



Global Schools
Program



SUSTAINABLE DEVELOPMENT
SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

ACTIVITIES GUIDE: CLEAN WATER



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Part 1: Introduction and Global Competencies



Introduction

How to Use this Activities Guide

The Global Schools Activities Guide on Clean Water is meant to support teachers or facilitators in carrying out activities in school communities with students. The activities can be carried out in the classroom or the whole-of-school. Educators can select activities, videos, articles, or worksheets to use in a lesson plan. Additionally, they can use the guide to build a long-term unit, centering project-based learning. Teachers and facilitators can use all of the activities in a step-by-step process to develop an entire unit on **Clean Water**.



Facilitator's Objectives

The topic of **Clean Water** is one of the main knowledge components of education for sustainable development, and it spans subjects beyond geography and science. The purpose of teaching this topic is to:

1. Facilitate student knowledge on these concepts through research on their local communities, in their school communities, and also by strengthening independent research skills;
2. Promote positive values, which could be values that society may view as being prosocial, on the topic;
3. Inspire positive actions by the students that contribute back to their school and the local community.

Overview of the Unit

Title	Clean Water
Suggested Level	12 years and up
Learning Goal	To develop knowledge, values, and skills related to the issues, challenges, and importance of clean water and sanitation.
Learning Objectives	<ul style="list-style-type: none"> • Students will be able to articulate how water is a fundamental concept of life. Students will be able to explain water scarcity and water pollution, including the global inequities in access to safe drinking water. These can include gender and socio-economic disparities in water access. • Students will be able to demonstrate and practice responsible water use, including good sanitation and hygiene practices as well as water conservation. • Students will be able to understand how water is managed at the national and local levels, as well as naturally. • Students will be able to think critically and evaluate how various actions lead to responsible water use and water safety. • Students will be able to describe to peers, friends, and family safe water and sanitation practices and water conservation practices.
Global Competencies	Systems thinking, Critical thinking, Self-awareness, Collaboration, Problem Solving, Global Awareness
Standards Explicitly Taught	*Global Schools encourages teachers to align the above learning objectives and goals to their national standards
Success Criteria & Assessment	Sample quizzes, essays, debates, and presentation topics can be found on the final pages of the guide.



Education for Sustainable Development Competencies

<u>Competency</u>	<u>Description of the Competency</u>	<u>Applications to Clean Water</u>
Systems thinking competency	“The abilities to recognize and understand relationships; to analyze complex systems; to think of how systems are embedded within different domains and different scales, and to deal with uncertainty.”	Encourage learners to analyze where water comes from and the complex social and economic systems that prevent access to safe water or provide access to safe water in their school, community, and country.
Anticipatory competency	“The abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one’s visions for the future; to apply the precautionary principle; to assess the consequences of actions, and to deal with risks and changes.”	Encourage learners to evaluate multiple possibilities for providing access to clean water and propose solutions for the future. Encourage learners to discuss the consequences of unsafe water and water pollution and what this means for the future.
Normative competency	“The abilities to understand and reflect on the norms and values that underlie one’s actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.”	Encourage learners to evaluate how their access/lack of access to water is influenced by their culture, nationality, and status. Encourage learners to understand how desertification and/or climate change could affect their actions and sustainability values.
Strategic competency	“The abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.”	Encourage learners to articulate actions they will take to practice safe hygiene, promote safe water access, and reduce water consumption.

<p>Collaboration competency</p>	<p>“The abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem-solving.”</p>	<p>Encourage learners to empathize with others that have suffered from local water pollution.</p>
<p>Integrated Problem Solving</p>	<p>“The overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development.”</p>	<p>Encourage learners to co-develop solutions for their community and others.</p>
<p>Critical thinking competency</p>	<p>“The ability to reflect on one's own role in the local community and (global) society; to continually evaluate and further motivate one's actions; and to deal with one's feelings and desires.”</p>	<p>Encourage learners to critically research water footprints and water sources and use this research to inform actions.</p>
<p>Self-Awareness</p>	<p>“The ability to question norms, practices, and opinions; to reflect on own one's values, perceptions, and actions; and to take a position in the sustainability discourse”</p>	<p>Encourage learners to reflect on their own water consumption as well as their opportunities to access safe and clean water.</p>



Part 2:
Topics in SDG 6:
Clean Water and
Sanitation



Background on SDG 6: Clean Water and Sanitation

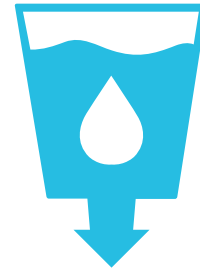
What is Clean Water?

Water is the primary, essential component for sustaining life. Approximately **71 percent** of the earth's surface is covered in water, and the oceans hold about **96.5 percent** of all of the earth's water. Freshwater ecosystems, such as wetlands, rivers, mangroves and aquifers, are a critical part of the global water cycle – supplying, purifying and protecting freshwater resources ([United Nations](#)).

We use water for drinking, domestic chores, and industrial purposes. According to the [World Health Organization](#), "improved water supply and sanitation, and better management of water resources, can boost countries' economic growth and contribute greatly to poverty reduction" (WHO). Furthermore, women and girls are responsible for water collection in 8 out of 10 households where the water sources are located off premises, sometimes in dangerous and not easily accessible locations. This means that increasing drinking water services for vulnerable populations will have a strong impact on SDG 5 ([WHO/UNICEF, 2017](#)).

Mismanaged and Contaminated Water

2 billion people are still living without safely managed water and sanitation ([WHO/UNICEF, 2021](#)). Currently, in low-income countries, 22% of health care facilities have no water services, 21% have no sanitation services, and 22% have no waste management services (WHO).



Mismanagement combined with climate change is devastating many ecosystems, undermining their ability to provide freshwater 'services', which threatens the health of human societies and natural environments ([United Nations](#)).

When water is contaminated, it impacts other sectors, such as the food production system or health care. Contaminated water can spread disease and be a danger to public health. Contaminated drinking water causes 485,000 deaths from diarrhea each year. Other diseases spread by unsafe water are typhoid, cholera, dysentery, or polio. Today, 2 billion people use a drinking water source that is contaminated by feces - either from humans or animals (WHO). Research published in [The Lancet](#) reveals that water pollution alone caused 1.8 million deaths in 2015, and continues to cause 1.2 millions deaths per year on average ([Our World in Data](#)). Low-income communities are at even greater risk because their homes are often closer to high-polluting industries. Furthermore, according to Global Health Observatory Data, about 3 billion people lack basic hand-washing facilities with soap and water at home, which contributes to basic hygiene.

Water and Climate Change

Across the world, climate change is heavily impacting the water cycle. Rivers and lakes are changing their natural course. Ecosystems across the world, particularly wetlands, are in decline in terms of the services they provide. Between \$4.3USD and \$20.2USD trillion per year worth of ecosystem services were lost between 1997 and 2011 due to land use change ([Costanza et al., 2014](#)). Plastic and industrial pollution are only continuing to contaminate the earth's water.

Also, water-related hazards have increased in frequency for the past 20 years. Increases in temperature and shifts in precipitation patterns are causing droughts or flooding in certain areas. By 2050, the number of people at risk of floods will increase from its current level of 1.2 billion to 1.6 billion ([United Nations, 2020](#)). Since 2000, flood-related disasters have increased by 134%, and the number and duration of droughts also increased by 29% ([WMO, 2021](#)). These water related strains can cause conflicts between neighboring farms, cities, and even nations ([UNICEF](#)). This is why **Clean Water and Sanitation** is included and recognized as one of the 17 Sustainable Development Goals.

SDG 6: Clean Water

To meet SDG targets for Clean Water and Sanitation by 2030, one out of every three countries must end open defecation and sustainable sanitation systems must be implemented.

The [SDG 6 Global Acceleration Framework*](#) has introduced five accelerators to support countries in achieving clean water facilities.

1. "**Financing**. Optimized financing is essential to get resources behind country plans.
2. **Data and information**. Data and information target resources and measure progress.
3. **Capacity development**. A better-skilled workforce improves service levels and increases job creation and retention in the water sector.
4. **Innovation**. New, smart practices and technologies will improve water and sanitation resources, management, and service delivery.
5. **Governance**. Collaboration across boundaries and sectors will make SDG 6 everyone's business".

*[Taken from the SDG 6 Global Action Framework on Water](#)

Policies taken by governments can begin to solve the problem. However, as individuals, we can take necessary actions to mitigate water pollution to a certain extent. From keeping the waterways clean, to making water accessible to everyone, we must learn how to take small steps toward responsible consumption. Together, we can prioritize the importance of safe drinking water.

Part 3: Classroom Activities



Step 1: Set the Context

Set the context for the unit and increase your own knowledge and understanding of SDG 6: Clean Water & Sanitation before facilitating the following activities.

Preparing for the Unit

Watch these videos from the SDG Academy to gain technical background and prepare yourself for teaching Responsible Consumption. These videos can also be used in advanced-level courses with students.

- [The State of the World's Water Resources](#)
- [Empowering Women for Water Governance](#)
- [The Global Goal on Water](#)
- [Overview of Water, Sanitation and Hygiene](#)
- [Water for All, Health for All](#)
- [Impact of Water Footprints](#)
- [Climate Adaptation and Water Management](#)

Pre Reading Assignments for Advanced Courses

For advanced secondary education courses or as homework, use these readings:

- [UN-Water SDG6 Synthesis Report 2018 Executive Summary](#)
- [Progress on Drinking Water, Sanitation and Hygiene](#)

Key Vocabulary in this Guide

Clean Water
Sanitation
Hygiene
Water Pollution
Water contamination
Water-borne diseases
Water strain
Drought
Flooding
Climate Change
Water footprint
Water Scarcity
Water Insecurity
Waste Water Recycling

Sample Introduction Activities



Activity One: Be a Water Saver

Have your students fill [out this easily achievable list](#) and assess their water use. This list can be found on the American Museum of Natural History site, titled "Be a Water Saver". Students will work together to complete a checklist on their water use. The checklist is divided into 11 categories. After students fill out the checklist, ask them to share their answers in pairs before sharing to the wider group. Then, discuss how they can become water savers themselves. Ask them to make their own list, decorate it, and hang it up either in the classroom or at home to remind themselves how to save water. Explain over the course of the unit, you will dive into deeper detail on these themes and topics. Additionally, feel free to have your students fill out this sheet multiple times throughout the unit or the year to see what water saving habits they are able to build. Feel free to adjust the topics based on the typical infrastructure that you and your students have available.



Activity Two: Water Footprint Calculator

Use watercalculator.org to have students calculate their "Personal Water Footprint". Compare and contrast differing responses in a class discussion. Ask students what they are most interested in learning more about as the unit continues. If you are located outside of the United States, please read through this [page](#) for conversions and additional guidance. Alternatively, you can have students walk around the school grounds 5 times carrying a water bottle in each hand to simulate the walk that some women and children take when they walk 5km to fetch clean water. Have students reflect upon their experience and how they would feel/do feel collecting clean water daily.



Activity Three: The Story of Cholera

Play [this video from the Global Health Media Project](#) about the spread of cholera. Note that this video contains graphics representing open defecation and vomiting. Please appropriately warn your students before starting the video. After watching the video, divide students into small groups to discuss what they saw in the video. Then, ask the groups to share what they discussed. Alternatively, following the end of the video, ask follow up questions such as: what were your immediate thoughts, what did you learn about water borne diseases like the ones in this video, and in what ways did the video show you how to prevent the spread of diseases?



Activity Four: Resource Watch

Using the [World Resource Institute's Resource Watch](#), explore different water related data on a world map. You are able to view numerous different indicators, such as water strain, flood risks, plastic pollution, and a few others. Feel free to ask your students what they are interested to see and what they observe on the maps. Have your students identify possible trends, similarities, and differences between the various maps.



Videos

1. [Our Global Water Crisis Explained \(Our Global Water Crisis, Explained\)](#)
2. [Ideas on how to solve the Global Water Crisis. \(Solving The Global Water Crisis in 7 Minutes | Hamza Farrukh | TEDxNorthAdams\)](#)
3. [Learn about your individual Water Footprint. \(What is a water footprint and Why it is important? | Waterpedia #WaterWednesday\)](#)
4. [Are we running out of clean water? Find out the answer here. \(Clean Water Crisis\)](#)
5. [SDG Academy video library](#)

Even more videos can be found on the website of our partner organization: [SIMA Classroom](#).



Articles

1. [Review these factsheets on water scarcity. \(Water Scarcity Factsheet\)](#)
2. [Threats of Water Scarcity \(Threats of Water Scarcity\)](#)
3. [Try to save water at home through these simple ideas from UNICEF.](#)



Data Visualizations

1. Check out [Eurostat](#) for indicators on monitoring SDG 6
2. Explore the [Sustainable Development Report Dashboard](#) for SDG 6

Step 2: Research

Now, students are encouraged to partake in guided research and activities to explore the topic of Clean Water.

Research can be completed independently in a computer lab, as a homework assignment, via talking to community members, through visiting a library, or as a classroom activity. Here are some suggested links for the students to use in their research process:

1. Read the [UN's website on Goal 6](#) (Goal 6 | Department of Economic and Social Affairs). Learn all that you can about this Global Goal.
2. Discover [statistics on water pollution](#) (Everything you need to know about water pollution).
3. [Check out this link](#) to understand the impacts of water pollution on the environment. (Environmental Data on Water Quality).
4. [Learn about water-related infectious diseases](#) (The situation of water-related infectious diseases in the pan-European region).
5. [Here you can find some smart solutions in action](#) (Clean Water Solutions For Developing Countries). Read to find out if you can implement any in your local context.

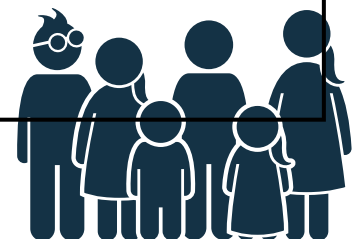


Student Research Worksheet

[Print here](#)

Research Questions	Student Notes
Are there any policies in your country to encourage sustainable water consumption?	
What is waste water recycling?	
What continent faces the most water insecurity?	
What is the current state of water pollution in your country?	
What industry uses the largest amount of water in your country?	

<p>What is the largest source of freshwater in your country?</p>	
<p>What is the average water footprint in your country?</p>	
<p>Describe water allocation in your country. Is there any area in your country or community impacted by water scarcity? Who is the most vulnerable to contaminated water or lack of water?</p>	
<p>Where does your wastewater go? If possible, how is wastewater collected and treated in your country?</p>	
<p>How common are water-borne diseases in your country? If it is common, how is your country tackling this issue? How could you spread awareness or inform others of these diseases?</p>	



Step 3: Investigate

Students are encouraged to apply critical thinking and research skills to investigate their schools' contribution to Clean Water. In this activity, students will act as detectives working to find clues. They will be responsible for taking notes, asking questions, and speaking with peers, teachers, and school leadership.



01 Group Students

Split students into groups of 2 to 4 for the following activity.



02 Distribute Questions

Give students a copy of the School Investigation Worksheet or post the questions at the front of the room. Worksheets can be adapted based upon the local context and the time allocated for the activity.



03 Set the timeframe

Allocate at least 25 minutes for students to work together to answer the questions.



04 Discuss

After students have completed the activity, lead a discussion:

- Where in the school can we improve clean water?
- How can we ensure all students understand the importance of clean water and safe hygiene?
- How can we provide more access to clean water for students in the entire school?

School Investigation Worksheet

[Print here](#)

School Investigation Worksheet	
Investigate!	Notes and Observations
Do you have water fountains in your school or on the school grounds? How many?	
Do you have water filters in your school or a school-wide water filtration system? How many water filters are there?	
According to the Water Quality Index Calculator, what is the safety score for the drinking water supplied in your school? Is this acceptable?	
In your opinion, do students practice handwashing in school? How often?	
In your opinion, do students know about the importance of handwashing?	
What is the water footprint for an individual in your school or your school as a whole?	
Does your school have water scarcity information available and on display?	
Is clean water available at school? If so, what kind of water supply is available at your school? Where does the water come from?	

<p>Are the general water consumption practices of students at your school sustainable?</p>	
<p>Do students waste water? If they do, what proportion of water do they waste?</p>	
<p>Does your school have any programs on water pollution and water scarcity?</p>	
<p>Given all these questions and notes above, what is the biggest problem in your school? How can you help your school community in this area? Write down your ideas here:</p>	

Step 4: Data Activities

Now that students have had the opportunity to investigate their schools, it is time to explore more data in the world around them.

These activities can be small or they can be longer-term projects that are worked on over the course of a few class periods.



Activity One: Design and Experiment

Have your students work together in small groups (depending on class size) to design their own waste water experiment to further investigate and learn how much water they are using. Students can collect data by examining their daily activities and timing how long they take to do each of the following activities: brushing their teeth, showering, washing dishes, eating certain diets, and using toilets. Students should use a timer and record themselves doing each of these activities for 1 week, acting as they normally would. For the second week, students should actively try and conserve water. Afterward, students can calculate and measure water use during week 1 and week 2, and determine the difference in water waste using tangible data. For an example of this project in action, check out the [Global Schools Case Study Guide](#).



Activity Two: Visit a Natural Water Source

If there is a pond, stream, or river near your school, have students visit the area at least once before and once after learning about SDG 6. A way to collect data is by providing questions to help students learn about and take in the world around them. Here are some of the guiding questions: what do you notice about the level of water, how clear is the water, and what do you notice about the plants surrounding the water? Have them write down their observations in their notebooks. Following the completion of the SDG 6 related lessons, revisit the water source, asking the same questions, but allowing your students more freedom to apply their knowledge from the lesson. Have them record their notes from before and after. How many more items did they notice about the water?



Activity Three: Water Pollution and Contamination

This activity focuses on problem solving and building students' understanding of the spread of water pollution. The [teacher's guide](#) contains instructions for the activity and requires students to work in groups. Each group needs one rubber band. Students will predict groundwater flow and investigate the most likely source of groundwater contamination.

Step 5: Take Action

Now, encourage students to take action! Actions can be small, or they can be longer-term projects over a whole unit.



Make a Water Filter for Your Classroom

Students can make water filters for their classrooms and learn about contaminated water, what pollutants can be easily eradicated with water filters, and what remains dormant. The activity is easy and simple to follow. A class will require a container for water, paper towels, coffee filters, gravel of all sizes, sand, and some assembling techniques. The teacher can assign each student a task during the construction of the water filter. Once the filter is built, it will be up to everyone to regularly keep unfiltered water in suction containers. Check out this video on the [Dirty Water Project](#).



Turn off the Tap

Do this activity once a week. Ask the students in your class to check on every tap in the school to see if they are turned off properly. Talk to students about what problems may arise due to water shortages. This practice will also help students save water in their homes.



Host Live Communication Programs

Host a day-long workshop or session in your school where students invite health advisors to talk about the impacts of drinking safe water. Experts can talk about the many health issues that arise with contaminated water consumption.



Practice Daily Handwashing

Handwashing is the first line of defense against germs. Washing hands with water and soap is a practice every student should cultivate starting in childhood. By learning the right hand washing methods, the germs are cleaned properly, and water waste is reduced. One action idea is to pair older students with younger students, creating handwashing mentors and a school-wide handwashing campaign. This gives the older students opportunities to present and showcase what they've learned as they discuss the importance of water, sanitation, and hygiene, specifically how it is related to human health.



Community Campaign

Show students pictures of pesticides or harmful chemicals. Ask them how these could potentially pollute the waterways in your country. Arrange community visits, where students can survey community members about water quality, gathering data to make recommendations to the local governance boards. In addition, students can be spokespeople for raising public awareness on water safety.

For more ideas, go to [SDGs in Action!](#)

Action Planning Template for Students

[Print Here](#)

<p>Describe your idea or action.</p>	
<p>Where will you implement your action? Your school, classroom, or local community?</p>	
<p>What is your primary goal in completing this action? How many people do you want to reach? What do you hope to accomplish?</p>	
<p>Provide any background and prior knowledge you have on this topic. Use research, facts, and statistics you gathered.</p>	
<p>What are your next steps for completing this action?</p>	

Step 6: Sharing Student Work

Celebrating Successes

Finally, your students have completed their project. They've done so much work up to this point, and now you deserve to celebrate their accomplishments and achievements. It's also time to share their project with other students, teachers, parents, and the community. We encourage you to facilitate the celebration of their work by having a platform to share their project outcomes. This also allows students to work towards a common goal.

- Host an exhibition in the school lobby or courtyard, where everyone in the class can showcase their projects and share what they have accomplished. Invite parents, teachers, and other students.
- Host a Ted Talk Day. Students will speak for 5-10 minutes about their project. Invite the head of the school, teachers, and parents.
- Encourage students to write a blog post about their work. Share it with Global Schools leadership and socialmedia@globalschoolsprogram.org to feature projects on the Global Schools website and social media.
- Encourage students to write a blog post or a short article for the school or local newspaper.
- Have students create a video about their project and the SDGs to share with your school.

Student Feedback

It is also important to encourage students to collect peer feedback on the project. This includes comments, experiences, lessons learned, and roadblocks. Additionally, make sure that you host a reflection session within your classroom.

- Have students answer 1 to 5 questions about their favorite and least favorite parts of the project and what they would like to do again.
- Hold a focus group session where everyone can discuss their feedback. Make sure you have someone take notes.
- Ask students to quantify their impact. Did they reach 80 other students in the school? How can they reach 100 next time?
- Have students speak to another classroom to receive feedback.
- Encourage other students to leave comments in a "comment box" in the school's lobby, offering their opinions and feedback. Save these comments so that you have quotes to use in the future.

Step 7: Review and Assessment

Use these resources to assess students' learning through quiz questions, debates, and essays. Feel free to use any combination of questions and activities to engage your students.



Quiz Questions

1. List all the water-borne diseases.
2. Define water footprint.
3. Elaborate on one of the SDG 6 targets.
4. Approximately, what is the average consumption of water in your country?
5. Briefly describe the water cycle.
6. How is water pollution harmful to the environment?
7. Approximately how many people die from water related diseases each year?
8. Describe the inter-relation of gender and water.
9. Which continent is most water insecure?
10. Describe why water is an important natural resource.



Debate Topics

1. Governments should play a larger role in water usage regulation.
2. Climate change is not man-made. It is a natural phenomenon.
3. As water becomes scarcer around the world, should we use waste water strategies?
4. Population affects water availability.
5. There should be wide span water usage bans to prevent drought in dry months.



Example Questions for Exams, Essays and Projects



Lower Secondary

1. What is a water footprint? What are three things that you can do to reduce your water footprint?
2. Describe the different stages of the water cycle. Be sure to include an example of one event that can happen in each stage.
3. Write out three ways that you can save water on a day-to-day basis. Which way do you think is the best way to save water?



Upper Secondary

1. Explore a few different strategies for water management and elaborate on how your country can improve. Imagine you are writing a proposal that will be sent to the school director.
2. Write three recommendations for your school to practice more responsible water consumption. Be sure to include evidence on why these policies would contribute to positive environmental outcomes. Be sure to include evidence on why these recommendations are practical and achievable by the school.



Advanced Upper Secondary

1. According to the World Health Organization, 2 billion people live without safely managed water and sanitation. Explain what governmental policies or projects you would like to adopt or implement in your country.
2. Explore how communities, industries, and private businesses implement sustainable water management strategies. How can they change and adapt sustainable practices, products, services, and/or strategies? Focus on one company for an in-depth case-study presentation and analysis.
3. Discuss the trade-offs between increasing water usage regulations and implementing waste water recycling. Be sure to include what potential policies and infrastructure could look like and how these could be implemented.

Additional Resources for Teachers

1. [Clean Water for All](#) lesson plan by the World's Largest Lesson on comparing the use of water and sustainable lifestyles with students from another school and country.
2. [UNESCO SDG 6 Resources for Teachers](#), UNESCO.
3. [Case Study Lesson Plan](#) on the Flint Water Crisis, World Savvy.
4. [SDG #6 Clean Water & Sanitation Lessons](#) using GIS from Esri



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