



MUNDARING ENVIRONMENTAL ART PROJECT 2020

CLEAN ENERGY – Let's reduce our energy impact!

Australia is one of the largest and most energy hungry countries in the world. It is rich in natural resources and has access to an abundance of renewable "clean" sources of energy such as solar, wind, hydro, geothermal and wave energy.

Let's investigate what we can do to reduce climate change by focussing on clean energy and implementing actions to reduce our impact. This project invites students to investigate the types of energy sources- **non-renewable** fossil fuels vs **clean energy** options and **their impact on our environment**. Students can use the information presented to come up with their creative solutions for a cleaner and more sustainable future.

DISCUSSION AND INVESTIGATION QUESTIONS

- What impact do greenhouse gases have on the Earth and our climate?
- What are the differences between renewable and non-renewable energy sources?
- What are the ways that we use non-renewable energy during our day?
 - How can we calculate this energy use?
- What are some of the ways we can decrease our use of non-renewable energy?
 - How does walking or riding your bike to school reduce energy use?
 - How does eating locally grown (or home grown) food save energy?
 - How does reducing rubbish (or better recycling) save energy?
- What is the difference between conserving energy and being energy efficient?
- What are some examples of sustainable and renewable energy sources that we could use in our community?
 - Could your house be powered by wind, solar or wave energy?

KEY RENEWABLE ENERGY SOURCES TO INVESTIGATE

- Why we need clean energy
<http://www.futuresparks.org.au/why-we-need-clean-energy.aspx>
- Wind Power – wind farms/turbines
http://www.futuresparks.org.au/media/25372/wind_energy_fact_sheet.pdf
- Solar Power – the Sun captures radiant energy and converts to heat, electricity or hot water
http://www.futuresparks.org.au/media/25363/solar_energy_fact_sheet.pdf
- Geothermal Energy – from heat from the earth
http://www.futuresparks.org.au/media/25348/geothermal_energy_fact_sheet.pdf
- Hydroelectric Power – through rivers and dams
http://www.futuresparks.org.au/media/25351/hydro-electric_energy_fact_sheet.pdf
- Tidal Energy – mechanical energy from the motion of tides
http://www.futuresparks.org.au/media/25366/tidal_energy_fact_sheet.pdf
- Wave Energy – mechanical energy from the motion of waves
http://www.futuresparks.org.au/media/25369/wave_energy_fact_sheet.pdf

KEY ENERGY SAVING ACTIVITIES TO INVESTIGATE

- Walking, riding to school
<https://s3.amazonaws.com/green-learning/eneraction/Eneraction-Lesson-Plan-12-Ride-Roll-and-Stroll.pdf>
- Changing to energy efficient alternatives
http://www.futuresparks.org.au/media/24696/topic_resources_-_energy_efficient_design.pdf
- How to calculate your carbon footprint
www.wwf.org.au/our_work/people_and_the_environment/human_footprint/footprint_calculator
- Eating locally grown (or home grown) food
<https://www.abc.net.au/life/what-is-better-for-the-environment-eating-seasonal-or-organic/11219734>
<https://www.buywesteatbest.org.au/>
<https://www.hsph.harvard.edu/nutritionsource/sustainability/plate-and-planet/>
<https://environmentvictoria.org.au/resource/eating-planet-environment-victoria/>
- Avoiding single use plastics
https://taronga.org.au/sites/default/files/content/pdf/LitterFreeRivers_Toolkit_Schools.pdf

EASY ENERGY SAVING ACTIVITIES AT HOME OR IN THE CLASSROOM

LIGHTS

- Turn off the lights when you are not using them. Just switching off at recess and lunchtime can save a lot of energy. Check the hallways and other shared spaces.
- Open the blinds to let in natural light and maybe you won't need to turn on so many lights.
- Design a small sticker to display next to your light switches to remind people to turn them off when they leave a room.
- Investigate getting lights on timers.

HEATING / COOLING

- When the cooler or heater is on keep the doors, windows and blinds closed.
- Only use heaters when there is someone in the room.
- Check the settings on your thermostat. Winter heating should be set at 21°C and summer cooling at 25°C.
- Check for draughts coming through gaps around windows and doors by holding a tissue up near the gap and seeing if it moves. Talk to your teacher about how to plug the gaps.

ELECTRICAL APPLIANCES

- Even when electrical appliances are not being used they still use power, even if they are switched to standby. We need to turn appliances off not only from their remote control, but also at the powerpoint to avoid wasting electricity.
- Design a small sticker to display next to your powerpoints to remind people to turn them off when they leave a room

POWER DOWN YOUR COMPUTERS

- Make sure all computers are turned off when not in use. Screen savers do not save energy!
- Monitors use a lot of energy, so ensure they are switched off. New computers have a function setting which automatically switches off the computer and/or monitor after a set amount of time. Investigate these options by going to your computer's control panel.
- Ensure printers and photocopiers are switched off at night and on weekends. Check to see if they have an 'Energy Saver' setting and make sure people know how to use it.

APPOINT A POWER RANGER

- Appoint a 'Power Ranger' in each class. This person is responsible of making sure everything is turned off each day. Everyone should have a turn at being the Power Ranger.

LOCAL EXCURSIONS, INCURSIONS & EDUCATION PROGRAMS

MILLENNIUM KIDS

Millennium Kids Inc. for young people, 10 - 25 yrs who want to change their world. Through community or school based workshops kids think about their communities, hatch ideas for change and implement their ideas with support of mentors & stakeholders www.millenniumkids.com.au/

RED HILL WASTE DISPOSAL FACILITY

Schools are welcome to visit the Red Hill Waste Management Facility to enable them to see first-hand what happens to their waste and how it is being managed. The guided tour and activities are free of charge to schools and community groups located in both the Shire of Mundaring and City of Swan.

CLIMATECLEVER SCHOOLS

A whole of school package to engage students in assessing and reducing energy (and water) use, supported with teaching resources. It was developed and piloted in WA and participating schools have achieved significant cost savings offsetting the program fees, as well as a lower carbon footprint. Shire of Mundaring became a program partner in February 2020, so schools within the Shire will receive a 10% discount on the annual fee.

Phone: 0422 865 776 www.climateclever.org/schools

WASTE-WISE SCHOOLS

The Waste-Wise Schools Program provides professional development for teachers in developing school waste management strategies, such as recycling, composting and worm farming, and administers a school grants program. They run Waste Audit Incursions, which are free of charge.

<https://www.wasteauthority.wa.gov.au/wws/program>

SCITECH

Scitech run a range of incursions and excursions on science topics and specialist programs for schools and the community. Incursions are available for a range of topics for more info see: www.scitech.org.au/educators

MORE RESOURCES

BOOKS

- ***Our Little Inventor* – Sher Rill Ng** The innovation of youth is showcased wonderfully in Australian author and illustrator Sher Rill Ng's stunningly illustrated story of a young inventor whose determination to clean the air of pollution in the town near where she lives is thwarted time and time again by adults who refuse to pay attention to her brilliant new invention.
- ***The Rhythm of the Rain* – Grahame Baker-Smith** Guiding children in their understanding of just how big the planet is, and that natural environments exist beyond what they have witnessed with their own eyes, can be a challenge, one made easier with the help of this exquisite picture book.
- ***The Last Dance* – Sally Morgan** The Last Dance might have been published almost 10 years ago, but its message is more important than ever before. Still one of the gentlest and kindest reminders in print to care for our native wildlife, Morgan, who is of the Palyku people of the eastern Pilbara, tells a story encompassing all of Australia, from rainforests to beaches to desert, bringing attention to wildlife affected by human beings.
- ***A Planet Full of Plastic* – Neal Layton** Did you know that we manufacture over 300 million tonnes of plastic every year? This is even more concerning when you realise eight million of those tonnes end up in our oceans. For the more factually minded child, A Planet Full of Plastic both tells the history of plastic invention, use and overuse alongside suggestions for how we can wean ourselves off it.

FILMS

- **Saving Hieronymus (1993):** an educational kit for school students on saving energy and the greenhouse effect <https://trove.nla.gov.au/work/10640917>
- **2040 (2019):** This recent documentary focusses on technology and solutions to address climate change and includes interviews with children around the world. It is optimistic in nature and provides a way to engage with students on climate change issues without messages of doom and despair. Copies can be ordered for use as a learning tool or to host on-site screenings for the school community (including fundraisers). <https://whatsyour2040.com/schools-get-involved/>
- **A Beautiful Planet (2016):** Stunning look at Earth -- and man's sobering impact on it. Age 6+

- **Australia's Science Channel:** Accessible science news via free videos, articles, podcasts, news and events. Australia's Science Channel is operated by a not-for-profit organisation to promote public awareness and understanding of science. It aims to provide a hub for researchers, Australian universities, organisations and institutions to share compelling science stories for everyone to watch, read, and listen. <https://australiascience.tv/>

FURTHER LINKS

Cool Australia: www.coolaustralia.org Award-winning science and sustainability education resources for students and teachers, including online professional development short courses.

Bureau of Meteorology: www.bom.gov.au/climate/change/ Information, trends, maps and data sets to track climate change.

The Climate Reality Project: <http://educators.climatereality.org.au/> Terrific educational resources that explore climate change and what can be done.

What is clean energy? And how do we move towards a clean energy world? <http://www.futuresparks.org.au/why-we-need-clean-energy/what-is-clean-energy.aspx>

What is energy? Factsheet http://www.futuresparks.org.au/media/25345/energy_fact_sheet.pdf

What is coal? Factsheet: www.futuresparks.org.au/media/25342/coal_fact_sheet.pdf

Renewable Energy in Australia: www.forteachersforstudents.com.au/site/themed-curriculum/renewable-energy-in-australia/

Future solutions consequence wheel:

http://www.futuresparks.org.au/media/32476/teacher_resource_consequence_wheel.pdf

The Mundaring Environmental Art Project aims to enhance awareness of local and global environmental issues and provide creative opportunities for young artists.

