Environment & Ecology · GS - III

Zero Liquid Discharge (ZLD) technology can play an important role in controlling industrial water pollution and promoting sustainable water management. Discuss its benefits, limitations and the role of government incentives in encouraging its adoption.

EXAM YEAR	PAPER	SUBJECT
DAILY PRACTICE 09/11/2026	GS - III	Environment & Ecology

MARKS	WORD LIMIT
10	~150 words

Answer Hint

Industrial wastewater treatment, water recycling and reuse, pollution prevention, freshwater conservation, high capital costs, energy requirements, residual waste management, subsidies, regulatory enforcement and circular economy.

Model Answer

Introduction

Zero Liquid Discharge (ZLD) is an industrial wastewater management approach that aims to prevent liquid effluent discharge by treating and recovering water for reuse.

Benefits

ZLD reduces the release of industrial pollutants into rivers, lakes and groundwater. It promotes water conservation by enabling industries to reuse treated wastewater. It also supports cleaner production, regulatory compliance and the principles of a circular economy.

Limitations

High installation and operational costs can discourage small and medium industries. Energy-intensive treatment processes increase production expenses. Concentrated salts and other residuals also require safe disposal or recovery to prevent secondary pollution.

Role of Government

Governments can encourage adoption through capital subsidies, concessional finance, technical assistance and common treatment facilities for industrial clusters. Clear discharge standards, regular monitoring and performance audits are necessary to ensure compliance.

Conclusion

ZLD can strengthen industrial sustainability, but its success requires affordable technology, effective regulation and financial support, particularly for smaller industries.

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