Geography · GS - I

“The ideal solution of depleting ground water resources in India is water harvesting system.” How can it be made effective in urban areas?

EXAM YEAR	PAPER	SUBJECT
2018	GS - I	Geography

MARKS	WORD LIMIT
15	~250 words

Answer Hint

Rainwater harvesting; groundwater recharge; urbanisation; permeable surfaces; rooftop collection; aquifer management; building regulations; community participation

Model Answer

Introduction

Groundwater depletion in Indian cities results from excessive extraction, reduced infiltration and rising demand. Rainwater harvesting can replenish aquifers and reduce dependence on external water supplies when supported by sound urban planning.

Measures to Make Water Harvesting Effective

1. **Mandatory rooftop harvesting:** Enforce building regulations requiring rainwater collection and recharge systems in suitable residential, commercial and institutional buildings.
2. **Recharge infrastructure:** Develop recharge wells, percolation pits and recharge trenches after assessing local soil and aquifer conditions.
3. **Restore natural drainage:** Protect lakes, ponds, wetlands and traditional water bodies from encroachment and pollution.

4. **Increase permeability:** Use permeable pavements, green spaces and rain gardens to improve infiltration.
5. **Maintain systems:** Ensure regular cleaning of rooftops, filters, storage tanks and recharge structures to prevent contamination.
6. **Community participation:** Involve resident welfare associations, urban local bodies and industries in neighbourhood-level harvesting.
7. **Incentives and penalties:** Link property-tax benefits and building approvals to compliance, while penalising violations.
8. **Monitoring:** Map groundwater levels and recharge potential to identify priority areas and evaluate outcomes.

Conclusion

Rainwater harvesting is effective when integrated with wastewater reuse, demand management and protection of natural water bodies. Its success requires scientific design, maintenance and accountable urban governance.

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