



MICRO-CREDENTIAL

CIRCULAR ECONOMY FOR LAND AND WASTE MANAGEMENT

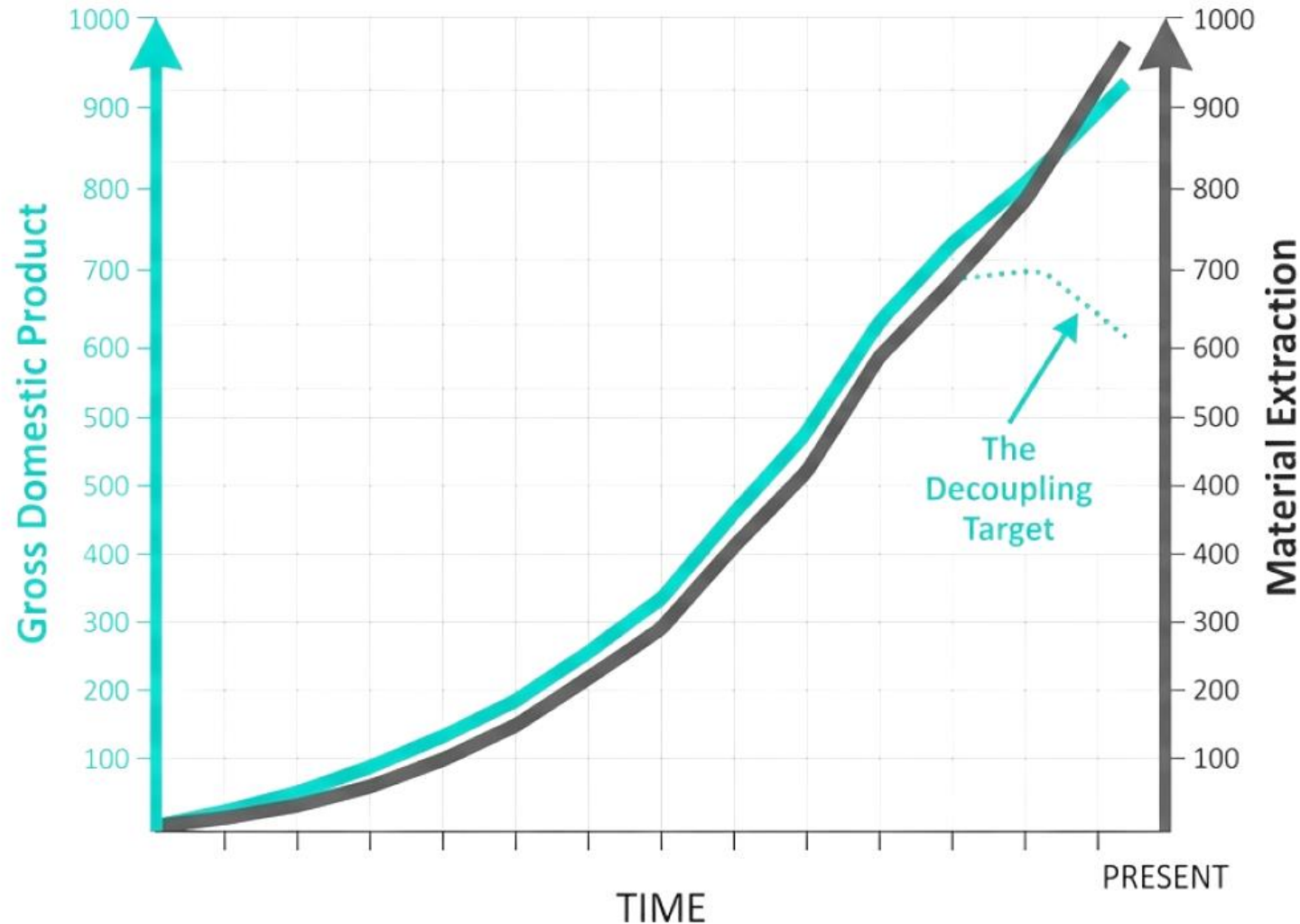
1.- Introduction to Circular Economy in Land and Waste Systems

Circular Economy Challenges in Central Asia

CELWS-W01-V04



Why Circular Economy Matters



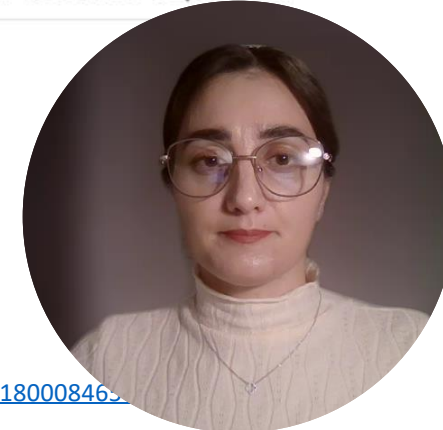
The IPAT Equation

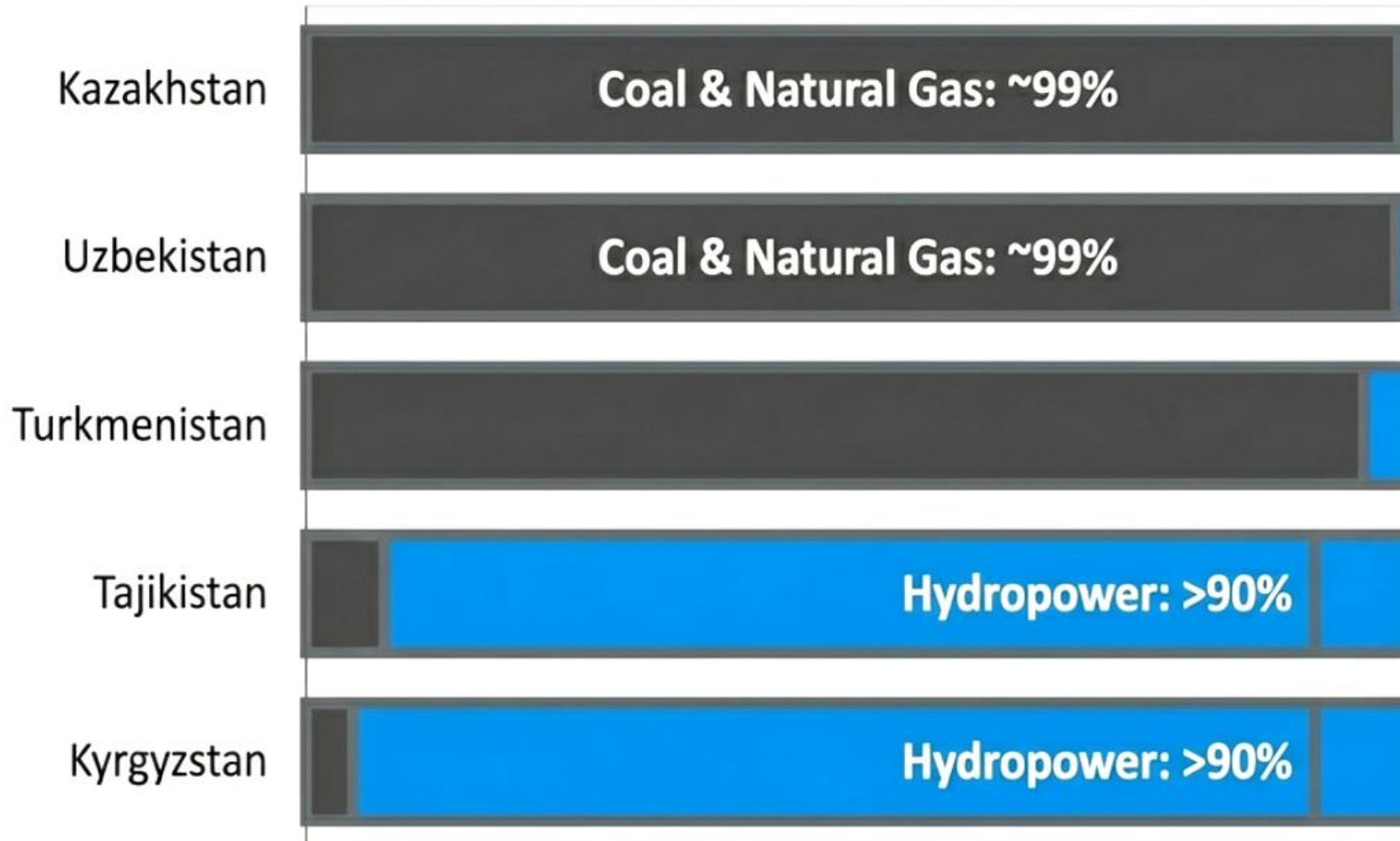
$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

Take-Make-Waste



Central Asia's rapid economic expansion relies heavily on a linear model. Increasing affluence currently dictates proportional increases in natural resource depletion.





Decarbonization
and material
efficiency face
entirely different
infrastructural
baselines
depending on the
specific national
energy mix.

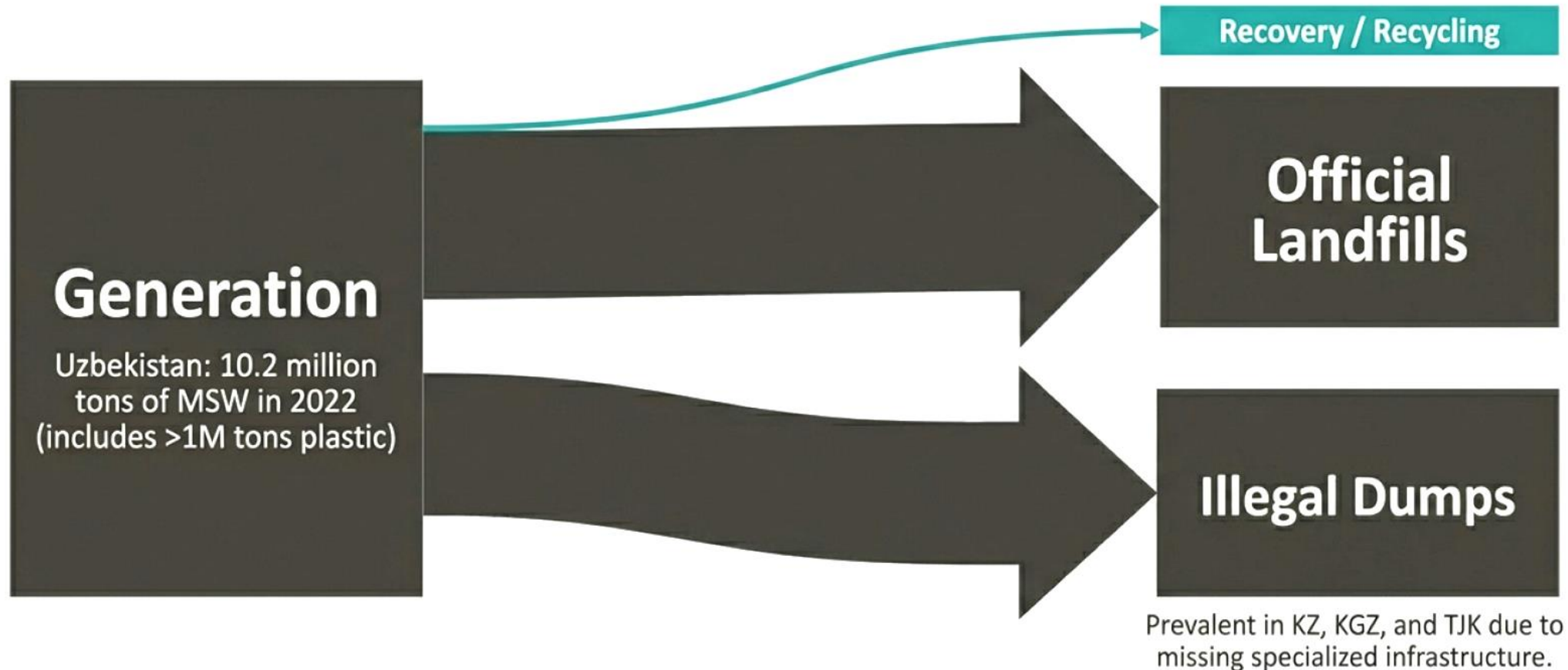


Current State of Circular Economy in the Region

	Central Asia	European Union
 Resource Productivity	~€0.2 GDP/kg	~€2.1 GDP/kg
 Municipal Recycling Rates	• Kazakhstan: 11.5% • Uzbekistan: <10%	• Average: ~45%

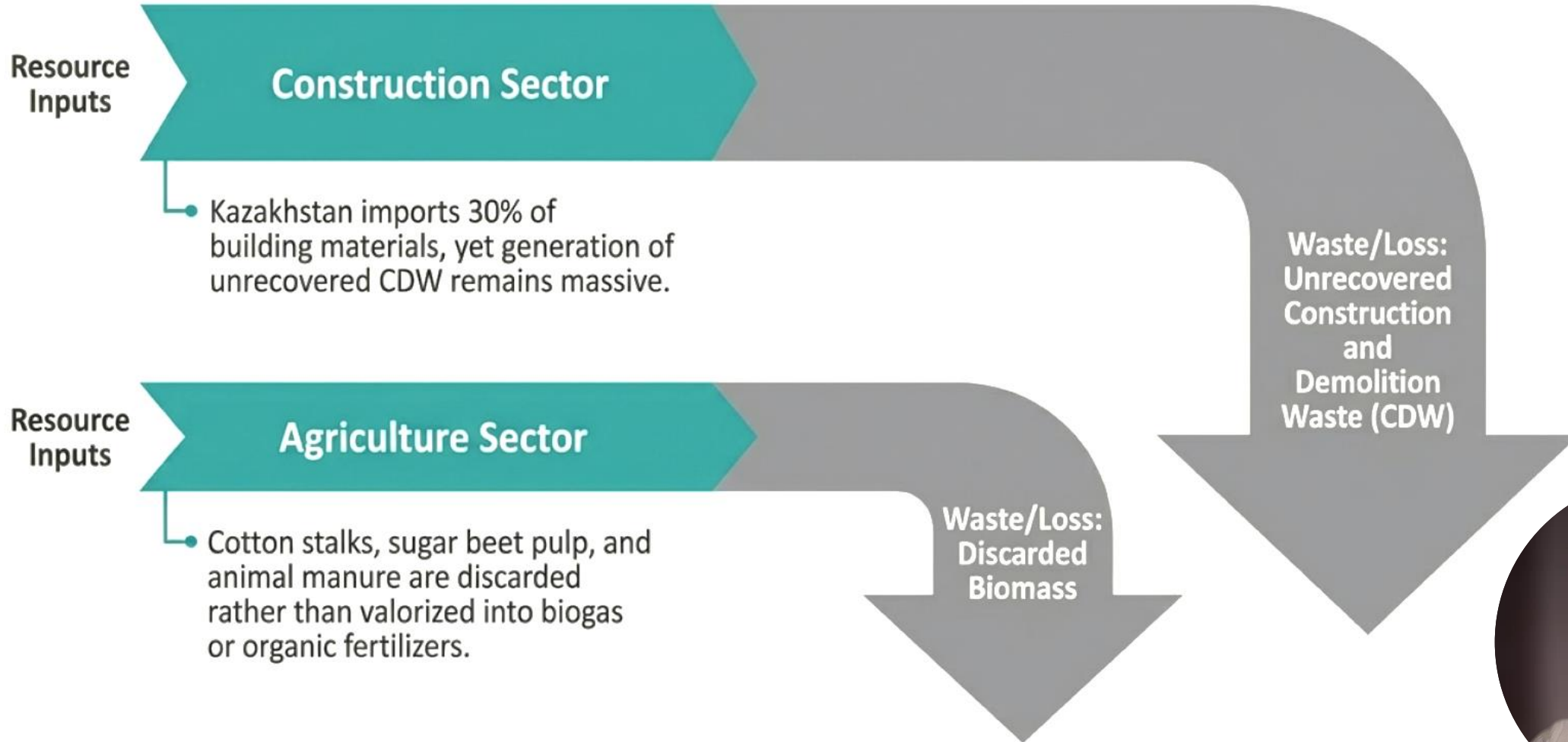
10x
Efficiency Gap

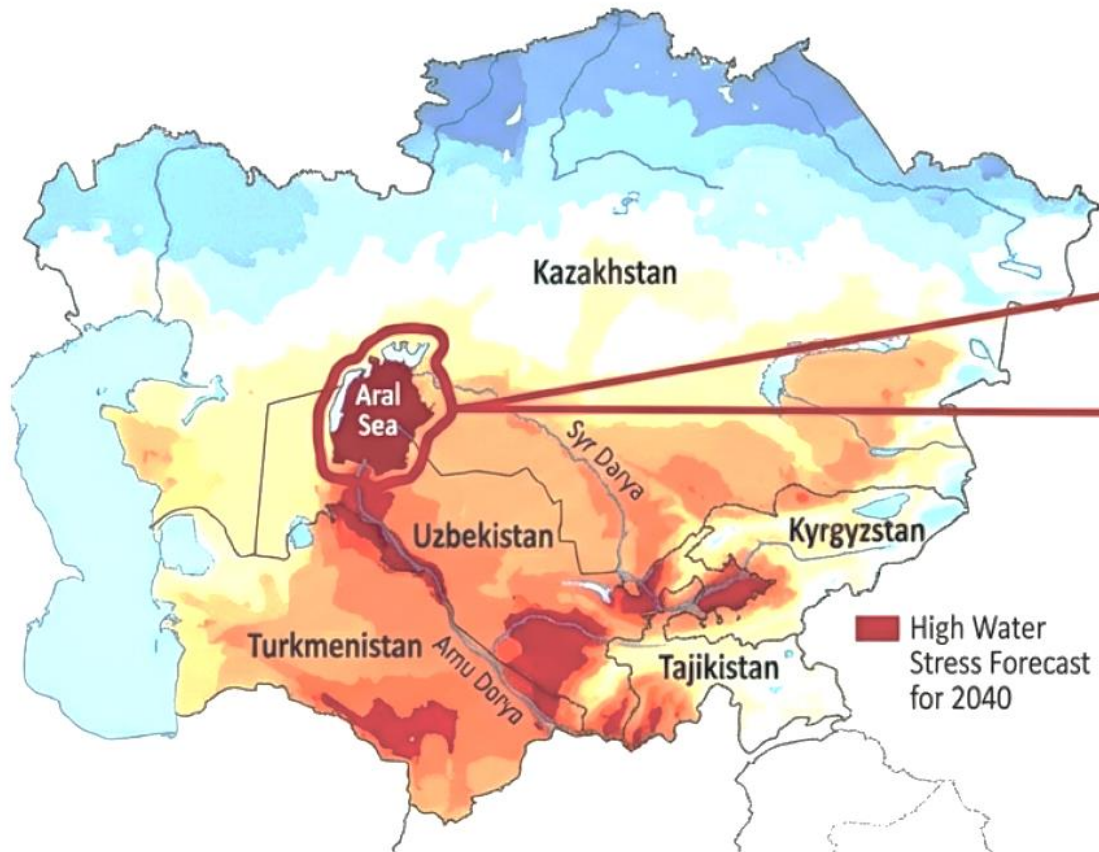




Prevalent in KZ, KGZ, and TJK due to missing specialized infrastructure.







Agriculture consumes **~90%** of water in Uzbekistan.

~33% is lost entirely to obsolete infrastructure and inefficient irrigation.

The linear model is not just economically inefficient; it threatens fundamental food and water security in a highly climate-vulnerable region.





Macro-Level Commitments

- Alignment with Paris Agreement & SDGs
- Uzbekistan's 2019-2030 Green Economy Strategy
- Kazakhstan's 2050 Strategy

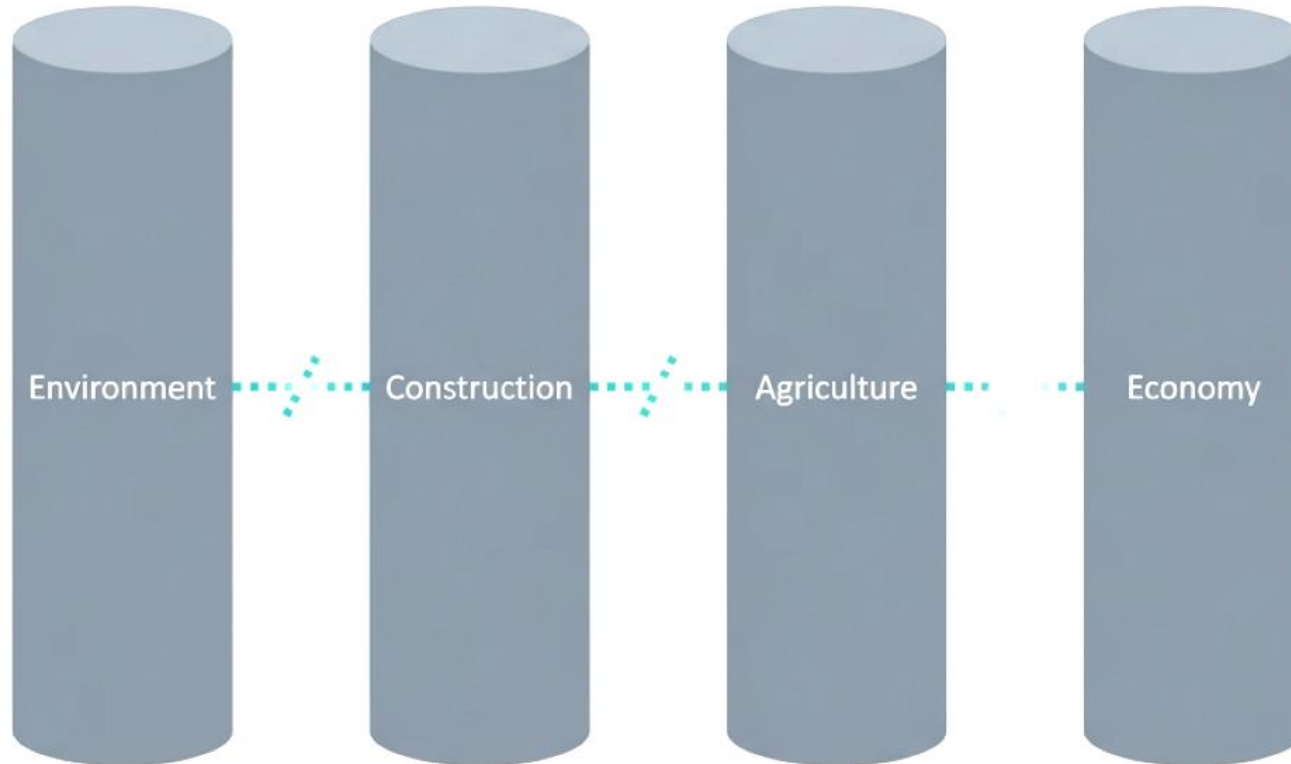


Specific Circular Economy Laws

- Absence of specific CE regulatory laws
- Missing Extended Producer Responsibility (EPR) enforcement
- Lacking secondary material standards
- Poor CDW management protocols

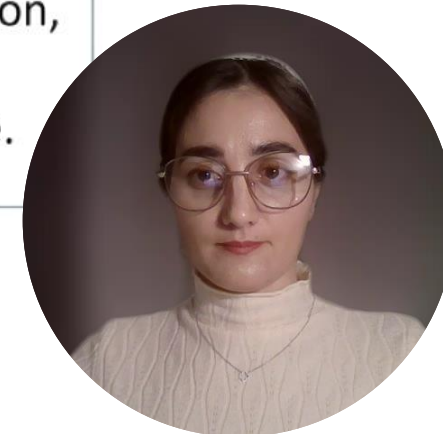


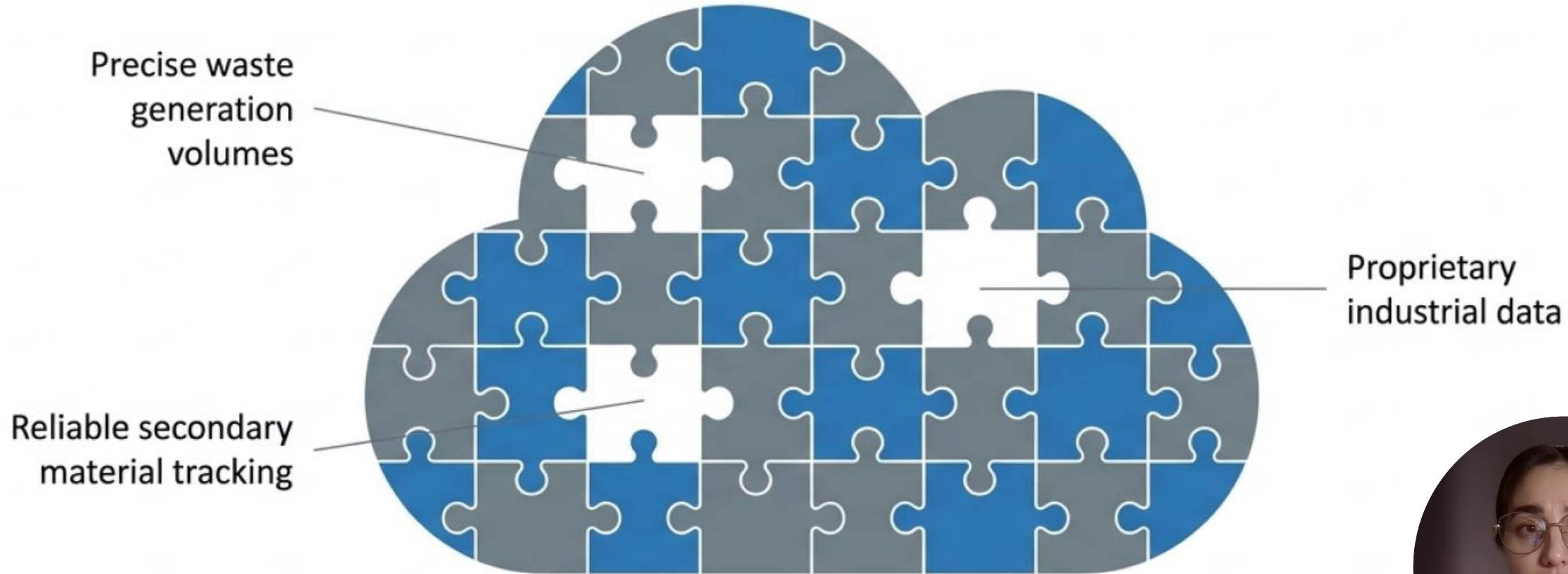
Governance Challenges in Transition Economies



The Impact of Isolation

The transition to circularity requires a whole-of-system approach. A purely top-down governance model with low private-sector involvement fails to implement micro-level execution, leaving businesses without regulatory support to innovate.







The Necessary Fix

The transition requires market-based incentives to internalize environmental costs and level the playing field.

- Implement landfill taxes
- Mandate Green Public Procurement (GPP)





The Bridge: University eco-incubators & Central Asian Leadership Programme.



Linear Discard Mindset:
Low consumer awareness & missing green tech personnel.

Circular Innovation Mindset:
Bottom-up societal habit changes.



Proof Point: Uzbekistan Agri-Food CEAP Projections by 2030

**~0.5
Billion m³**

**of water saved
annually.**

34%

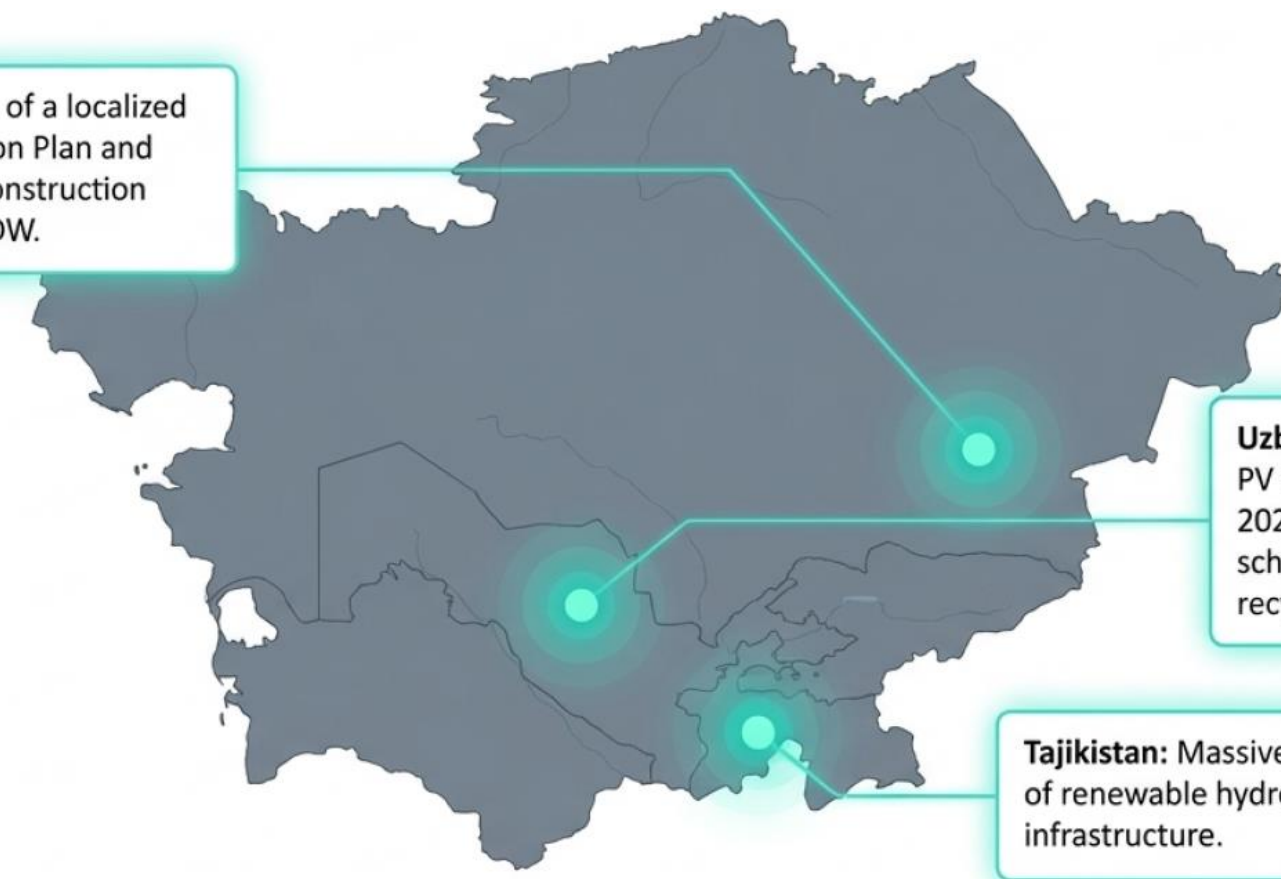
**reduction in sector
greenhouse gas
emissions.**

~46,000

**new green jobs
created.**



Emerging Circular Initiatives in Central Asia



Almaty (KZ): Adoption of a localized Circular Economy Action Plan and launch of a modular construction factory to eliminate CDW.

Uzbekistan: Deployment of solar PV auctions (targeting 4GW by 2026), implementation of EPR schemes, and UK-Uzbek textile recycling pilots.

Tajikistan: Massive expansion of renewable hydropower infrastructure.



Pathways Toward a Circular Economy



1. Policy & Governance

Remove bureaucratic silos, mandate waste audits, and phase out virgin fossil subsidies.

2. Finance & Infrastructure

Unlock international capital (World Bank, EBRD) to build modern recovery facilities and decentralized renewable grids.

3. Human Capital

Educate and incentivize the private sector and civil society to actively participate in resource looping.





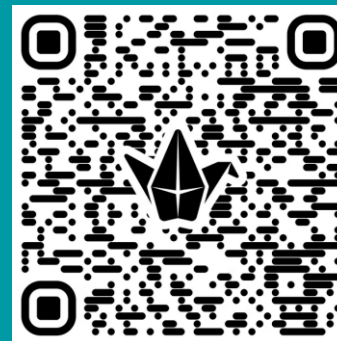
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