "Day Zero" crisis and persistent rural suicides highlight the magnitude of the problem and its intimate link to governance and rural distress.[2][6]

Jordan/Middle East

Jordan, the world's second-most water scarce nation, has fewer than 100m^3/person/year available, far below the global threshold for absolute scarcity. Regional instability, refugee influxes, and political complexities

further stress an already overdrawn aquifer system. Innovations include compulsory rainwater harvesting, large-scale desalination, and water-sharing agreements, but challenges remain in equitable allocation and enforcement.[7]

Latin America and the Caribbean

Although apparently rich in water, distribution is uneven. Northern Mexico, northeast Brazil, and Andean Peru are water-stressed; deforestation and mismanagement exacerbate vulnerability. Innovative models such as Payments for Ecosystem Services have shown some promise.

Cape Town, South Africa

The 2018 crisis nearly brought this major city to a halt, with well-publicized "Day Zero" warnings galvanizing municipal action. Conservation, extraordinary use restrictions, and emergency augmentation (desalination and groundwater extraction) postponed catastrophe, but highlighted the phenomenon of hydrological shocks in the urban century.

The Aral Sea Disaster

Once the fourth-largest lake in the world, the Aral Sea shrank by ~90% due to Soviet irrigation schemes. The resulting ecological and economic devastation offers an object lesson in unsustainable water management's catastrophic long-term costs.

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7. The Science of Water Management

Hydrology and Resource Mapping

Remote sensing (satellite imagery), hydrogeological modelling (e.g., MODFLOW), and innovative data platforms (e.g., the India Water Tool) are at the forefront of mapping availability, extraction, and quality.[6]

Water Quality Assessment Methodologies

Standard techniques include biological assessments (macroinvertebrates as indicators), chemical testing (nutrients, toxins), and microbial counts (E. coli, cholera, typhoid).

Remote Sensing and Modelling

Technologies such as GRACE satellites (tracking groundwater depletion) and Google Earth Engine support basin-wide assessments and early-warning systems for drought and flood.

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8. Policy Frameworks and International Agreements

United Nations (UN Water)

SDG 6 aims for universal and equitable access to safe and affordable drinking water by 2030; significant shortfalls mean acceleration is needed. UNEP, in conjunction with other agencies, monitors, coordinates, and mobilizes funding/innovation.[1]

Multilateral Instruments

- **The Dublin Principles (1992):** Four tenets, including the economic value of water and community participation.
- **Helsinki Rules (1966)** and **UN Watercourses Convention (1997):** Set out rights and duties for cross-border water bodies.

Regional Agreements

- **Mekong River Commission (MRC):** Joint management among Southeast Asian countries.
- **Nile Basin Initiative:** Eleven-nation consortium; Ethiopia's Grand Renaissance Dam is a test case.
- **Indus Waters Treaty:** India/Pakistan; considered robust, but vulnerable to geopolitical shocks.

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9. Innovation and Technology for the Future

Digital Water Management

- Smart meters, IoT-enabled leak detection, and cloud-based analytics are revolutionizing urban water management.[9]
- Decision-support systems deploy predictive AI to optimize irrigation and reservoir releases.[10]

New Irrigation Systems

- Drip and subsurface irrigation sharply reduce agricultural water demand.
- Precision agriculture uses soil sensors and weather forecasts to fine-tune watering.

Desalination and Water Reuse

- Membrane and reverse osmosis technologies are increasingly viable, as seen in Israel and Singapore.
- Water recycling (“reuse”) turns sewage into potable resource (Singapore’s NEWater).

Community-led Solutions

- Indigenous knowledge (e.g., traditional rainwater harvesting in Rajasthan, India).
- Decentralized catchment management by local groups; proven resilience against drought.

Innovation Finance

- The Water Innovation Engine and other funds catalyze technological adoption and local entrepreneurship.[10]

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10. Steps Taken: Global, Regional, and Local Responses

Global

- UN-Water provides a framework for Integrated Water Resources Management (IWRM).
- SDG 6 as galvanizing framework for policy and investment.
- World Bank and other lenders fund infra, capacity building, and institutional reform.[1][2]

Regional

- River basin treaties (Indus, Nile, Mekong) as models for managing shared waters—though vulnerable to conflict.[7][6]

National

- Israel: World leader in desalination, wastewater recycling, smart irrigation.
- Singapore: Water self-sufficiency through diversified sourcing (catchment, desalination, import).
- India: Revitalization of tanks and lakes, Smart Cities mission includes water as core element.

Local

- Women-led water committees and micro-utilities in Africa.
- Regreening of catchments (Farmer Managed Natural Regeneration) in the Sahel.

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11. Barriers to Implementation and Opportunities for Synergy

- **Financing:** Poor credit access, unattractive risk-return profiles for private capital.
- **Technical:** Limited skilled personnel to operate/maintain new systems.
- **Policy integration:** Siloed ministries, fragmented mandates.
- **Data gaps:** Incomplete hydrologic, demographic, and consumption datasets.

Opportunities include:

- Blended finance models to leverage public, philanthropic, and private capital.
- Scaling up proven pilots (e.g., managed aquifer recharge in Australia).
- Digital leapfrogging—low-cost sensors, mobile water testing, and open data.

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12. Proposed Areas of Negotiation and Reform

Delegates should focus on:
- Streamlining transboundary water management
- Financing and scaling water innovation
- Ensuring water security for the most vulnerable
- Integrating water, food, and energy policy synergies
- Mainstreaming climate adaptation in all water strategies
- Advancing women's leadership in water governance

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13. Key Questions for Delegates

- How can technological paradigms be scaled globally without exacerbating inequalities?
- What modalities best incentivize cross-boundary cooperation while respecting national sovereignty?
- How should financing architectures be structured to catalyze public, private, and social innovation?
- What legal/jurisprudential frameworks ensure fair allocation, access, and accountability?
- How can water policy be harmonized with climate, food, and energy security strategies?

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Glossary of Key Terms (for deeper comprehension):

- Aquifer: Underground layer of water-bearing permeable rock.
- Desalination: Removal of salt and minerals to produce potable water.
- Drainage basin: Geographic area that all precipitation drains into a river system.
- Integrated Water Resources Management (IWRM): Coordinated, cross-sectoral approach for optimal resource use.
- Water footprint: Total volume of freshwater used to produce goods/services.
- WASH: Water, Sanitation, and Hygiene services, critical in public health.