

**Committee:** Forensics Junior Group Discussion (FJGD)

**Topic:** Measures to prevent the depletion of water sources

**Student Officer:** Ilianna Mavroeidi and Myrto Manousopoulou

**Position:** Co-heads

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## Personal Introduction

Dear delegates,

My name is Ilianna Mavroeidi, I am currently attending the 11<sup>th</sup> grade of Pierce-The American College of Greece. This year, I will have the honor to serve as a co-head in the Forensics Junior Group Discussion (FJGD), and more specifically, as an expert chair on the topic “Measures to prevent the depletion of water sources” in the 9<sup>th</sup> CSMUN conference.

This is going to be my first ever time chairing and my 6<sup>th</sup> conference overall and I am very excited to experience it with you all. I started MUN last year and I have gained an abundance of experience and skills from it. It is a great way to learn about the current affairs, improve your public speaking skills and foster long-lasting friendships.

This study guide serves as a basis for your preparation and will provide you with information on water scarcity around the world as well as solutions to address it. I would suggest that you not limit your preparation solely to this document but conduct further research on the topic at hand.

I wish you a fruitful discussion and I am looking forward to meeting you all at the conference!

Sincerely,

Ilianna Mavroeidi

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Hello everyone,



My name is Myrto Manousopoulou, and I will be one of your co-heads for the Forensics Junior Group Discussion in the 9<sup>th</sup> CSMUN conference this year. I am 16 years old and currently I'm a student at St Catherine's British School. I started MUN 2 years ago and I am deeply honored and very excited to be in this position as it is my first-time chairing in a regional conference. I am really looking forward to meeting all of you and having an informative and progressive discussion.

The topic that will be discussed in our committee is the one of the depletion of water sources. More specifically, it is a world issue that is significantly important as many people around the world are affected by it, some more lightly and others very heavily. By being a previous delegate that has debated and worked on this topic in the 2019 CSMUN conference, I am very well educated on the key facts and solutions to our subject and I am delighted to help you in any way that you need. In this guide below, we will provide you with some key notes that will help you complete your knowledge and understanding for the topic.

All the best,

Myrto Manousopoulou

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## Topic Introduction

We are surrounded by water which takes up 70% of our planet, but, unfortunately, most of it is not potable. 3% of water on Earth is freshwater while only 1.2% can be used for drinking<sup>1</sup>. However, even this small percentage is not accessible to millions of people, since it is disproportionately dispersed around the globe.

Due to its high quantity, water might seem renewable, but it is not. The world is suffering from water depletion and the water sources are slowly diminishing. It is already affecting approximately 40% of the world's population, more than 3 billion

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<sup>1</sup> National Geographic Society. "Earth's Freshwater." *National Geographic Society*, 9 Nov. 2012, [www.nationalgeographic.org/media/earths-fresh-water/](http://www.nationalgeographic.org/media/earths-fresh-water/).



people that is. Since water sources are constantly dwindling, it has been estimated by the United Nations Development Programme (UNDP) that by 2050, 1 in 4 people will face water scarcity<sup>2</sup>.

*Figure 1: Image depicting draught and the depletion of a water source.<sup>3</sup>*



From Canada to India, all countries experience water stress, some more than the others. For instance, in Afghanistan only 20% of the population has sustainable access to improved drinking water sources while in other countries such as Denmark, the percentage of population with access to drinking water reaches 100<sup>4</sup>.

The issue of the depletion of water sources is an extremely grave one and it impacts various aspects of the planet such as agriculture as well as both human and marine life while it generates all kinds of negative results including loss of money, diseases, death, conflicts, contamination, land subsidence and many more. We need to act and implement measures as soon as possible, to ensure the world will not run

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<sup>2</sup> "Sustainable Development Goals: United Nations Development Programme." *Sustainable Development Goals | United Nations Development Programme*, [www.undp.org/sustainable-development-goals#clean-water-and-sanitation](http://www.undp.org/sustainable-development-goals#clean-water-and-sanitation).

<sup>3</sup> "Over 1,000 Experts Call for Global Action on 'depleting' Groundwater." *Telegraph India | Latest News, Top Stories, Opinion, News Analysis and Comments*, 25 Dec. 2019, [www.telegraphindia.com/india/over-1-000-experts-call-for-global-action-on-depleting-groundwater-levels/cid/1730156](http://www.telegraphindia.com/india/over-1-000-experts-call-for-global-action-on-depleting-groundwater-levels/cid/1730156).

<sup>4</sup> Rogers, Simon. "Access to Clean Water." *The Guardian*, Guardian News and Media, 9 Mar. 2009, [www.theguardian.com/news/datablog/2009/mar/03/access-water](http://www.theguardian.com/news/datablog/2009/mar/03/access-water).

out of water. If not, it will be too late, and the world will lose one of the greatest and most vital amenities and a necessity for life, water.

## Definition of key terms

### Aquifer

Aquifers are masses of porous rocks or sediments that have been inundated by groundwater. As precipitation penetrates through the earth, groundwater enters an aquifer. It can go through the aquifer and re-emerge through springs and wells. There are two main categories of aquifers; unconfined which are beneath a porous soil layer and confined which have an impermeable layer of rock or clay above them.

### Blue water

Blue water is the water in the seas.

### Desalination

Desalination is the procedure through which we can remove salt from saltwater.

### Desertification

“Desertification is defined as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities”.

5

### Green water

Green water is defined as a portion of rain which penetrates the soil and can be consumed or stored by plants.

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<sup>5</sup> “Explainer: Desertification and the Role of Climate Change.” *Carbon Brief*, 2 Sept. 2020, [www.carbonbrief.org/explainer-desertification-and-the-role-of-climate-change](http://www.carbonbrief.org/explainer-desertification-and-the-role-of-climate-change).



## Groundwater

Groundwater is the water found underground in crevices and cracks in soil, sand, and rock. It is retained in aquifers and flows slowly through them.

## Irrigation

Irrigation is the process of supplying water to land for crops and plants to grow and thrive.

## LEDCs

Stands for Less Economically Developed Countries, and includes countries with poorer living conditions and a lower Gross Domestic Product (GDP).

## MEDCs

Stands for More Economically Developed Countries, and includes countries with a higher GDP and improved living standards.

## Precipitation

Precipitation is water that descends from the clouds, usually in the form of rain or snow.

## Renewable resources

“A renewable resource is one that can be used repeatedly and does not run out because it is naturally replaced.”<sup>6</sup>

## Water abstraction

Water abstraction, also known as water extraction, is the temporary or permanent removal of water from any source for agriculture, industry, recreation, flood mitigation, or treatment to generate drinking water.

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<sup>6</sup> Banton, Caroline. “Renewable Resource Definition.” *Investopedia*, Investopedia, 19 May 2021, [www.investopedia.com/terms/r/renewable\\_resource.asp](https://www.investopedia.com/terms/r/renewable_resource.asp).



## Water depletion

Water depletion is signified by a significant drop in the total amount of potable water as a result of human activity and environmental change.

## Water resources

Water resources are any of the various natural waters that exist on the Earth (vapor, liquid, or solid) and are potentially useful to people.

## Water scarcity

Water scarcity is described as a lack of adequate water or the inability to obtain safe drinking water.

## Water stress

When the demand for water exceeds the available supply for a period, or when the quality of the water prevents its usage, water stress occurs. Fresh water supplies degrade in quantity and quality due to water stress.

## Wetland

“A wetland is an area of land that is either covered by water or saturated with water”.

7

## Background Information

To this day, over 2 billion people live in countries experiencing high water stress, where water is either not available, accessible, or safe to drink. The main reasons behind this are climate change, water wastage and increased human demand. In addition, 700 million people worldwide could be displaced by intense water scarcity by 2030 and it is a fact that by 2050 all the accessible water will be gone if we don't change our ways and do something about it. It is important to know, that globally,

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<sup>7</sup> National Geographic Society. “Wetland.” *National Geographic Society*, 9 Oct. 2012, [www.nationalgeographic.org/encyclopedia/wetland/](http://www.nationalgeographic.org/encyclopedia/wetland/).





785 million people lack access to clean drinking water. All Member states are affected, as unsafe water leads to illnesses and occasionally to deaths.

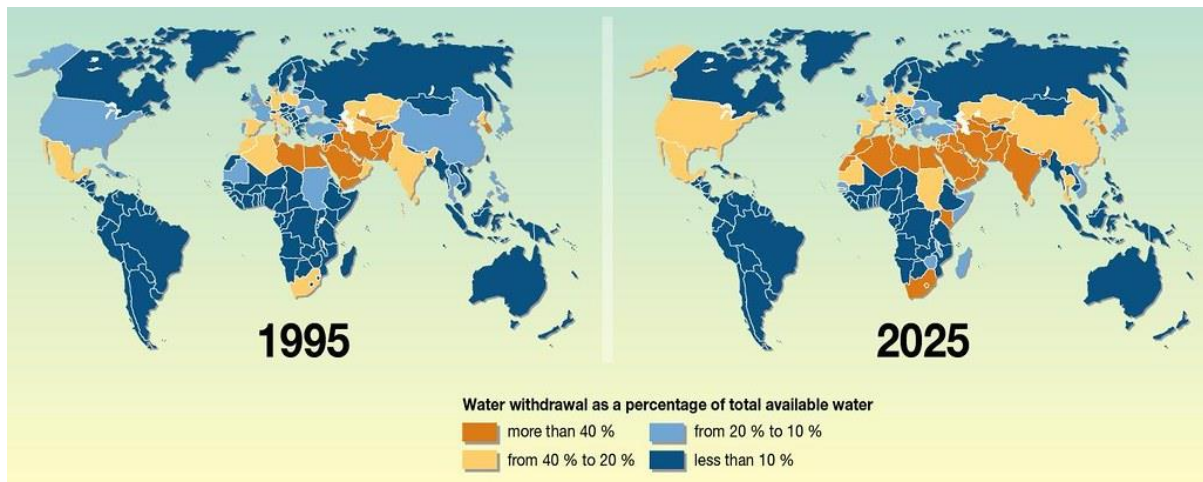


Figure 2: Image depicting water withdrawal as a percentage of total available water.<sup>8</sup>

## Causes

The main cause of the shortage of water is Climate Change as extreme weather conditions heavily affect the environment and as the dangerously increasing temperatures lead to droughts, heatwaves, and fires. More ground and surface water evaporates everyday due to excessive heat and more water vapour is lost into the atmosphere.

The lack of facilities to store and save water are not well constructed with leaks in pipes and breakages during transport which results in poor water distributions from region to region. Even a small amount lost from a single pipe adds up to a huge loss of water. Poor storage and water collection facilities result in more water being lost. The technological development that stores rainwater for future use is low and so, due to ignorance, the depletion of water sources is caused.

The lack of money granted by other countries, organizations or individuals show that governments do not consider this issue as important as all the rest and therefore do not emphasise on the improvement in distribution, access, and the safety of water.

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<sup>8</sup> Rekacewicz, Philippe. "Increased Global Water Stress." *GRID-Arendal*, [www.grida.no/resources/5625](http://www.grida.no/resources/5625). Accessed 11 Aug. 2021.

In addition, the increasing population needs more and more water every day and as water isn't renewable, it can't satisfy everyone's needs as there are many different forms of its use, such as: cooking, washing, drinking, agriculture, farmlands, in electricity and industry. Due to overpopulation, more water is being used and wasted.

Unfortunately, pollution has contaminated water sources as carbon dioxide and carbon monoxide combine with H<sub>2</sub>O molecules and therefore makes it unsafe for all of its uses. The toxic chemicals that are released into the water affect the flora and fauna of the environment and thus influence the grounds where fresh water is released. For example, when sulphur and nitrogen oxides combine with oxygen in water, acid rain is formed. This acidic solution formed cannot be drinkable as it is not safe and can cause serious health issues.

Finally, the substantial increase in agricultural activities means that more water is used for growing and harvesting crops healthily. Especially as the water is free to use for this activity, farmers use it up without consciousness. Additionally, there is a decrease in rainfall due to drastic climate changes. Rainwater can be collected and taken through the process of desalination and filtration in order to make it drinkable water. However, when there is not enough rainwater from the reduced rainfalls, then the reservoirs aren't filled up, and not a lot of water can be obtained.

## Effects

One of the main effects caused in us humans is dehydration, which results in poor growth, nutrient deficiencies, and illnesses. The health rate of the people decreases, and more bacteria and viruses might arise adding more weight to the medicinal workload.





The high demand of water cannot be fulfilled and as it is essential for living, many people, especially those residing in LEDCs, are unlikely to survive, therefore increasing the death rates in separate regions.

The lack of water that is safe for other uses is reduced and the water is full of bacteria and chemicals which make our organisms sick. Due to water scarcity, the prices of water will rise and become expensive, meaning that many people will not be able to afford it. This will generate all types of problems that will have to be solved urgently.

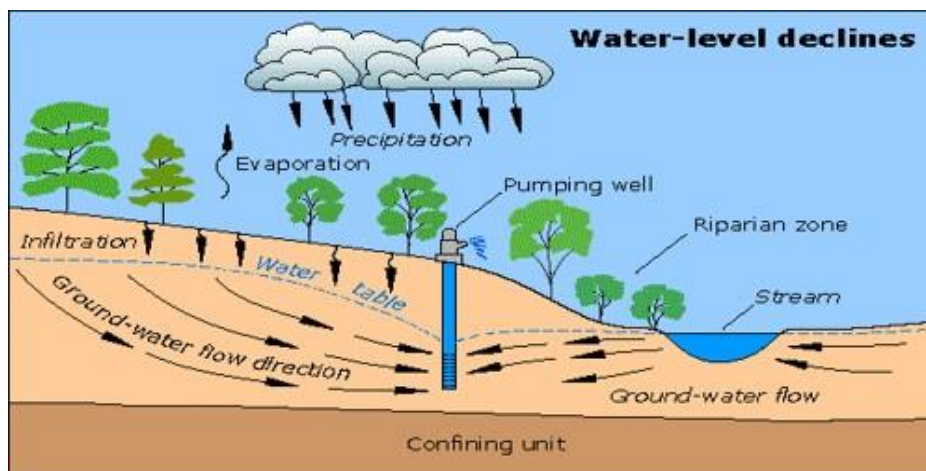


Figure 3: Image depicting the effects of groundwater depletion.<sup>9</sup>

Moving onto a more mental level, focusing on the effect that water scarcity has on the mental health of the population is also essential. Water scarcity has added a lot of pressure on the society, and it has it urgently running around trying to solve this issue by figuring out ways that it can have and create more water that is safe for use. The main way that everyone tries to help is by building more irrigation infrastructure like using land to build reservoirs and trying to build factories that convert unsafe and dirty water into safe and drinkable water. All these above, unfortunately result in three downgrading consequences: degradation of land, financial pressures, and pressures on physical health. Firstly, degradation of land is when land is used to build machines and industrialised infrastructure instead of using it as farmland for animals, to grow

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<sup>9</sup> "Effects of Groundwater Depletion." *Assignment Point*, [www.assignmentpoint.com/business/economics/effects-groundwater-depletion.html](http://www.assignmentpoint.com/business/economics/effects-groundwater-depletion.html).

crops, or even to simply not disturb even more nature and leave all the animal habitats in peace to not result in animal extinction. Next, financial pressures might arise as more governments will have to fund and spend money on building this infrastructure to reduce water scarcity. Thirdly, many people are starting to stress and think about the future where people might be left with no safe water and therefore cause a lot of pressure on their physical health. Also, the constant worrying in LEDCs of if they are going to have clean water to drink the next day, causes a lot of pressure and stress on people's mental health. Concluding, all the above will result in a huge weight and stress on people's mental health.

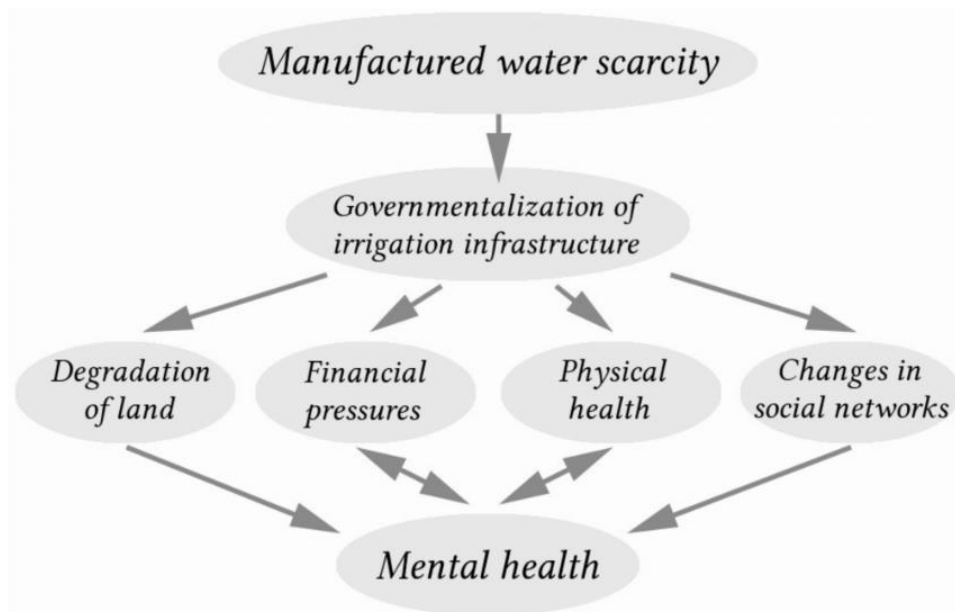


Figure 4: Image depicting the manufactured Water Scarcity and the pathways to mental health impacts<sup>10</sup>.

## Major countries and organizations involved

### Australia

Australia has many bushfires annually which, according to a study, have been found to create as much smoke as a very large volcanic eruption. These fires result in many

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<sup>10</sup> Ženko, Maja, et al. "Linking Water Scarcity to Mental Health: Hydro–Social Interruptions in the Lake Urmia Basin, Iran." file:///C:/Users/ilian/AppData/Local/Temp/water-11-01092-v2-1.pdf, 24 May 2019, <file:///C:/Users/ilian/AppData/Local/Temp/water-11-01092-v2-1.pdf>.

deaths of both humans and animals, destruction of natural habitats, 10 million hectares of land burned, and the list goes on. All of these constant changes result in more water sources being depleted and polluted and therefore resulting in water scarcity.

## India

India has been dealing with a water crisis as water sources are rare and if there are any, then they are unsafe and dangerous to drink. Also, most of the water is either dried out or displaced instead of used, due to the extremely hot and dry climate. The high population also means an increased demand in water and so water scarcity is a huge problem. Finally, due to contamination, more than 31% of the country's diseases are water-related and a little amount of the population has access to traditional sanitation.

## Papua New Guinea

There is a large problem in this region, where most of the water sources are dirty and filled with pollutants. This results in water-borne diseases which are the principal cause of death in children under 5 years old. Many schools do not have access to efficient piped water systems and therefore must depend on collecting rainwater in order to meet drinking needs. Sometimes, it goes to extreme lengths, where some institutions have to close down and stop operating when there is a huge shortage of water.

## Ethiopia

One of the main countries where politics and excessive draughts are the main causes of water shortages. Its dry climate adds to this, as all lakes, streams and ponds dry up and anything left is always contaminated with animal waste and bacteria.

## USA

The USA is constantly faced with harsh and extreme weather conditions, with most common being the wildfires in California, recurring floods and large hurricanes which destroy everything in their path. These destructive weather conditions cause



huge problems to the facilities of every town along with any water sources which can be found there.

### The World Bank

This is an organization that is collaborating with partners to build “A Water-Secure World for All.” It helps governments prevent and manage floods and droughts and tries to decrease the intensity of the natural disasters that are caused by climate change and thus helps to protect our water sources. Additionally, it offers loans and grants to governments in order to improve their water management and infrastructure, as it puts all of its emphasis on this issue. Finally, it has a large interest in helping as many countries as possible which have to deal with water shortages.



## Timeline of events

<u>22 March 1993</u>	The first World Water Day, designated by the UN General Assembly (GA).
<u>17 June 1994</u>	The UN Convention to Combat Desertification is adopted in Paris, France.
<u>26 December 1996</u>	The UN Convention to Combat Desertification takes effect.
<u>2002</u>	General Comment No. 15 of the Committee on Economic, Social and Cultural Rights is adopted.
<u>2003</u>	UN Water is formed.
<u>23 December 2003</u>	The UN GA proclaims the Water for Life decade through resolution A/RES/58/217.
<u>22 March 2005</u>	The Water for Life decade officially begins.
<u>28 July 2010</u>	The UN GA recognizes the right to water and sanitation through Resolution 64/292.
<u>1 January 2015</u>	The Sustainable Development Goals (SDGs) come into force.
<u>19 March 2019</u>	The UN World Water Development Report 2019 is published.
<u>23-27 August 2021</u>	World Water Week is held digitally.

## Previous attempts to solve the issue

### International decade for Action “Water for Life,” 2005-2015

In December 2003, the UN GA decided to proclaim the years between 2005-2015 the international decade for Action “Water for Life”, officially starting on World Water Day (22 March) in 2005. The 'Water for Life' Decade's main purpose was to encourage efforts to meet worldwide goals on water and water-related concerns by



2015, mainly through cooperation. The Decade's challenge was to direct focus on action-oriented initiatives and policies that would assure long-term sustainable control of water resources, both in quantity and quality, as well as implement sanitation measures. Responsible for the decade's coordination was UN Water, a mechanism created in the UN. During the decade, a lot of progress was made, and many people gained access to water and sanitation services. However, they unfortunately did not manage to fulfil all the goals they hoped to, and they missed the Millennium Development Goal (MDG) target by 9%.

### World Water Week

The World Water Week is a conference organized every year and for the past 30 years by the Stiftelsen Stockholm International Water Institute (SIWI). It is now the world's most powerful movement aimed at resolving global water issues. People from over 130 countries participate in this non-profit event and this year it took place online, from 23 to 27 of August. The thematic scope ranges each year, although it is always related to water, and this year the theme was "Building Resilience Faster".

### Relevant UN Resolutions, Events, Treaties and Legislation

#### UN Water<sup>11</sup>

UN Water is an interagency mechanism, part of the UN, which coordinates the attempts of the UN in response to water and sanitation related crises and challenges. It was formed in 2003 and its headquarters are located in Geneva, Switzerland. UN Water gets all the support from its members (agencies which run water-related missions etc.) and partners mainly focusing on policy-making, monitoring, reporting, and encouraging action.

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<sup>11</sup> UN Water. "UN Water." UN-Water, 19 July 2021, [www.unwater.org/](http://www.unwater.org/). Accessed 21 July 2021.



## Sustainable Development Goal 6

The Sustainable Development Goals (SDGs) are a collection of 17 goals established by the United Nations and endorsed by all its members in 2015 at the UN Sustainable Development Summit. They are an urgent call for all countries to join forces in a global partnership to end poverty, protect the environment, and improve the lives and prospects of everyone, everywhere, as part of the 2030 Agenda for Sustainable Development. Specifically, goal number 6 aims to “Ensure availability and sustainable management of water and sanitation for all” which is tightly correlated to the topic at hand. The UN, through this goal, is trying to secure that every single one of earth’s citizens will have access to potable and clean water sources as well as sanitation facilities. Especially during a time like this, in the midst of the COVID-19 pandemic, people need to have clean water and sanitation tools, such as soap and alcohol-based hand rub, to protect themselves and their families from the virus.

## UN World Water Development Report 12

The UN World Water Development Report is a report on sanitation and water concerns published each year, with a different theme, by UNESCO, on behalf of UN Water. Based on the work done by UN-Water Members and Partners, the report provides insight into key trends in the state, usage, and management of freshwater and sanitation. The report, which is released in conjunction with the World Water Day, equips decision-makers with the knowledge and resources they need to develop and implement sustainable water strategies. It also includes practices and thorough assessments which aim to spark innovative ideas and activities in the water sector and beyond. This year’s theme was “Valuing Water”.

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<sup>12</sup> “UN World Water Development Report 2021: UN-Water.” *UN*, 21 Mar. 1970, [www.unwater.org/publications/un-world-water-development-report-2021/](http://www.unwater.org/publications/un-world-water-development-report-2021/).





General Assembly (GA) Resolution 64/29213 and the right to water and sanitation<sup>14</sup>

The United Nations General Assembly expressly acknowledged the human right to water and sanitation on July 28, 2010, through Resolution 64/292, and recognized that pure drinking water and sanitation are vital to the fulfillment of all human rights.

General Comment No. 15: The right to water<sup>15</sup>

The General Comment No. 15 was adopted in 2002 by the Committee on Economic, Social and Cultural Rights, part of the Office of the United Nations High Commissioner for Human Rights (OHCHR). It recognizes the international right to water, and it defined it as “the right of everyone to sufficient, safe, acceptable and physically accessible and affordable water for personal and domestic uses.”

The United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (UNCCD)<sup>16</sup>

The United Nations Convention to Combat Desertification is a convention with the aim to address desertification and drought through state action plans that include long-term objectives and are backed up by global cooperation and collaboration agreements. It was adopted on 17 June 1994 in France and took effect in 1996. The UNCCD consists of 197 parties and focusing on drylands, it is the only legally enforceable international agreement that connects the environment and development with long-term land conservation.

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<sup>13</sup> A/RES/64/292 - E - A/RES/64/292 -Desktop, 3 Aug. 2010, <https://undocs.org/A/RES/64/292>

<sup>14</sup> A/RES/64/292 - E - A/RES/64/292 -Desktop, 3 Aug. 2010, [undocs.org/A/RES/64/292](https://undocs.org/A/RES/64/292).

<sup>15</sup> UN Economic and Social Council. “General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant).” UN Committee on Economic, Social and Cultural Rights (CESCR), 20 Jan. 2003., <https://www.refworld.org/pdfid/4538838d11.pdf>

<sup>16</sup> “United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought And/or Desertification, particularly in Africa.” United Nations General Assembly, 12 Sept. 1994. [https://www.unccd.int/sites/default/files/relevant-links/2017-01/UNCCD\\_Convention\\_ENG\\_0.pdf](https://www.unccd.int/sites/default/files/relevant-links/2017-01/UNCCD_Convention_ENG_0.pdf)



## Possible solutions

### Recycling wastewater

Primarily, by recycling wastewater, people can expand the use of it by improving its quality to be reused; this can also lead to a decrease in expenses for a country that would have to import water, whereas, by recycling, it would be sufficient just to take the wastewater from sewages and clean it out to be repurposed.

### Raising awareness

Raising awareness to the public can show the importance of this matter and the urgency of it. Also, it can help convince the government through protests to help with the wastage and extreme loss of water. Nowadays people can raise awareness through social media, campaigns, school or even pressure groups which link the government with people's needs and wants for the community. Even encouraging schools to educate students upon this matter will help raise awareness and give them knowledge on how important it is to save as much water as possible, as water is not a renewable source.

### Collecting rainwater

Reservoirs can be built on rooftops and wherever else possible to collect water during rainy weather periods, which can be stored for later; This would especially be of beneficial use for schools which need water on a daily basis, for instance: for cooking, children filling up their water bottle, cleaning hands and many more. Instead of all the rainwater being lost, it can be collected and filtered (in order to kill any pathogens) so it is safe for people to drink.

### Check-ups on irrigation systems

If all irrigation systems that are built around towns are efficient and targeted to the roots of each plant, then water loss can be decreased. Moreover, it would be greatly beneficial if the irrigation systems were programmed to go off early in the



morning or late at night, so that plants can be watered, and the sun cannot cause evaporation before it is absorbed through the roots.

## Desalination of sea water

Over the years the sea levels have risen, and so there is much more sea water available for possible usage. A very smart and effective process that can be carried out is desalination of saltwater, which is the process of removing the salt from the water. This can be greatly beneficial as people can use ocean water and turn it into drinkable one, thus increasing the overall amount of water available for us.

## Filtration Systems

Developing water filtration systems by upgrading technology can be used quite easily, as there are many countries that have water which is dirty and full of bacteria. Therefore, if these systems are increased and spread out to all regions, safe water will be accessible by everyone.

## Efficient pipes

Improving water transportation through pipes is an enormous task and big investment but a very efficient and eco-friendly one. It is also a way to avoid cracked pipes, frozen pipes or even burst pipes. It is not only a matter of hydration but also a problem of house damage through ceilings collapsing or water running down between the walls. Therefore, if we make sure that everything is new and repaired, then the chance of losing excessive amounts of water is significantly reduced.

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