WATER QUALITY & WATER CONSERVATION

Understanding, Protecting, and Preserving Our Most Vital Resource

A Lesson in Environmental Science

2 Why Water Matters

Water sustains every living system on Earth — from the cells in our bodies to entire economies and ecosystems.

Health & Survival

Every cell in the human body depends on clean water. It's essential for drinking, sanitation, and disease prevention.

Ecosystems & Wildlife

Rivers, lakes, and wetlands provide habitat for countless species and keep natural cycles in balance.

Food & Industry

Agriculture, manufacturing, and energy production all rely on reliable access to fresh water.

3 What Is Water Quality?

“Water quality describes the chemical, physical, and biological characteristics of water, usually judged by its suitability for a particular use.”

— A working definition used by environmental scientists

- Good water quality means water is safe for drinking, supports healthy ecosystems, and is fit for its intended use.
- Quality is measured using physical, chemical, and biological indicators.
- It can change quickly due to pollution, weather, or human activity.

Tested & Measured

Scientists test water using standardized methods so results can be trusted and compared against health guidelines everywhere.

4 Key Water Quality Indicators

pH Level

Measures acidity or alkalinity. Safe drinking water typically falls between 6.5 and 8.5 on the pH scale.

Turbidity

The cloudiness of water caused by suspended particles. Clearer water generally signals fewer contaminants.

Dissolved Oxygen

The amount of oxygen available in water. Fish and aquatic organisms need sufficient levels to survive.

Contaminants

Pathogens, heavy metals, and chemicals such as nitrates that can make water unsafe for use.

5 Common Sources of Water Pollution

Point Sources

Pollution traced to a single, identifiable location

Industrial discharge from factories

Untreated or poorly treated sewage

Example: A pipe releasing chemicals directly into a river.

Non-Point Sources

Diffuse pollution from many scattered sources

Fertilizer and pesticide runoff from farmland

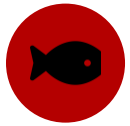
Plastic waste and urban stormwater runoff

Example: Rain washing fertilizer off fields into a stream.

6 Effects of Poor Water Quality

Human Health

Contaminated water spreads diseases such as cholera and diarrheal illness, especially where treatment is limited.



Ecosystem Damage

Excess nutrients trigger algal blooms that deplete oxygen, leading to fish kills and disrupted habitats.

Economic Cost

Communities pay more to treat polluted water, and industries like fishing and tourism can suffer real losses.

7 How Is Water Quality Tested?

1. Sample Collection

Water samples are collected from rivers, wells, or taps.

2. Lab Analysis

Physical, chemical, and biological tests are run on each sample.

3. Compare to Standards

Results are checked against health and safety guidelines.

4. Report & Action

Findings are reported, and treatment steps follow if needed.

PART TWO

Water Conservation

Using water wisely today to protect its supply for tomorrow.

9 What Is Water Conservation?

Every drop counts

Conservation means using only what we need, so this shared resource lasts for future generations.

Why It Matters

- Reduces strain on rivers, lakes, and underground water supplies.
- Lowers the energy used to pump, heat, and treat water.
- Helps protect ecosystems that depend on natural water levels.
- Keeps water affordable and available during droughts.

10 Water Conservation at Home

Fix Leaks Promptly

A dripping tap can waste thousands of liters a year.

Take Shorter Showers

Cutting a few minutes saves water every single day.

Install Low-Flow Fixtures

Efficient taps and showerheads use less without sacrificing comfort.

Turn Off the Tap

Switch it off while brushing teeth or washing dishes.

Reuse Household Water

Greywater can water gardens instead of going to waste.

Water Gardens Wisely

Water early or late in the day to reduce evaporation loss.

11 Conservation in Agriculture & Industry

Farms and factories account for the majority of water withdrawn worldwide, making their choices critical.

Agriculture

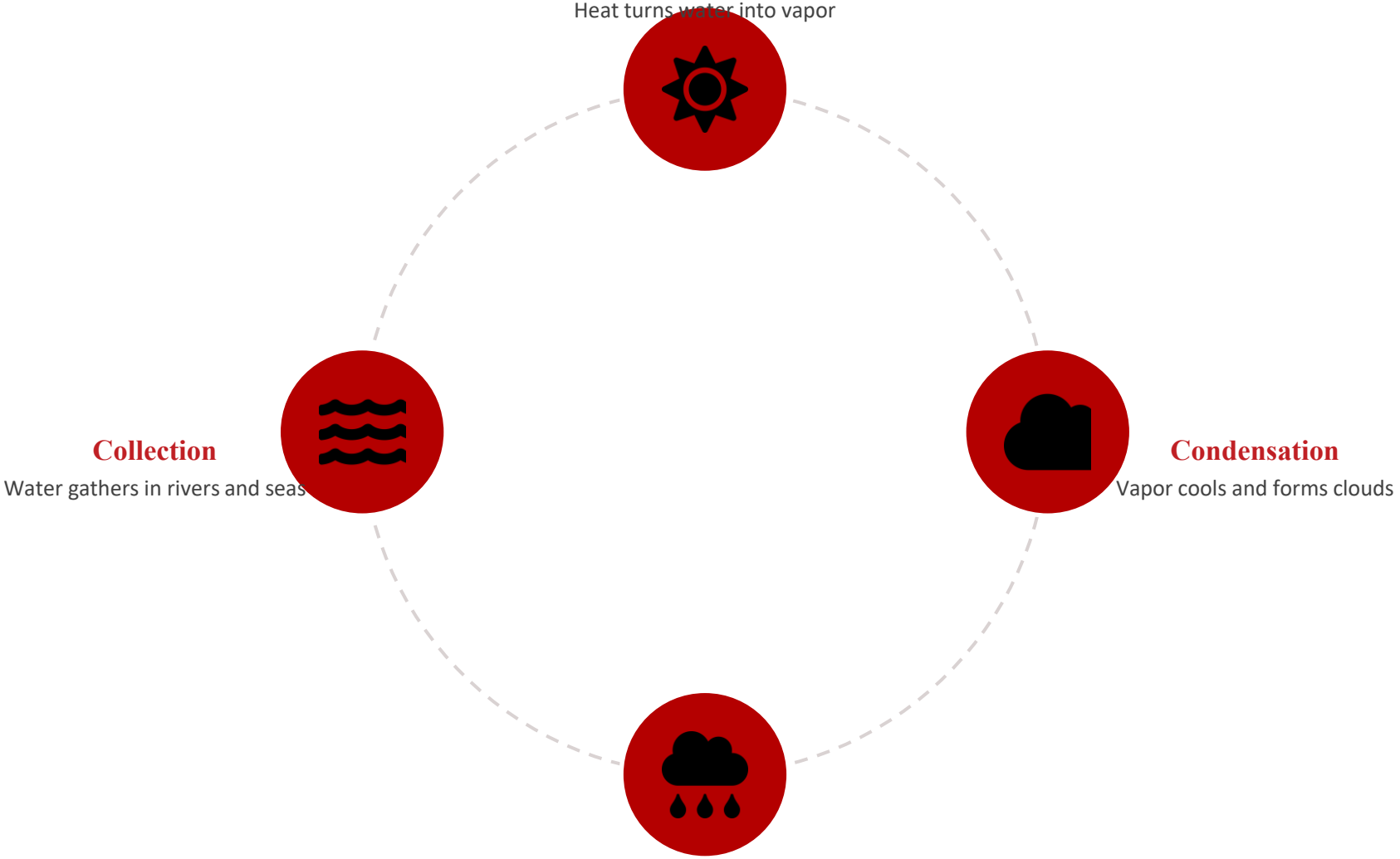
- Drip irrigation delivers water directly to plant roots, cutting waste.
- Choosing drought-resistant crops reduces overall demand.
- Scheduling irrigation around weather avoids watering during rain.

Industry

- Recycling process water reduces how much is drawn from local supplies.
- Rainwater harvesting supplements facility water needs.
- Regular leak detection prevents unnoticed large-scale waste.

12 The Water Cycle

Conservation works with a natural cycle that has moved water through our planet for billions of years.



13 Global Water Facts

71%

of Earth's surface is covered by water

~2.5%

of all water on Earth is fresh water

<1%

of Earth's water is easily accessible fresh water

~70%

of global fresh water withdrawals go to agriculture

Most of Earth's fresh water is locked away in glaciers, ice caps, and deep groundwater — which is exactly why the small accessible share deserves careful protection.

14 What Can You Do?

Start Small, Stay Consistent

Fix leaks, shorten showers, and turn off taps — small habits add up quickly.

Reduce Waste & Reuse Water

Cut single-use plastics and reuse water for gardens where you can.

Share What You Learn

Talk about water quality and conservation with family, friends, and your community.

Protect It. Conserve It.

Clean water quality and mindful conservation go hand in hand —
and every one of us plays a part.

Thank You