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Toward Climate-Integrated Circular Water Governance: A Framework Linking Wastewater, Gender, and Youth Engagement

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Decades of decentralized hydrological research reveal a fundamental reality, when women lead water and waste management, the integration of scientific data with socio-ecological systems is profoundly more effective. The career trajectory underscores that moving beyond linear, technology-only paradigms toward true Integrated Water Resource Management (IWRM) requires community-centric, gender-inclusive leadership. Purely technological systems cannot succeed without the social frameworks to sustain them.

Through extensive collaborative research, with the research serving as the pivotal academic partner, several powerful models of circular water governance have emerged across India. Decentralized wastewater treatment frameworks in Haryana and Rajasthan demonstrate that involving women and youth at every step transforms wastewater from an environmental hazard into a managed, circular resource. Women-led ecological restoration, such as the transformation of the Aravalli Biodiversity Park driven by the citizen group 'I Am Gurgaon,' provides concrete evidence of how female leadership successfully reclaims the urban ecological commons.

These initiatives highlight that intergenerational equity is the bedrock of climate resilience. Programs like the Young Water Fellowship within the Gurujal network, alongside urban mini-forest restorations by youth-led groups like the Rewilders (spearheaded by the youth) in Faridabad, prove that localized, inclusive interventions withstand climate impacts far better than top-down infrastructure. To scale these successes, there is an urgent need to empower climate-smart women and youth to manage modern technological systems from local wastewater recovery to monitoring automatic weather stations ensuring that data-driven hydrology remains grounded in community stewardship.

This presentation synthesizes these diverse Indian success stories to propose a robust, integrated circular governance framework. It demonstrates that empowering women and inclusion led to success stories in rejuvenation and youth is not merely a social equity metric, but a fundamental scientific prerequisite for achieving resilient, circular urban eco-hydrology.