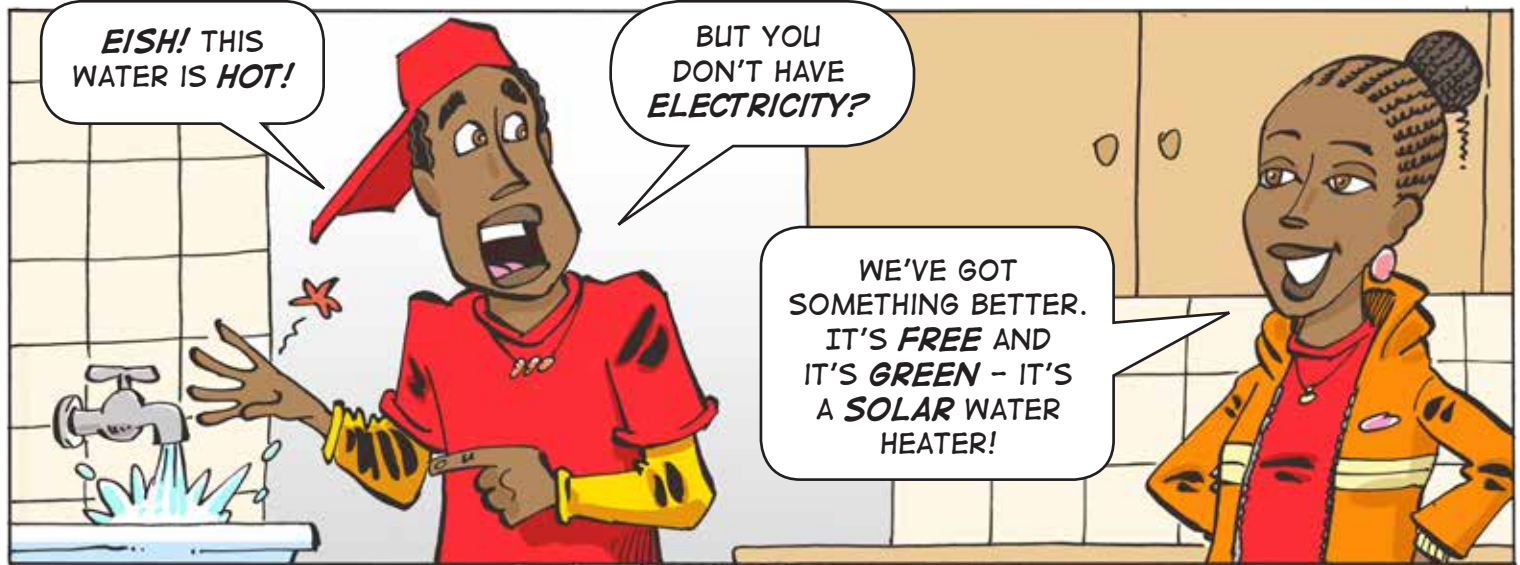


HOT WATER FOR MAHALA!



ACTIVITY: SOLAR ENERGY

YOU WILL NEED:

- 3 GLASS OR PLASTIC BOTTLES
- RED PLASTIC, WHITE PLASTIC, BLACK PLASTIC (OR PAPER)
- RUBBER BANDS OR STRING
- A PATCH OF SUNLIGHT

1

FILL THE BOTTLES WITH COOL WATER. MAKE SURE THAT YOU HAVE THE SAME AMOUNT OF WATER IN EACH BOTTLE. WRITE DOWN THE TEMPERATURE IF YOU HAVE A THERMOMETER.



2 WRAP WHITE PLASTIC AROUND ONE OF YOUR BOTTLES. WRAP BLACK PLASTIC AROUND ANOTHER AND RED PLASTIC AROUND THE THIRD BOTTLE. USE THE RUBBER BANDS OR STRING TO HOLD THE PLASTIC.



3 PLACE THE BOTTLES IN THE SUN. MAKE SURE THAT THEY ARE ALL GETTING THE SAME AMOUNT OF SUNLIGHT.

4 AFTER HALF AN HOUR, FEEL THE TEMPERATURE OF THE WATER IN EACH BOTTLE.



5 WHICH COLOUR IS THE BEST COLLECTOR OF ENERGY FROM THE SUN? WHICH IS THE WORST? CAN YOU THINK OF OTHER MATERIALS TO TEST FOR COLLECTING SOLAR ENERGY?



WHAT'S HAPPENING HERE?

SUNLIGHT IS MADE UP OF ALL THE DIFFERENT COLOURS.

The colour black absorbs the energy from all the different colours and reflects no colours. This is why it looks dark to our eyes.



BLACK

The colour white reflects all of the colours and hardly absorbs any energy, which is why it looks light to our eyes.



WHITE

The colour red absorbs the energy of all colours except red light, which it reflects.



RED

SO, BLACK IS A GREAT COLOUR FOR ABSORBING LIGHT AND HEAT ENERGY FROM SUNLIGHT. WHITE ABSORBS THE LEAST ENERGY FROM SUNLIGHT AND RED ONLY ABSORBS SOME ENERGY.



WHY IS EVERYBODY SO INTERESTED IN ENERGY THESE DAYS?



BECAUSE OUR SOCIETY IS GROWING SO FAST THAT IN 15 YEARS WE WILL NEED TO **DOUBLE** THE ENERGY WE ARE USING NOW.

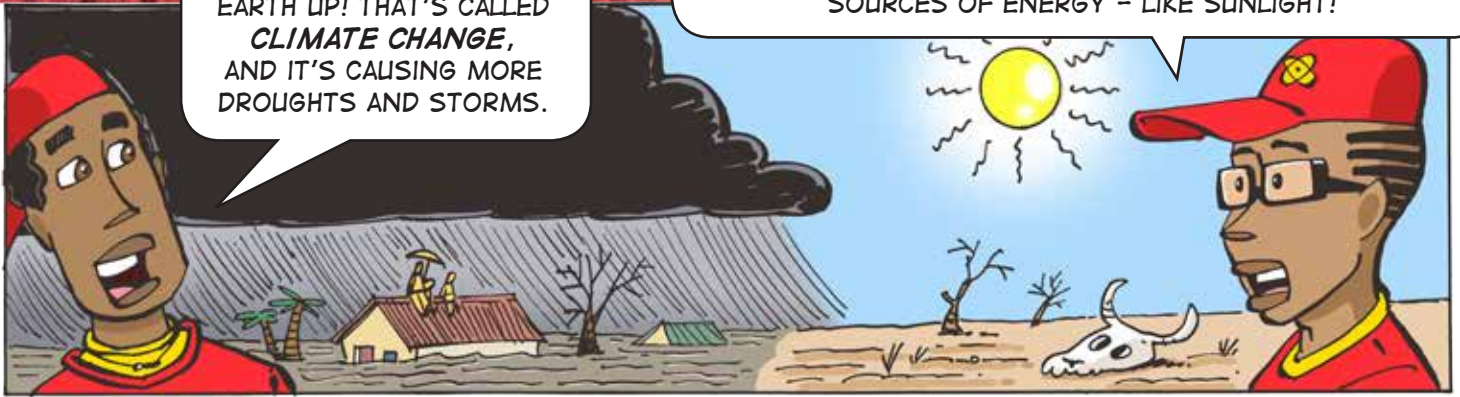
BUT THEN OUR COAL WILL RUN OUT!



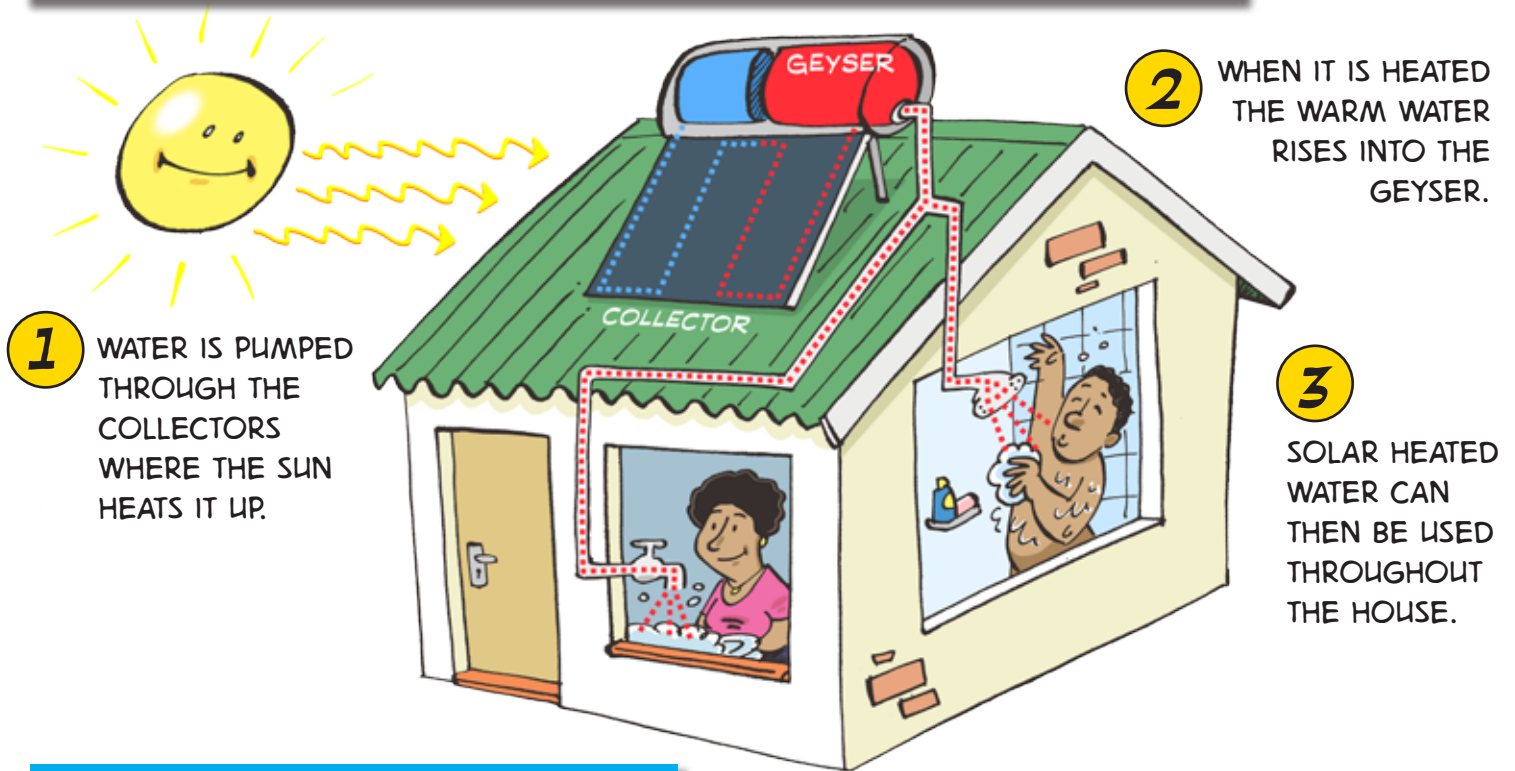
YES, AND COAL GIVES OFF AIR POLLUTION AND GREENHOUSE GASES LIKE CARBON DIOXIDE WHICH ACTS LIKE A WARM BLANKET AROUND THE EARTH!

AND THIS IS HEATING THE EARTH UP! THAT'S CALLED **CLIMATE CHANGE**, AND IT'S CAUSING MORE DROUGHTS AND STORMS.

WHICH IS WHY SCIENTISTS ARE LOOKING FOR **RENEWABLE** SOURCES OF ENERGY - LIKE SUNLIGHT!



HOW DOES A SOLAR WATER HEATER WORK?



1 WATER IS PUMPED THROUGH THE COLLECTORS WHERE THE SUN HEATS IT UP.

2 WHEN IT IS HEATED THE WARM WATER RISES INTO THE GEYSER.

3 SOLAR HEATED WATER CAN THEN BE USED THROUGHOUT THE HOUSE.

PUZZLE YOUR MIND!!!

FIND THE LISTED WORDS IN THE PUZZLE BLOCK, AND DRAW A RING AROUND EACH WORD. THE WORDS RUN IN ALL DIRECTIONS, SO LOOK CAREFULLY!

E	N	E	R	G	Y	E	G	S	A	O	R
G	O	I	B	S	T	H	S	R	O	O	E
E	I	E	L	A	A	L	E	S	A	S	N
T	T	E	M	P	E	R	A	T	U	R	E
E	U	I	R	O	H	L	H	O	I	S	W
F	L	R	A	B	D	G	H	R	B	A	A
C	L	L	A	W	I	N	A	M	U	G	B
S	O	E	E	L	E	O	I	S	A	N	L
H	P	B	N	E	O	T	M	W	L	H	E
R	L	U	R	E	M	S	N	A	W	G	L
G	S	G	N	T	I	F	O	S	S	I	L
M	R	S	M	S	O	C	S	E	I	S	L

ENERGY
SUNLIGHT
WIND
BIOMASS
TEMPERATURE
FOSSIL
FUELS
GREENHOUSE
CLIMATE
STORMS
GAS
RENEWABLE
SOLAR
HEAT
POLLUTION
COAL



Knowledge is NCAH!



CAREERS:

THERE ARE GREAT JOB OPPORTUNITIES, SUCH AS:

- SCIENTIFIC RESEARCH
- ENGINEERING (NEW WAYS OF GETTING POWER)
- PLUMBING

WHAT COLOUR WOULD BE BEST TO WEAR IF YOU WANT TO STAY COOL ON A HOT DAY?



CURRICULUM LINKS

- GRADE 7 **ENERGY & CHANGE** (SOURCES OF ENERGY)
- GRADE 9 **ENERGY & CHANGE** (ENERGY AND THE NATIONAL ELECTRICITY GRID)
- GRADE 11 **CHEMICAL SYSTEMS** (LITHOSPHERE: ENERGY RESOURCES)

START YOUR OWN SCIENCE SPAZA

Name of school: _____

Municipality: _____

Province: _____

Name of your science club:

Name of contact person: _____

Telephone number: _____

Email address: _____

Postal address: _____

To be filled in by responsible adult (parent/teacher)

Name: _____

Surname: _____

Position: _____

ID Number: _____

Signature (parent/teacher):

Date: _____

Send to PO Box 22106, Mayor's Walk, 3208 Fax to 086 610 5453 email: info@sciencespaza.org or submit your application online at www.sciencespaza.org



The South African Young Academy of Science (SAYAS) was launched in 2011 in response to the need for young scientists to contribute towards making a difference and solving issues faced by the country today. It allows young scientists to speak out and be heard, and to play a part in making decisions.



RECORD's mission is to be recognised as the foremost institution for renewable energy research coordination and collaboration in SA. Its vision is to facilitate renewable energy research coordination, collaboration and dissemination of national and international renewable energy knowledge contributing towards a sustainable low carbon energy future. This is achieved through 4 core activities: coordinating renewable energy research in SA; facilitating renewable energy research collaboration; contributing to energy skills development and targeted awareness regarding renewable energy in SA.



The South African National Energy Development Institute (SANEDI) is an organisation that promotes the development of renewable energy sources. They conduct research and promote, direct and monitor energy efficiency and green energy initiatives. Its vision is to promote sustainable energy innovation, transformation and technology diffusion in support of sustainable development that benefits everyone in South Africa.



Answer: White is best on a hot day, since it reflects all of the colours in sunlight, and so it absorbs the least heat of all the colours.

Science Spaza is an initiative of Jive Media Africa. *What moves you?*

Find out more at www.sciencespaza.org  ScienceSpaza

