SIWI STOCKHOLM JUNIOR WATER PRIZE

# HUNGARY

## 2019

# About the Stockholm Junior Water Prize

The Stockholm Junior Water Prize (SJWP) was established in 1997 and is an annual competition open to young people between ages 15 and 20, who have conducted water-related projects focusing on local, regional, national or global topics of environmental, scientific, social or technological importance. The Stockholm International Water Institute administers the Stockholm Junior Water Prize and it serves as its secretariat www.siwi.org/prizes/stockholmjuniorwaterprize/.

The Stockholm Junior Water Prize consists of two parts: the National Competition and the International Final. All participating countries organize their own National Competition. The winner proceeds to the International Final in Stockholm. As a result of the competitions, thousands of young people around the world develop personal interests, undertake academic studies and often pursue careers in water or environment-related fields.

The International Final takes place during the World Water Week in Stockholm, an ample event where water people from all over the world meet. This generates many opportunities for networking and exposure. The efforts of the participating countries are highlighted globally.

The winner of the Stockholm Junior Water Prize receives a 15,000 USD award, a blue crystal prize sculpture, a diploma, as well as the stay in Stockholm. Nevertheless, the participation is what genuinely matters.

H.R.H. Crown Princess Victoria of Sweden is the Patron of the Stockholm Junior Water Prize.

## Hungary and the SJWP

Hungary joined the SJWP in 2013. Mr. János Áder, the President of the Republic, has been the patron of the competition since 2014.

The national organizer of the SJWP is the GWP Hungary Foundation in agreement with the Stockholm International Water Institute. Details of the competition are available at www.ifivizdij.hu.

## Previous winners of the national competition

2013: Dézi Kakas, János Béri and Péter Polák Jr. (Fényi Gyula Jesuit Secondary Grammar School, Miskolc) – Project title: The Importance of the Szinva Stream: Biological and Chemical-Physical Examinations

2014: Claudia Li, Lívia Mayer and Nikolett Sebestyén (Eötvös József Grammar School, Tata) – Project title: Our Water is Our Future

2015: Márton Czikkely, Tamás Gergely Iványi, Tamás Márkus (Városmajori Grammar School,Budapest) – Project title: The Secrets of Drinking Water – How to Combat Polyethylene Terephthalate

2016: Dávid Kovács, Ákos Iván Szűcs (Kada Elek Secondary School of Economics, Kecskemét) – Project title: What Can We Gain by Using Grey Water?

2017: Anna Tari, Kristóf Stefán, Nikolett Szabó (Szent László High School, Budapest) – Project title: „Tanks of Water"

2018: Bence Zsolt Rappay (I.Béla Secondary Grammar School, Szekszárd) – Project title: „Hillside water management and possibilities of melioration in the Csatári-valley"

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Finalists of the National Contest

# The Hungarian National Final

**The jury during the national final**

Eighteen entries were received for the 2019 Hungarian National Competition. Altogether, there were twenty five secondary school students involved, participating either as individual contestants, or as teams of two members.

The projects were written in English, according to the requirements of the call and dealt with different topics, such as water reuse, the quality of drinking water and of surface waters, environmental awareness, eutrophication, wastewater treatment. Five projects were selected by the jury for the national final on the basis of the SJWP judging criteria.

The Hungarian National Final was organised at the Hungarian Water Utility Association (MaVíz) in Budapest on the 1st of June 2019. The finalists were requested to prepare an A0 poster per team displaying the results of their project.

During the final, the contestants presented their main findings and answered the jury's questions. Approximately 15 minutes per team were allocated. The presentations and the interviews were conducted in English.

## The jury of the SJWP – Hungary 2018

Chair:

- András Szöllősi-Nagy, Professor, National University of Public Service

Members:

- Sándor Baranya, Associate Professor at the Budapest University of Technology and Economics
- Anna Bérczi-Siket, consultant, Office of the President of the Republic
- Adrienne Clement, Associate Professor at the Budapest University of Technology and Economics
- Veronika Major, director of the VTK Innosystem Plc.
- Marcell Marschall, R&D leader of GE Power & Water / Water & Process Technologies
- Edit Nagy, Secretary General at the Hungarian Water Utility Association
- Zsolt Edgar Rasztovits, Business Development Director for Xylem Water Solution Hungary
- Péter Szűcs, Dean at the University of Miskolc
- Danka Thalmeinerova, consultant

Secretary:

- Monika Jetzin, GWP Hungary Foundation

# Summary of the finalists' projects

## WHAT COMES FROM YOU, GOES BACK TO YOU

Lilla Kovács and Viktória Lőrincz – Szalézi Szent Ferenc Secondary School, Kazincbarcika

For nature, for life on Earth, for the human society, for social development, water is indispensable. It is one of the natural resources that are present in every second of Man's life. Its biological significance is immense; life on the planet Earth is unimaginable without it. About 2.5 – 3% - of our water reserves is fresh water, which we can utilise. We need it in our everyday life for washing ourselves, for doing the washing-up, for human consumption, for washing and for spending our free time. On the other hand, it is one of the fundamental conditions of agriculture, industry, and thus of producing goods for people. Demand for water is increasing proportionally with population growth, while the supply of drinking water on Earth is gradually shrinking. We use water on daily basis, even in our homes. During human activities, contaminating the water we use is unavoidable, and pollution may come in diverse form and in various amounts. Just think of how we contaminate water we use in our households or of the pollution occurring due to our industrial or agricultural activities. Polluted water is to be cleaned in all cases depending on its degree and type, so that our water resources we can preserve our water reserves and its good quality on behalf of sustainable development. Providing sustainable development guarantees that Man of the future can utilize our existing supplies adequately on long run. Protecting the quality of the water supply and its improvement is not only essential for people, but the protection of our environment plays an important part in guarding our world. The process of cleaning sewage water depends on the extent and type of the contamination. Various technological procedures can be applicable for the removal of certain pollution. Different technology is used for cleaning water contaminated by industrial or agricultural activities and other technologies are applied during the process of cleaning sewage coming from households, which is known as communal sewage. However, the fundamental aim and task of all technology is that contamination – whether it be solid or dissolved forms – should be removed from the water in the largest possible amount before releasing it back to the natural water cycle. Conscious water usage and the conscious lifestyle are the two basic pillars of the process, which makes it possible to remove the pollutant with the largest possible efficiency from the sewages with the help of different cleaning technologies.

In our thesis, we are to present the suitable and unsuitable sewer usage habits, as well as their effects on the pipe networks and on the sewage purification technologies. Since the cleaning of the contaminated waters with good efficiency begins with the proper usage of suitable drainage. With the help of a questionnaire, our schoolmates', their families' sewage using habits have been surveyed so that our age group and their relatives can recognise the significance of cleaning contaminated waters, which starts with using our sewage network purposefully.

# Summary of the finalists' projects

## HOW CAN WE AVOID MORE WATER DISASTER? - THE TISZA RIVER MUST BE SAVED FOR THE FURTHER GENERATION

Richárd Szűcs and Zsombor Nagy - Kossuth Lajos Secondary and Primary School, Tiszafüred

In this essay we focused on a local problem. The starting point was the cyanid pollution in 2000 and we checked whether the fish cumminity has recovered since then. Three main fields were examined: pollution caused by tourists, anglers and pollution cauesed by the floating houses. Considering heavy metal pollution and the chemical quality of water, the potential risks of contaminated fish consumption on human health were evaluated.

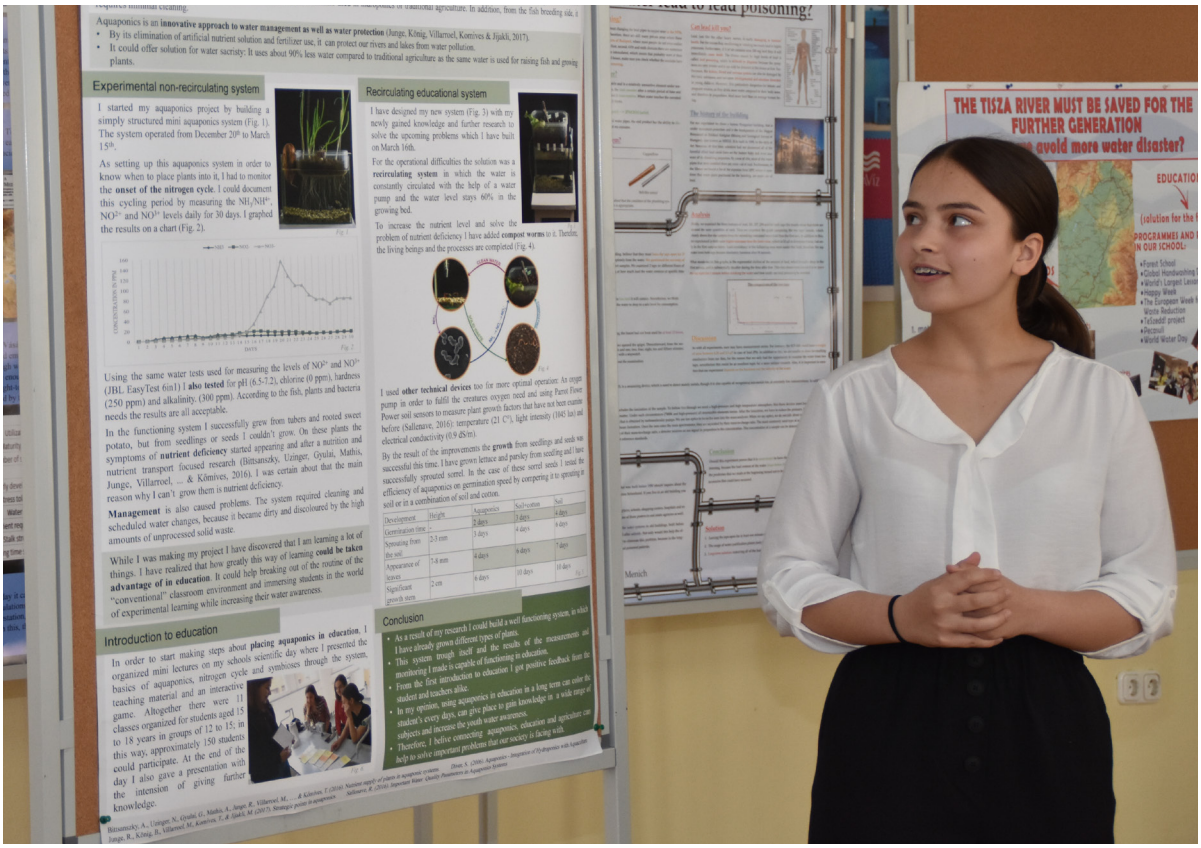
We searched the answer for whether education can be an effective soultion for prevention of water pollution, and we have made a list of most important purposes.

## GROWING PLANTS, GROWING MINDS WITH EDUCATIONAL AQUAPONICS SYSTEMS

Eszter Kun - Szentendrei Móricz Zsigmond Secondary School, Szentendre

Our planet needs innovative solutions to the problem of water management and water protection. Young people of my age long for a more enjoyable, more practical, experience-based education. Both problems can be tackled at the same time by the cultivation of educational aquaponics systems, which provides teenagers with the opportunity to acquire versatile knowledge by experimental learning while increasing their environmental awareness with water management and protection in the focus. In my work I successfully designed an educational aquaponics system, which proved to be capable of functioning.

Therefore, in my essay I present the results of my research on aquaponics systems and discuss their introduction to the framework of secondary school education.



# Summary of the finalists' projects

## COULD TAP WATER LEAD TO LEAD POISONING?

Krisztina Menich and Melinda Vida - Veres Pálné Secondary School, Budapest

We would like to raise awareness about the dangers of the contaminated tap water. One of the main toxic chemicals that often occurs in the water is lead, which could cause serious health problems or even death in the long-term. Loads of people are affected by this problem without even realising it. However, the individuals who had been informed tend to waste a lot of water by trying to eliminate the issue too cautiously.

These people usually leave the taps open every morning or several times a day for ten minutes or even longer, to ensure that the water is safe to drink. We wanted to prove that this is an appropriate prevention for the problem, but it is unnecessary to waste that much water.

## RESTORATION OF ENVIROMENTAL DAMAGE CAUSED BY THE TISZA RIVER REGULATIONS AND DRAINAGE FOR AGRICULTURE AND FORESTRY

Dénes Papp and Marcell Juhász - Kiss Ferenc Forestry Vocation School, Szeged

It can be said today about the slopes of Hungary that, due to river regulation, the spread of agriculture, drought, fragmentation and invasion infestation, their stocks have changed dramatically and decreased. Along with this, the living fauna there has changed drastically or died. We wanted to have some innovative ideas for these modern problems, which can prevent and suppress these problems.

# The result of the National Final

The jury decided on the winner in a closed session and announced the result on the spot. The decision was based on the same judging criteria used during the international final (Relevance, Creativity, Methodology, Subject Knowledge, Practical Skills, Report and Presentation), considering both the written project and the presentation, including the interview. The winner of the Stockholm Junior Water Prize – Hungarian competition 2019 is:

Eszter Kun (Szentendrei Móricz Zsigmond Secondary School, Szentendre) with the project: „Growing Plants, Growing Minds with Educational Aquaponics Systems"

The project emphasizes the need for innovative solutions to the problem of water management and water protection. Young people long for a more enjoyable, more practical, experience-based education. Both problems can be tackled at the same time through the cultivation of a educational aquaponics system. This provides adolescents with the opportunity to acquire versatile knowledge by experimental learning while also increasing their environmental awareness with water management and putting protection in focus. The student designed an educational aquaponics system, which proved to be capable of functioning. The study presents the results of the research on aquaponic systems and discusses its introduction within secondary school education.The teacher who assisted Eszter was Mr. Barnabás Sárospataki.


The winner of the SJWP Hungary 2019

All finalists were invited to the Budapest Zoo and the Széchenyi Bath as well. The support of the teachers was also recognized on stage.

President János Áder invited the five finalist teams to the Budapest Water Summit. There the students shortly explained their results to the President in the presence of the media. Mr. Áder spoke about the drama of "too much water, water scarcity and water pollution" being important for the entire world. He handed over a Diploma of Merit to the winner.


The winner of the SJWP Hungary 2019 receiving the diploma from President János Áder

# The international final

The finalists from the participating countries were invited to the World Water Week in Stockholm. There they actively took part in the global conference through a variety of activities for five consecutive days. An i-poster exhibition of all student projects gave the finalists an opportunity to discuss their projects with a wide range of conference attendees including researchers, politicians and the media.

This year, representatives from 35 countries competed for the SJWP: Argentina, Australia, Bangladesh, Belarus, Brazil, Canada, Chile, China, Cyprus, Denmark, Ecuador, France, Germany, Hungary, Israel, Italy, Japan, Latvia, Malaysia, Mexico, Netherlands, Nigeria, Norway, Russian Federation, Republic of Korea, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Kingdom and the United States of America.

## The SODIS Sticker

**Macinley Butson**
**Australia**

A new, novel and innovative ultraviolet radiation sticker has been developed to accurately measure large UV exposures for solar disinfection of water.

The SODIS sticker is capable of accurately measuring the solar UV exposure required to sanitise drinking water through two innovative products built together.

A high accuracy and transparent UV sensitive film coupled with a partial UV blocking filter, was used to construct The SODIS Sticker.

Following the presentations, each finalist was interviewed by a jury of international experts, who then decided on the winner.

Hungary was represented by the one-member team formed of Eszter Kun (Szentendrei Móricz Zsigmond Secondary School, Szentendre) with her project: „Growing Plants, Growing Minds with Educational Aquaponics Systems".

The 2019 Stockholm Junior Water Prize was awarded to a student from Australia (Macinley Butson) who developed a new, novel and innovative ultraviolet sticker to accurately measure large UV exposures for solar disinfection of water. The SODIS sticker is capable of accurately measuring the solar UV exposure required to sanitize drinking water through two innovative products built together.  H.R.H. Crown Princess Victoria of Sweden presented the prize at an award ceremony during World Water Week in Stockholm on 27 August.

**The winner of SJWP 2019 receiving the prize from H.R.H Crown Princess Victoria**

A Diploma of Excellence was awarded to a student from United Kingdom, Diana Virgovicova for her discovery of a New Photocatalyst to Solve Water Pollution.

**The Diploma of Excellence was awarded to Diana Virgovicova**

Eszter during her presentation

Finalists makes friendship

Crown Princess greeting the finalists

Finalists before the Award Ceremony

Stockholm Junior Water Prize 2019 finalists with H.R.H Crown Princess Victoria of Sweden

## Sponsors

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## National Organiser


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