

Teacher & Student

***GUIDELINES AND
INFORMATION KIT***

For entries into the 2018 Australian
Stockholm Junior Water Prize

www.awa.asn.au/asjwp

SIWI STOCKHOLM
JUNIOR
WATER PRIZE

**AUSTRALIAN
WATER**
ASSOCIATION

xylem
Let's Solve Water

Australian Stockholm Junior Water Prize

The annual water science competition for high school students



OVERVIEW

The Stockholm Junior Water Prize (SJWP) is the most prestigious youth award for a water-related science project at the high school level. The prize taps into the unlimited potential of today's youth as they seek to address water challenges.

Created in 1997 by the Stockholm Water Foundation, the prize was established to mirror the adult Stockholm Water Prize. The Stockholm International Water Institute facilitates the international competition.

The Australian Water Association organises the Australian competition with support from Xylem. The Australian SJWP aims to inspire students to develop solutions to real water problems, and encourages students into careers in the international and Australian water community.

For more information contact:

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WHAT IS THE STOCKHOLM JUNIOR WATER PRIZE?

Australian Stockholm Junior Water Prize (ASJWP)

The Australian Stockholm Junior Water Prize (ASJWP) is an annual water science competition for high school students that aims to increase interest in water-related issues and research, and to raise awareness and knowledge of local and global water challenges.

The ASJWP is open to projects aimed at improving the quality of life through developing innovative solutions to water problems. Investigations can include water resource management, water protection, and water and waste water treatment.

The ASJWP winner will then go on to represent Australia at the international competition in August 2018 in Stockholm, Sweden.

Stockholm Junior Water Prize

The SJWP is the most prestigious international award for high school students who conduct research projects in water science. This international student science prize enjoys the patronage of HRH Crown Princess Victoria of Sweden.

National winners from over 30 countries travel to Stockholm, Sweden during World Water Week in August to participate in a week long cultural exchange program and compete for the international prize, US\$15,000 and a crystal water sculpture. The winner's school also receives US\$5,000.

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TASK OUTLINE

Students are invited to develop practical and innovative water research projects aimed at improving quality of life and the environment. The scope of the project may be on a local, regional, national or global topic but must have the potential to improve quality of life and/or the environment. All projects must use a research-oriented approach, which means that they must use scientifically accepted methodologies for experimentation, monitoring and reporting results, including statistical analyses.

Steps

Choose a topic to research

This is your chance to investigate something you are passionate about, something that interests you or grab an idea where you think you could make a real change. Your topic could revolve around a waterway near your school, how you could improve treatment or control flooding, or it may be an idea to improve water quality or water resources worldwide. Do a bit of research, the world is your oyster!

Decide on your hypothesis or key question to answer

The hypothesis is an 'educated guess'. What do you think your results will achieve? What do you want to know? Why is it important that you find this out?

Research relevant background information

This is important in all projects. It is time to discover what has been done, if anything, on this issue. What part of this research can help you undertake your experiments?

Undertake experiments, monitoring and/or further research

An experiment starts and finishes with factors that change during the experiment. These are the variables. This is where you might want to seek assistance from your science teacher to ensure you undertake accurate experiments or monitoring.

Analyse results

Take some time to carefully review all of the data you have collected from your experiment. Use charts and graphs to help you analyse the data and patterns. Did you get the results you had expected? What did you find out from your experiment?

Write a scientific report outlining the research/experiments and a discussion of results and conclusions/recommendations

This is where you put it all together. Keep reading for more tips on writing the report.

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ELIGIBILITY & JUDGING

Eligibility

All Australian school students aged between 15 and 20 years of age can enter the ASJWP.

Entered projects must have been developed while still in secondary school. If students have just graduated from secondary school, but have not yet started university, they will still be eligible to enter the competition.

Individuals and groups of up to three students are eligible to enter.

Judging

A judging panel to assess nominations for the ASJWP is established by the Australian Water Association and consists of between six and nine members of the water industry.

The judging process is outlined below:

- ★ Review of student papers by nominated judging panel. Scoring is based on the project criteria, outlined in this document.
- ★ Review of selected student presentations via video conference based on the paper entries.
- ★ Selection of national winner based on both paper and presentation scores.
- ★ Announcement of the ASJWP winner at the Ozwater'18 Gala Dinner.

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PRIZES

Participants

- ★ Each participant will receive an Australian Water Association certificate.

Australian Winner

- ★ The national winner receives a glass trophy and certificate.
- ★ The national winner* will receive travel and accommodation to Ozwater'18 in Brisbane, May 2018 to attend the National Water Awards Gala Dinner.
- ★ The national winner* receives a trip to Stockholm, Sweden to represent Australia in the international SJWP and participate in a week-long cultural exchange program during August 2018.
- ★ The national winner will automatically join the Water Tank, an international alumni community of the SJWP competition to connect and collaborate and advance their project and career.

* If the national winner is a group project, one representative receives the expense paid trip. Other group members may go to Ozwater'18 and Stockholm at their own expense.

Overall Winner

- ★ The international Stockholm Junior Water Prize winner receives US\$15,000 and a crystal sculpture. The winner's school receives US\$5,000.

Experience

'Being the Stockholm Junior Water Prize winner for Australia has been a privilege. It creates employment opportunities, the chance to network with individuals across the globe and the ability to experience first-hand the water industry that works vigorously to make a tangible change to this world.'

Visiting Stockholm for World Water Week 2016 has definitely been an amazing experience that I will cherish for many years. I have gained an abundant amount of knowledge through meeting and networking with like-minded individuals from across the globe. From interacting with students my own age and with water professionals who have been in the industry for over 20 years, I have gained a holistic perspective on the current situation of the water industry and challenges it faces in the near future.

For students considering entering this award, my advice is to have confidence when presenting, highlight the strengths of your research and suggest improvements on the weaknesses. Finally, just enjoy the experience as it is a part of the learning curve.'

– Mohamed Jakaria, 2016 Australian Stockholm Junior Water Prize Winner

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PROJECT CRITERIA

The project can earn a maximum score of 115 points. A project is judged using six different criteria. A Score from 1 to 5 is assigned (1 being the lowest score).

1. Relevance

Relevance of the project both in terms of scientific relevance and overall environmental and societal relevance:

- ★ Does the project target an important challenge within the water environment?
- ★ Is the project scientifically relevant (can the scientific level be related to basic, applied, research and are the results applicable for implementation)?
- ★ Can the project contribute to the improvement of the quality of life or the environment?
- ★ Is the project proposing innovative solutions to unsolved problems?
- ★ Does the project increase the awareness of water issues?
- ★ Does the project integrate environmental and societal issues?

2. Creative ability

Shows the creativity of the project in relation to:

- ★ How to pose a problem
- ★ How to solve a problem
- ★ Analysing data
- ★ Experiments or investigations
- ★ How to mediate and make the affected parties aware of the problem

3. Methodology

- ★ Is there a clearly defined idea on which a result can be achieved?
- ★ Is the problem well defined?
- ★ In what way has it been limited?
- ★ Has the work been planned accordingly?
- ★ Is there adequate information upon which to draw conclusions?
- ★ Have the possible misinterpretations of the data been taken into consideration?
- ★ Are there any new questions or suggestions for continued research?

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4. *Subject knowledge*

- ★ Is the student familiar with literature and ongoing research in the field?
- ★ Upon what sources has the work been based?
- ★ Is the list of references satisfactory? (Have the references really been studied?)
- ★ To what extent have sources of popular science been consulted?
- ★ Is the author familiar with the topic dealt with in his/her work?
- ★ Is the author knowledgeable of ongoing research in the field? Terminology?
- ★ Is the author familiar with alternative solutions?

5. *Practical skills*

- ★ Has the student made the exhibit themselves?
- ★ Have they carried out the measurements, etc?
- ★ What help has been provided by parents, teachers, professionals, etc.?
- ★ Has advantage been taken of material available in school?
- ★ From where has the equipment been obtained for the exhibit? Was it self-made?
- ★ How well have available techniques been used?

6. *Report and presentation*

- ★ Can the student present the work in a proper and informative way, both written, verbally and through an exhibit?
- ★ Is the content of the work well structured?
- ★ Is the level of the text, illustrations, diagrams and the language in the written report sufficient?
- ★ Is the display appealing with regards to any special qualities and personal touch?
- ★ Is there a relationship between the display and text material?

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DEVELOPING AN ASJWP PAPER

The following are recommendations from the ASJWP judging panel, based on their experience in reviewing projects.

Projects should not only include a problem statement, but clearly explain how the project can contribute to a solution. Even if the project itself may not solve the problem, it should demonstrate how the activities in the project can play a role in a solution.

Each project should try to address a cause-effect solution. This means studying not only the environmental effect (e.g. nitrogen load in a lake system), but also the causes behind the problem and ways of solving the problem. For example, a study on the eutrophication level of a lake in itself will not be highly competitive in the SJWP competition. On the other hand, if the study also addresses the causes behind the environmental disturbance and outlines how eutrophication monitoring will contribute to improved management of the lake environment, then the project will stand a better chance in the competition.

Development-oriented research projects are strongly welcomed. However, it is important when presenting an applied solution to a problem (e.g. the invention of a new technology or a better way of analysing a problem) that the project refers to previous work. Include an explanation of the gaps you are filling that others have not studied before.

If the project focuses on raising awareness and creating a change in the way people manage water, it is important to document the work in a way that gives quantitative evidence to what has been achieved. For example, it is not enough to say that “many people at the project site have started saving water with a new technology”. Instead it is important to show (e.g. through surveys) the number of people that have adopted a new way of managing water in a structured way (e.g. change over time, etc.).

If a project is a long-term school project, clearly show what has been done by whom over the years. Show what you or your team of up to three students has contributed to the final consolidated result.

It is important that you clearly show that you were responsible for conducting the research and developing the written the project.

Finally, it is important that you show that you have read relevant literature on the topic for your own understanding and orientation.

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PAPER GUIDELINES

These guidelines are designed to help students prepare their paper in a professional format for the Australian Stockholm Junior Water Prize competition. Please follow them as closely as possible. Students have the option of submitting an extended abstract or a full paper. The following guidelines relate to preparing the extended abstract. For the full paper template please contact Katie Trevor - ktrevor@awa.asn.au. Instructions for how to set out your paper are below.

NB: The winner of the Australian Stockholm Junior Water Prize will need to prepare a full paper to submit to the International Stockholm Junior Water Prize (assistance will be provided).

Instructions

- ★ Please use the headings “Introduction”, “Highlights”, “Methodology”, “Results”, “Discussion” and “Conclusion” – capitalised and underlined. Any subheadings should be bolded.
- ★ Page Limit - Maximum 4 pages of text followed by a maximum of 4 pages of supporting tables, graphs and references.
- ★ Page Size and Layout - The paper should be prepared for A4 size paper (210 x 297mm), with overall margins of 20mm on all sides of the paper (top, bottom, right and left). Use font type Arial for the entire document.
- ★ Ensure you run a spell-check and ask a peer to proof your abstract prior to submitting.
- ★ Send your abstract through to Katie Trevor (Australian Water Association) - ktrevor@awa.asn.au.
- ★ If your abstract does not meet the submission requirements, it will not be processed for review.

Title Page

You may design the title page of your paper as you wish, but it must contain the following information in an easily legible format:

- ★ “Entry to the Australian Stockholm Junior Water Prize [year]”
- ★ Paper title
- ★ Your name(s)
- ★ Name of your school

Introduction

This section sets out your project in broad details. Describe the water-environment problem you studied and why it was important. Also put your project in its scientific setting, detailing at least the most relevant work done on your project topic by others. We don't expect a very detailed literature review, but we do expect that you understand the scientific context of your project. See References for advice on how to give in-text references to the work of others.

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Highlights

Highlights are a short collection of bullet points that convey the core findings and provide readers with a quick textual overview of the abstract/paper

- Include 3 to 5 highlights
- There should be a maximum of 85 characters, including spaces, per highlight
- Only the core results of the paper should be covered

Methodology

In this section you must detail all of the experimental procedures that you used in your project – all methods and all materials.

Results

In this section, you present all of the results you obtained in your research. Present them as either figures or tables, along with an appropriate description, to be included at the end of the abstract. Colour images are welcome. Choose whichever of these formats (figure or table) you think is most suitable for the particular set of results you are presenting.

Discussion

Note: This is an extremely important section which the judges pay close attention to, so think about it very carefully.

Here you must discuss your results. You may wish to include the more important analyses of your results in this section (rather than in the results section). You must discuss how the results are important to the water environment problem you were studying, how novel they are, and how they relate to the results of others working on a similar project (are they the same, similar, or different? why?).

You should also discuss your results in the wider scientific and/or social context, for example, are your results useful to local or national government agencies? Are they relevant to local people? Explain your answers. How does your project contribute to improving the quality of life and/or the environment? Of course, if your project is completely novel, then you may not be able to discuss your results in relation to the results of others. In such a case, you must discuss your results in the wider scientific and/or social context only.

Conclusion

Your conclusions should be short and to-the-point. Please remember that this section is for your conclusions and only your conclusions. It is not the place to discuss your results.

If there is anything in these guidelines that you do not fully understand, ask your teacher or project supervisor for help. This research paper could easily be considered university level work, so don't be afraid to ask!

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References

The purpose of providing a reference is to enable interested parties to obtain and read the reference, so you must provide all the information necessary for this. If you are familiar with the Harvard System, then you may use it. Otherwise, we recommend you use this simpler method: In the text, give references as numbers in square brackets.

For example:

“Smith [1] found that ..., but other workers have found the opposite [2, 3].”

“We used the acid-dichromate method to measure the wastewater COD [4] and the membrane-filtration technique with lauryl sulphate broth and overnight incubation at 44 to count the number of faecal coliform bacteria in both the wastewater and the river [5].”

Immediately after the conclusions section you must list in detail all the in-text references you have made. The list is numerical, using the numbers you used in the text. So, in the above example, the first reference is to Smith. How you present this reference depends on whether it is a book, a paper in a scientific journal, a chapter in a book, or a newspaper report.

a. Book:

Surname, Initials (Year) Title of Book. Publisher's Name, City and Country (or State if the USA) of publication.

b. Journal or Paper:

Surname, Initials (Year). Paper Title. Full Name of Journal Volume Number, First and Last Page Numbers of the Paper.

d. Newspaper or Magazine Report:

[1] “Our rivers are polluted”, Daily Express (London, England), 5 June 2003, p. 6.

f. More than one author use: [1] Smith, AB, Jones, CD and Bull, EF (1996).

g. When referencing a Web site, include the author (if any), title of the site, URL, date accessed, and any other identifying information.

Library of Congress Home Page. <http://lcweb.loc.gov> (accessed Dec 2005).

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IMPORTANT INFORMATION

Closing date

Entries for the 2018 competition close Sunday, 11 March 2018 at 5pm (AEDST).

How to enter

To enter, complete your project according to the ASJWP criteria and project guidelines, then follow the steps below:

1. Download and complete entry form at www.awa.asn.au/asjwp
2. Submit entries via email ktrevor@awa.asn.au

Include as attachments:

- ★ Your project in PDF or MS Word format
- ★ Your completed nomination form
- ★ Biography
- ★ Photo

Important dates

| | |
|---------------------------|--|
| <i>11 March 2018</i> | 2018 ASJWP entries close |
| <i>26 - 30 March 2018</i> | If shortlisted, students are required to present to the judging panel on their submitted project (10 minute presentation via video conference) |
| <i>9 April 2018</i> | Winner notified |
| <i>9 May 2018</i> | Winner presented with award at Ozwater'18 in Brisbane |
| <i>25 - 30 Aug 2018</i> | SJWP Ceremony held during World Water Week in Stockholm |