

Jockey Club Water Caretakers of Tomorrow Programme

Waterwise: Water as Resource - Unit 5

Organised by



- Funded by



香港賽馬會慈善信託基金
The Hong Kong Jockey Club Charities Trust

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About The Jockey Club Water Caretakers of Tomorrow Programme:






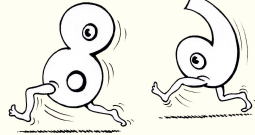
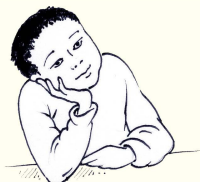
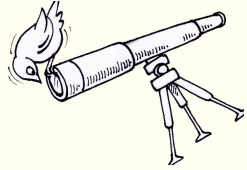
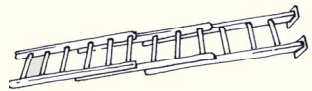

Jockey Club Water Caretakers of Tomorrow Programme is organised by Ocean Recovery Alliance, Ltd and funded by The Hong Kong Jockey Club Charities Trust. There are eight units in this program, and each of them is designed with you, a student in Hong Kong, in mind.

These are the goals for your lessons, to:

- Understand and appreciate how our water systems function on a local and global scale.
- Understand how watersheds function, and the interconnections of life within and between these watersheds.
- Be able to assess threats, such as pollution and habitat destruction, and learn how to lessen these effects.
- Be empowered to take an active role as caretakers of our water resources by sharing your commitment with your communities.

Student introduction

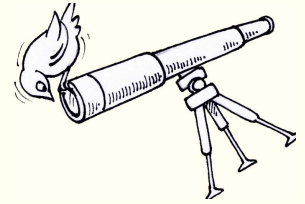
- You will need access to the internet.
- In some activities using the camera in your smart phone or tablet will be useful.
- Your teacher will tell you if your work will be done on your computer, printed paper or notebooks.

Start of a new activity.		A new amazing fact .	
Get ready to do an experiment .		Fast forward to make your contribution to improving our world.	
Identify your misconceptions before your move on.		Data will be used to solve problems.	
Identify your prior learning .		These are the goals for this unit.	
An extension activity		A cross-curricular activity	

Student aims:

At the end of this unit, I will be able to:

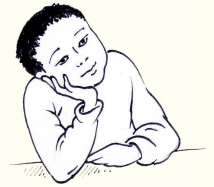
- Identify the sources of clean water on Earth
- Manage multiple uses for a limited renewable resource
- Explain how we maintain clean water
- Anticipate the consequences of changes to the water supply
- Develop a plan for responsible personal use of water
- Participate in a community effort to use water responsibly



Glossary

Agriculture	The cultivation of crops and animals for food, medicine and materials used to enhance and sustain human lives.
Aquaculture	The cultivation of fish for the purpose of food.
Arid	This describes a dry region that receives very little average rainfall each year.
Blackwater	Waste water from the toilet that becomes our sewage.
Condensation	Process of water vapour (gas state) turning into droplets (liquid state).
Cost Benefit Analysis	Weighing the pros and cons of an action before it is implemented by comparing how expensive it is to how much people can gain from it.
Dam	A large, walled construction to contain a freshwater supply.
Desalination	The process of removing salt from seawater for use as freshwater.
Disinfection	Process of cleansing something to kill harmful bacteria or viruses.
Distillation	Process of purifying a liquid by heating and cooling it.
Domestic	Relating to anything in your home.
Drip	The action of water droplets falling to the ground.
Filtration	The process of separating out solid material in a liquid or gas.
Fog	Thick cloud of water droplets suspended in the atmosphere at ground level.
Geomorphology	The study of the formation of Earth's landforms and the processes that shaped them.
Green Roofs	Rooftops designed to soak up rain by means of growing plants and vegetation, as opposed to draining it as quickly as possible.
Greywater	All wastewater from the household that does not include water from the toilet.
Groundwater	Permanent water stored in the ground.
Hydropower	Power derived from moving water.

Industrial	Economic activities that turn raw materials into goods in factories.
Irrigation	The process of watering a piece of land, either for agricultural or commercial use.
Permaculture	Agricultural systems intended to be sustainable and permanent.
Plumbing	The network of pipes used to drain and direct water from a household.
Potable	Freshwater that is suitable for drinking by people.
Precipitation	Process of water falling from the sky in the form of rain, snow, hail, sleet, or condensation.
Primary Treatment	The first stage of removing contamination from sewage water, including removal of solids and harmful organisms.
Recharge	The rate at which something is filled back up.
Recreation	Activities pursued purely for enjoyment.
Recycle	Repurpose a waste product into something useful.
Renewable Resource	A resource that can be used and replenished.
Reservoir	A natural or artificial body of water on the surface of the land that is used as a supply of freshwater.
Saltwater Intrusion	The contamination of a freshwater source by seawater.
Secondary Treatment	The second stage of removing contamination from sewage water using biological methods.
Surface Water	Water that is found above ground such as rivers and lakes.
Tertiary Treatment	The final stage of removing contamination from sewage water, which creates high quality water.
Water Tanks	A construction designed to hold and store water.
Water Treatment	The processing of water for a particular end use. This might include agriculture, drinking or return to a natural waterway.



What do I know?

On this website you need to match the item with the amount of water needed to produce it. The activity is in gallons and pounds. Here is a quick conversion:

1 gallon is about 4 litres

1 pound is about $\frac{1}{2}$ kilogram

For each item you have four choices. Make sure you press the button and choose the number of gallons before you click on the submit button at the bottom.


<https://water.usgs.gov/edu/activity-watercontent.html>

The two biggest surprises about how much water is needed to produce a food or another product were:

Lesson 1 - How we use water

Activity 1. How we use it

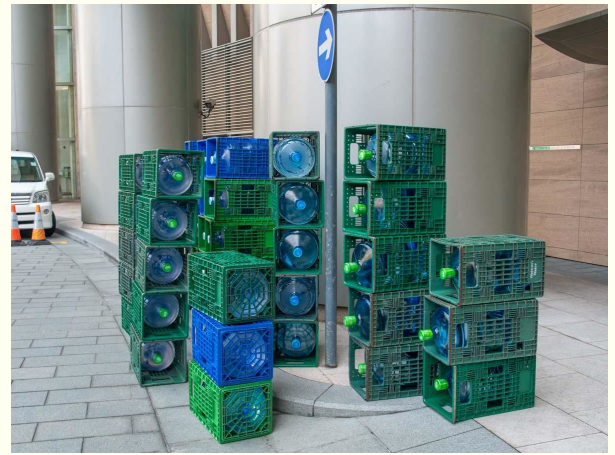
Describe how water is being used in these photos. In some photos are products. How do we use water to make these products? Some of the water uses have web links if you want to find more information. Some of the photos may have several answers.

How we use water	
<p>http://www.wsd.gov.hk/en/publications_and_statistics/statistics/capacity_of_impounding_reservoirs_in_hong_kong/</p>	

How we use water



<http://www.naturalspringshongkong.com/>



How we use water

<https://blogs.unicef.org/east-asia-pacific/clean-hands-healthy-lives-timor-leste/>



<http://home.howstuffworks.com/home-improvement/plumbing/sewer1.htm>



<http://www.hkfsd.gov.hk/eng/>

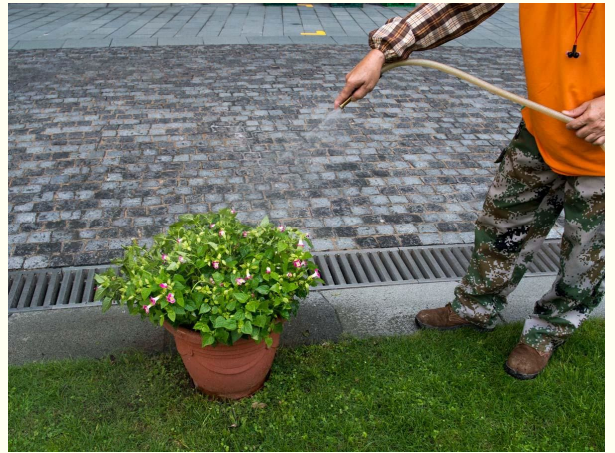


<http://www.tackletour.com/reviewHK.html>



How we use water

http://www.fehd.gov.hk/english/pleasant_environment/cleansing/clean1.php



<http://waterfootprint.org/en/resources/interactive-tools/product-gallery/>



<http://waterfootprint.org/en/resources/interactive-tools/product-gallery/>



How we use water

<http://waterfootprint.org/en/resources/interactive-tools/product-gallery/>



http://re.emsd.gov.hk/english/other/hydroelectric/hyd_tech.html



Activity 2. Bruce Lee says, “Be as water, my friend”

Look at the video of Bruce Lee describing water.

<https://www.youtube.com/watch?v=cJMwBwFj5nQ>



What does Bruce Lee say is so special about water?

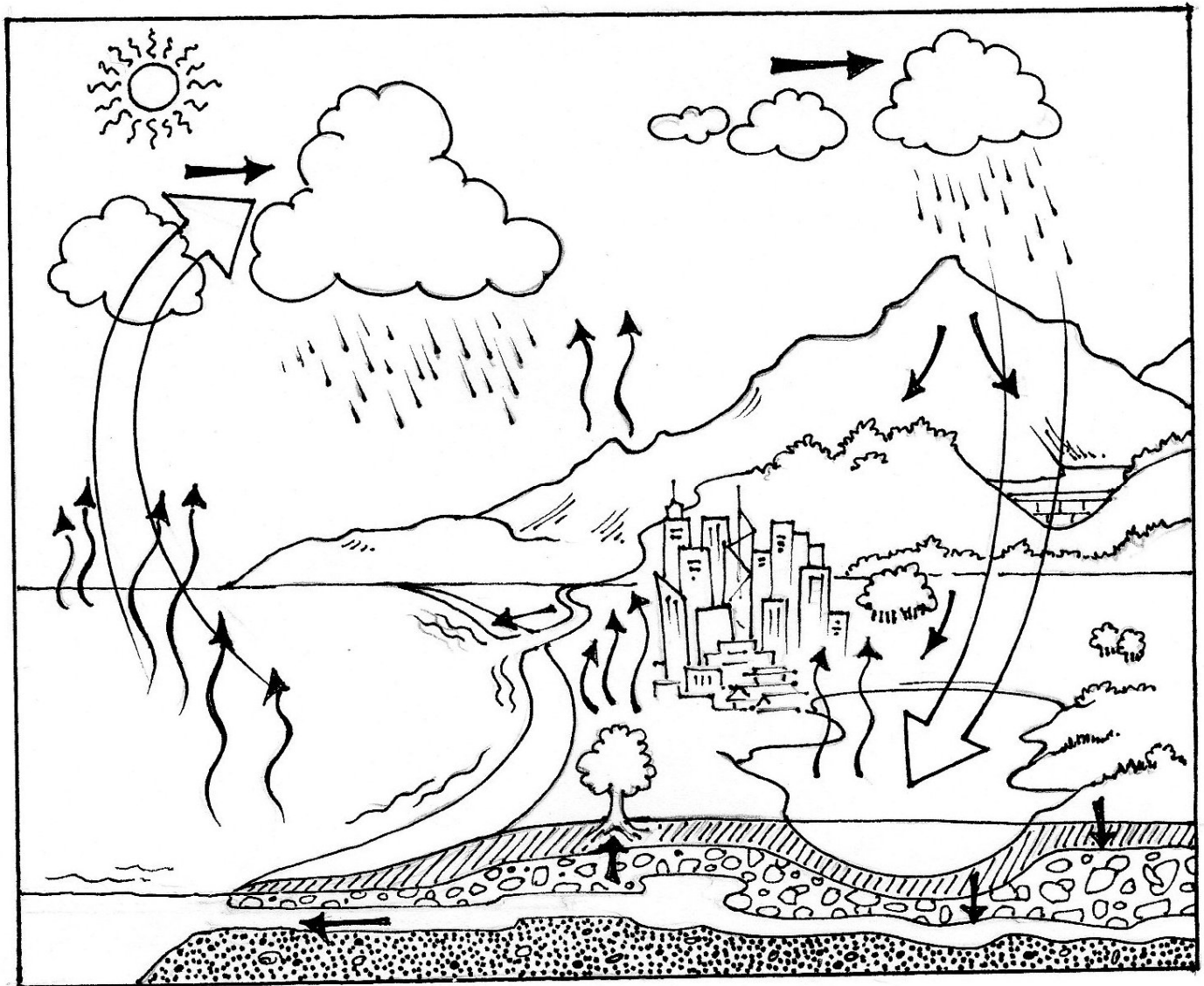
Write three haikus that deal with the special qualities of water, or describe the water we encounter in our lives. If there is time, make a simple illustration to go with each haiku. Think back to the unit on Miraculous Water and what properties of water you learned about. Perhaps you would like to make each haiku represent a different state of water, or each haiku can describe a different place where you experience water in a different context. It is up to you!

Look at “WIKIHOW” that explains how to write a haiku and also provides some examples of haiku poems:

<http://www.wikihow.com/Write-a-Haiku-Poem>

Activity 3. A limited renewable resource

Review the water cycle by labelling the diagram below.



Use the water cycle to explain why water is a renewable resource.

If water is a renewable resource, why do we talk about water “running out”?

Activity 4. Hong Kong water supply



Use this web page to answer the following questions about Hong Kong's water supply:

<http://www.wsd.gov.hk/en/publications-and-statistics/statistics/key-facts/index.html>

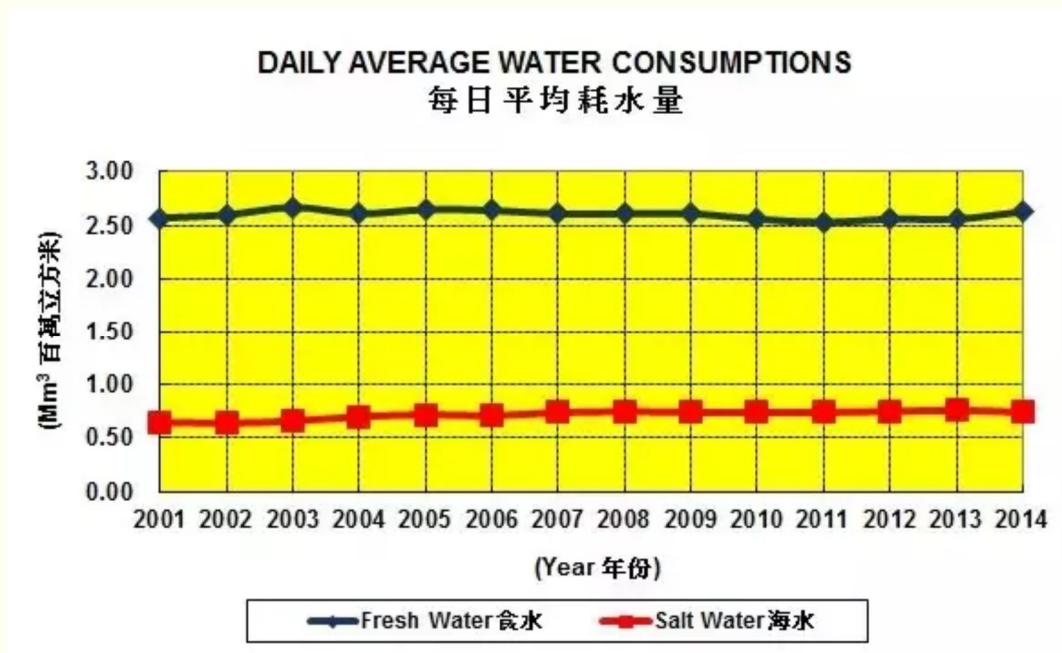
<http://www.wsd.gov.hk/en/core-businesses/total-water-management-strategy/index.html>

The number of litres of water each Hong Kong person uses: _____

The number of dams in Hong Kong: _____

The percentage of water coming from Dongjiang (outside Hong Kong): _____

Can Hong Kong build more dams? _____

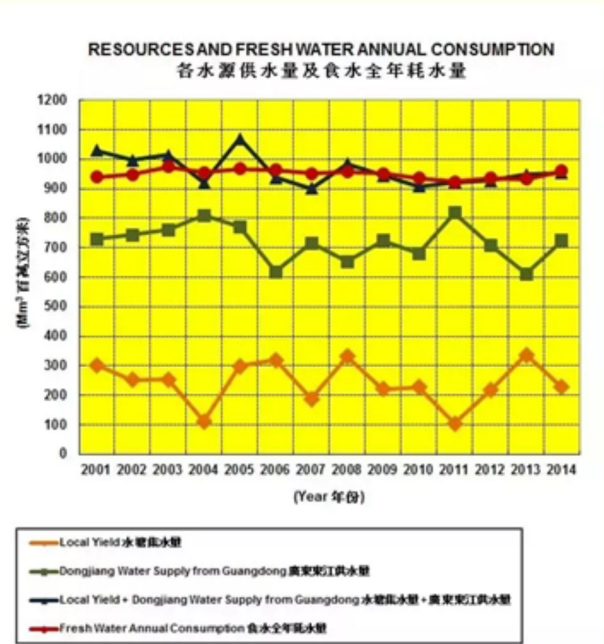


Source <https://www.quora.com/Is-Hong-Kongs-water-supply-sustainable>

The graph shows the consumption of water in Hong Kong over the past 15 years. Has the consumption of water increased over this time? How would the graph look if it were extended another 15 years? What does the graph tell us about the future consumption of water for Hong Kong?

Source <https://www.quora.com/Is-Hong-Kongs-water-supply-sustainable>

The bottom orange line is the water that is being supplied from Hong Kong Reservoirs. The rest of the water comes from outside Hong Kong. Suggest some reasons why the Hong Kong water supply from reservoirs varies so much from year to year.



How dependent do you think Hong Kong is on obtaining water from Dongjiang?



Use the data below to make a graphs or chart to display the information. Choose the appropriate type of graph, e.g. bar graph or chart, e.g. pie chart, to best display the information. Compare the graphs and charts chosen and discuss which best displays the information.

Reservoir	Supply Capacity cubic metres
Pok Fu Lam	233,000
Tai Tam Upper	1,490,000
Tai Tam Bywash	80,000
Tai Tam Intermediate	686,000
Kowloon	1,578,000
Tai Tam Tuk	6,047,000
Shek Lei Pui	374,000
Reception	121,000
Aberdeen (2 Res.)	1,259,000

Reservoir	Supply Capacity cubic metres
Kowloon Bywash	800,000
Shing Mun (Jubilee)	13,279,000
Tai Lam Chung	20,490,000
Shek Pik	24,461,000
Lower Shing Mun	4,299,000
Plover Cove	229,729,000
High Island	281,124,000

Source: <http://www.wsd.gov.hk/en/core-businesses/operation-and-maintenance-of-waterworks/waterworks/capacity-of-impounding-reservoirs-in-hong-kong/index.html>

Amazing fact

Many Hong Kong buildings are supplied with seawater to flush toilets.



Activity 5. Water isn't cheap

Hong Kong's large population and lack of natural freshwater supply means that most of its water supply must come from outside of Hong Kong. The Hong Kong government must have an agreement with Dongjiang in Mainland China to supply water. Hong Kong is dependent on Dongjiang. Read the articles below.

<http://www.china.org.cn/english/government/165557.htm>

<http://www.scmp.com/news/hong-kong/economy/article/2088144/change-unfair-water-import-deal-mainland-china-hong-kong>

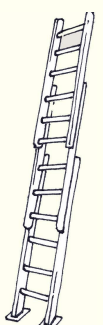
Additional reading about water supply in Hong Kong:

www.scmp.com/magazines/post-magazine/article/1937523/why-hong-kong-shouldnt-take-clean-plentiful-water-granted

After reading the two websites and doing further research, discuss what your class thinks about the supply and price of water from Dongjiang.

Extension: Making water work

Water is not only an important resource for consumption. It is also an important source of energy. Using moving water as a source of energy is what hydropower is all about.



Answer some or all of the following questions and making a model or a poster:

- How does hydropower work?
- Make a model of a water wheel or
- Make a poster showing how it works.
- Is hydropower a good source of energy?
- Are very large dams environmental disasters? eg. Aswan dam, Three Gorges dam

Lesson 2. The Where and the How

Amazing facts

1. Of all the water in the world, 97% is seawater. We can't drink seawater or use it for agriculture on land.
2. Most of the freshwater is locked into ice. This is 2.4% of the total water.
3. Most of the remaining 0.6% of the planet's water is locked away underground where it can't be easily reached.
4. The amount of easily available freshwater is just 0.003% of the total water on Earth.

(source <https://ndep.nv.gov/edu/docs/bucket.pdf>)



Activity 1. Water, water everywhere

A drip is approximately 0.05ml.

Calculate how many drips are in 1 litre. (One litre is 1000 ml)




Conducting experiments

1. Read through the setup for the experiment.
2. Record your prediction for the outcome of the experiment.
3. Gather the materials that are needed.
4. Find a suitable location to conduct the experiment.
5. Review all safety requirements including handling glassware safely and using heat and heated substances. Ask your teacher if you are not sure. Report any accidents.
6. Record your observations as you complete the experiment.
7. Clean and return equipment.

In this activity, using one litre of water to represent all the water on Earth, how much of the one litre is available for humans and life on land to use?

Experiment: How much water?

<p>Materials:</p> <ul style="list-style-type: none">• Litre container of water• 100 ml graduated cylinder• Two 150 ml beakers• Small dish• Dropper	<p>Method:</p> <ol style="list-style-type: none">1. Remove 3% of the water from the one litre container and place in a beaker (represents freshwater). What is 3% of one litre?2. From the beaker remove 6 ml of water. This is the freshwater that is not frozen. Place in the second beaker.3. Remove a single drop from the second beaker and place on the dish. This represents the amount of water left available to humans and life living on land and in freshwater.	
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Prediction: How many drops represent the amount of clean water available to life on land?

Calculation: _____

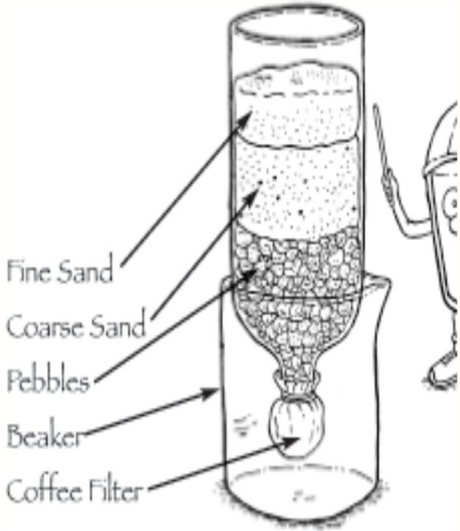
Now look at this webpage that compares the various forms of water found on Earth. Compare these graphs and percentages with the results from the activity you have just done.

<https://water.usgs.gov/edu/earthwherewater.html>

Activity 2. Filtering water



Experiment: making a water filter

Materials:	Method	
<ul style="list-style-type: none">• Plastic bottle with bottom cut out• Flask that can hold upside down plastic bottle• In each small container:<ul style="list-style-type: none">– Gravel 100 ml– Charcoal 100ml– Sand 100ml– Water mixed with soil 50ml• In each larger container<ul style="list-style-type: none">– Gravel 200 ml– Charcoal 100ml– Sand 200ml– Water mixed with soil 100ml	<ol style="list-style-type: none">1. In an inverted plastic bottle with the bottom cut out, place a layer of charcoal, then sand and on top gravel.2. Place the inverted plastic bottle into a beaker.3. Pour half of the dirty water into the top of the filter. Make sure to the limit the amount of water so it doesn't overflow from the beaker.4. Compare the water that has come out of the filter into the beaker with the original dirty water.	

Prediction:

Observation:

Are there any other characteristics of the water that might need further cleaning? How would you accomplish this?

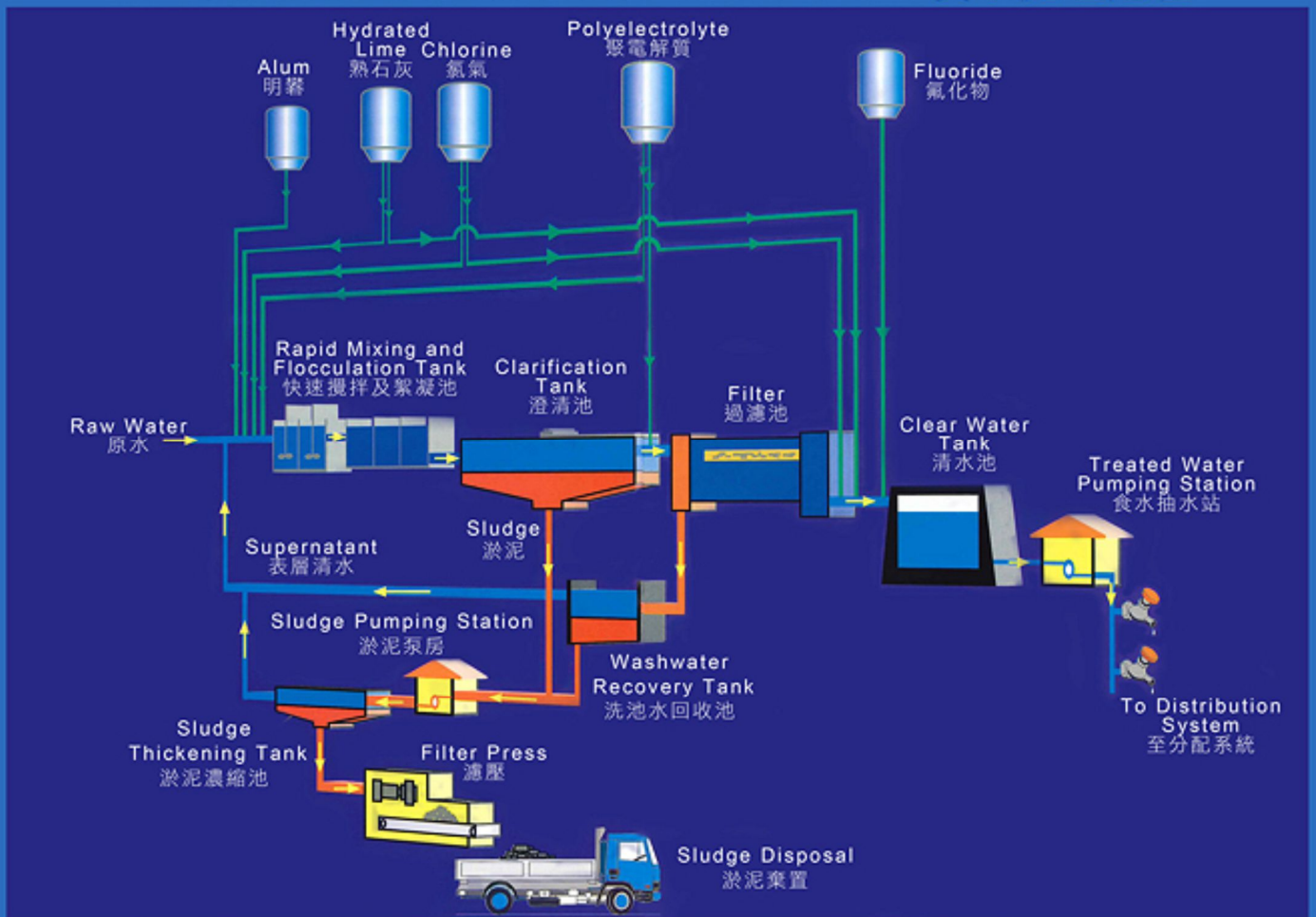
Activity 3. Water treatment in Hong Kong



All the water being used in Hong Kong is monitored so that it is clean and free of dangerous bacteria and other contaminants. The reservoirs where the water is captured and stored are in watersheds that have low human impact. This makes it relatively clean to begin with.

Watch the video and then study the diagram to understand the processes used to maintain a clean water supply in Hong Kong:

THE WATER TREATMENT PROCESS 食水處理過程



Source http://www.wsd.gov.hk/en/water_resources/water_treatment_and_distribution_process/water_treatment_process/

What is added to the water and when is it added?

What is removed from the water and when is it removed?

Alum, hydrated lime and polyelectrolyte are used to take unwanted chemicals and suspended particles out of the water. Chlorine kills bacteria that could be living in the water.

After the water has passed through the Hong Kong treatment plants, it is safe enough to drink.

Activity 4. Water monitoring in Hong Kong



Quotation from Hong Kong's Water Supply Department:

“Water quality throughout the entire treatment, supply and distribution system is systematically monitored by means of physical, chemical, bacteriological, biological and radiological examinations of water samples taken at catchment, intakes, Muk Wu Pumping Station receiving Dongjiang water, impounding reservoirs, water treatment works, service reservoirs, distribution systems and consumers' taps.”

http://www.wsd.gov.hk/en/water_resources/water_quality/my_drinking_water_quality/index.html

The Water Supply Department is constantly monitoring the quality of water being supplied to all Hong Kong consumers. Look at the PDF file that has data of the parameters being measured.

http://www.wsd.gov.hk/filemanager/en/content_135/drinking_b-e.pdf

How many parameters are being measured? _____

Which guidelines are used to confirm that the water is safe? _____

Why do you think it might be important to understand how safe Hong Kong's water supply is?

Produce a pamphlet that explains why Hong Kong water is safe to drink.



Activity 5. Bottled water

While one billion people in the world don't have access to clean drinking water, many of those that buy bottled water have access to clean water from their taps. Use these three websites to find out why buying bottled water is a controversial issue.



<http://www.scmp.com/comment/insight-opinion/article/1928230/no-good-reason-hongkongers-buy-bottled-water>

<http://www.scmp.com/news/hong-kong/health-environment/article/2081218/university-hong-kong-bans-sales-disposable-bottled>

<http://oceancrusaders.org/plastic-crusades/plastic-statistics/> (go down to bottled water story)

What are some of the issues involved in buying bottled water?

Have a class discussion about the issues. Record the arguments for and against using bottled water.

For using bottled water	For using tap water

What are your alternatives to buying bottled water?

Download the PDF file of the “Tap Water Rap”.

<http://metroclf.org/wp-content/uploads/2013/03/Tap-Water-Rap-lyrics.pdf>

Get into groups of three or four. Write an extra verse to go at the end that explains what people in Hong Kong can do to use less bottled water.

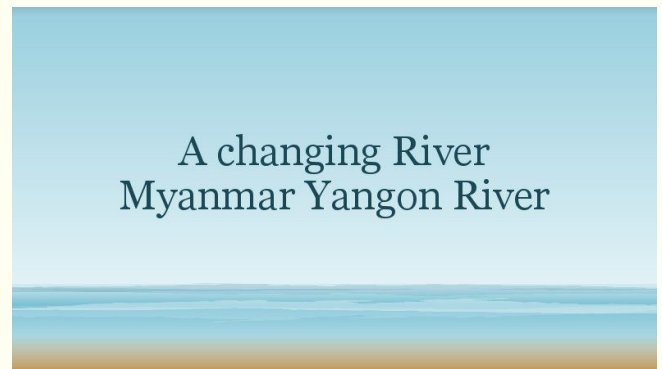
Activity 6. Water Use in Myanmar - Then and Now



Exploring the clash between Myanmar traditional water use and use in the 21st century.

Download the PowerPoint “Waterwise - A Changing River”

- Use the photos in this PowerPoint to describe how life has changed along the Yangon River over the past 100 years. What do you think hasn’t changed?
- Move the photos around. Delete the photos you don’t want to use.
- How do people use the river?
- Why might people be washing in the river?
- What changes might have occurred to the quality of the water?
- Was plastic litter a problem 100 years ago?
- How do you think litter plastic has changed in the past years?



Lesson 3 - Water Conservation and Management



Activity 1. International water dilemma

Many of the world's major watersheds occupy more than one country. The water being used by countries at the bottom of large watersheds often originate as rain and melted snow from countries higher up. Watersheds can often cross international boundaries. What happens when countries higher in the watershed start using the water that affects countries lower down? The website below provides three examples of water use problems that might arise in the future.

<https://www.geopoliticalmonitor.com/three-international-water-conflicts-watch/>

As a class suggest what rights two countries might have if they share water resources in the same watershed?

Country A wants more water resources because the source of the water is located in their country and they need more water for development.	Country B is downstream of Country A. Country B needs to receive the same water resources as they used in the past.
What rights does Country A have?	What rights does Country B have?

Is it clear which country has a right to the water when there isn't enough to go around?

As a class decide what factors should be considered when countries negotiate about water rights. List them below:

What does the United Nations have to say about the right of all people to have access to clean water?

<http://www.unric.org/en/water/27360-making-water-a-human-right>

Activity 2. What a waste

Describe how water might be wasted in each of these photos:



These are the top 25 ways people waste water in Sacramento, California in the USA. Many of the ways people waste water in this community are very different from the ways people might waste water in Hong Kong. Look at the list on this website. List 10 of the 25 ways people might waste water in Hong Kong:

<http://sswd.org/index.aspx?page=322>



Experiment: It's only a drop

<p>Materials:</p> <ul style="list-style-type: none"> • Tap • 100 ml graduated cylinder • 150 ml beaker • calculator 	<p>Method</p> <ol style="list-style-type: none"> 1. Allow a tap to drip in a beaker at a rate of around one drip per second for 5 minutes. 2. Measure the total water amount in a graduated cylinder. 3. Calculate how many litres of water would be lost over one year. 	
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Prediction: How many litres do you estimate might be lost in one year?

Calculation: (The number of 5 minutes in one year multiplied by the volume of water measured)
 Ask your teacher for help if you are not sure how to convert millilitres to litres.

Activity 3. Let's find out: school and home audit



School water leak audit

Get into your group and decide how you will divide up the task. Look at all the plumbing in your school. You may need to get permission to enter staff rooms

Type of plumbing	Location	Reason: such as plumbing needs fixing, wasn't turned off properly
Hand basin tap		
Hand basin tap		
Hand basin tap		
Hand basin tap		
Hand basin tap		
Water fountain		
Water fountain		
Water fountain		
Water fountain		
Water fountain		
Toilet		
Toilet		
Toilet		
Toilet		
Toilet		
Sink		
Sink		
Garden tap		
Garden tap		
Other		

Gather all the data from all the groups. Classify the reasons why water is being wasted in your school, e.g. plumbing requires maintenance, taps not turned off properly.

How is water wasted in your school? Summarize your findings below:

How water is used in the home: domestic audit

Choose to do a domestic or waste water audit as described below:

1. Home water use in the home audit

In this activity you will estimate the amount of water used at home over a 24 hour period during a weekend at home. Discuss the activity with your family. Explain what you would like to do. Ask your family how you can avoid intruding or embarrassing them. Make sure you are sensitive to the needs of your family before you start.

Record how many times each activity is done. Record each time the toilet is flushed. Record how long a tap or the shower is running. Estimate how much water is used by the end of the day.

Water use in one day for one person	Number of times or time water is running	Litres used each time	Estimated total litres for each water use
Toilet flushing (toilet could be using seawater)			
Shower or Bath			
Hand washing			
Brushing teeth			
Cooking			
Drinking water, tea, coffee etc			
Washing dishes			
Washing clothes			
Washing floors			
Running water in the sink			
Watering plants, water for pets			
Other:			
Other:			

Ask your teacher to show you the average number of litres used for typical domestic water use, after you have completed your estimates. Were there many surprises?

Add the class' data together and produce a pie graph. Compare your class' pie graph with the pie graph that can be found on the website below. This graph shows how people in Great Britain consume water:

<http://www.waterwise.org.uk/pages/at-home.html>

What does your data have in common with the data from Great Britain?

Explain why some of your data is very different from the data from Great Britain.

Or:

2. How water is wasted in the home audit

Over a day watch how your family might be wasting water and note if any of the plumbing in your home is leaking.

Ways of wasting water	Yes	No
Leaking hand basin tap		
Leaking sink tap		
Leaking toilet		
No plug with hand basin		
Tap left running while brushing teeth		
Family regularly takes showers longer than 6 minutes		
Fruit and vegetables washed under running tap		
Dishes washed under running tap		
Washing machine isn't full when it's turned on		
Tap left running before glass of water is filled		
Food defrosted under running tap		
Cooking pots overfilled with water (e.g. water level much higher than vegetables)		
Dual flush toilet not used properly		
Other things you noticed:		

Activity 4. We can help fix it at school and home



Using less water at school

How does your school go about fixing leaking plumbing? Is there a way you can help your school to get plumbing fixed as soon as there is a problem?

Find out who you can report to when there is a plumbing problem.

Using your research, list the ways students waste water, e.g. leaving taps on. Design ways to Remind students (and school staff) how they can prevent water wastage. Examples might be simple reminders beside taps, at school meetings, school bulletins or presentations you can conduct for every class. If there is more than one class doing this unit, combine with the other classes to help the school to reduce their water use.

How water is being wasted at school	What do you want students and staff to do?	How will you remind them to reduce water waste?

Using less water at home

Water is wasted when more water is used than is required to perform the job. How do you think you and your family are wasting water? Explore your home and find out how the water is being used.

Sometimes water is wasted because of leaking plumbing that needs fixing. When exploring water use at home remember to respect your family's privacy and don't embarrass anyone.

How water is being wasted at home	How can the family reduce the waste of water?	What does the family think about ways to use less water?

Lesson 4: Everyone needs to help



Activity 1. Research

Introduction

We all live in communities. Our community includes government. Governments need to do some jobs which are paid for by our taxes. These jobs include making sure we have access to clean water, removal of all kinds of waste, looking after roads and making sure all forms of transport operate safely. Governments can't do everything. We, as individuals, also need to be part of keeping our communities functioning. How do we all work together to look after our water resources and watersheds?

Materials

Computers or tablets connected to the internet

Research and reporting

1. Get into small groups of 2 or 3.
2. As a class decide which groups will research each of the topics below.
3. Use the links to start your research.
4. If you have time, make your own searches for more information.
5. Gather information about:
 - What is being done to help improve water quality in the environment and for people's consumption.
 - Which organisations are doing the work.

Role of government to protect water resources:

Monitoring

http://www.epd.gov.hk/epd/mobile/english/environmentinhk/water/river_quality/rwq_monitoring.html

<http://wqrc.epd.gov.hk/en/water-quality/toxic.aspx>

http://www.wsd.gov.hk/en/water_quality/index.html

Policy and laws

http://www.dsd.gov.hk/EN/Sewerage/Sewerage_Strategy/index.html

http://www.epd.gov.hk/epd/english/laws_regulations/enforcement/laws_eflhk.html

www.buildingmgt.gov.hk/en/daily_operation_of_building_management/6_3_15_2.htm

Providing appropriate infrastructure and services

<https://www.youtube.com/watch?v=BF2uWyM4WYs>

https://www.youtube.com/watch?v=xj5q_TNxZ6Q

http://www.dsd.gov.hk/Documents/AnnualReports/0809/sew_content.html

Charging for sewerage services so there is money to build and service infrastructure

http://www.dsd.gov.hk/EN/Sewage_Services_Charging_Scheme/index.html

Fixing up problems e.g. street cleaning

http://www.fehd.gov.hk/english/pleasant_environment/cleansing/clean1.php

www.wsd.gov.hk/en/contact_us/by_phone/customer_services_hotline/index_t.html

<http://chinadigitaltimes.net/2012/10/photo-firefighters-try-to-control-water-bursting-from-broken-fire-hydrant-in-shanghai-october-10-by-remko-tanis/>

Law enforcement catching those who break the law

http://www.police.gov.hk/ppp_en/11_useful_info/filming/laws.html

http://www.fehd.gov.hk/english/pleasant_environment/library/fixed_penalty/1.html

<http://www.scmp.com/lifestyle/article/1802374/10-laws-are-broken-hong-kong-every-day>

<https://www.fastcocreate.com/3045403/a-hong-kong-clean-up-campaign-identifies-litterbugs-through-dna>

Educating the community to look after water resources

<http://www.gov.hk/en/residents/environment/public/index.htm>

Role of community to help protect water resources:

Do the right thing: What should the community be doing?

www.scmp.com/lifestyle/article/1802374/10-laws-are-broken-hong-kong-every-day

<http://www.dailymail.co.uk/news/article-2223482/How-growing-trend-using-wet-wipes-instead-toilet-roll-costs-Thames-Water-12m-year-fix.html>

What individuals can do

www.gov.hk/en/residents/environment/public/enquiries/logpollutioncomplaint.htm

http://www.epd.gov.hk/epd/english/greenconstruction/poll_pro/wastewater_management.html

Community action groups that fix problems:

Help restore the natural environment

<http://hkcleanup.org/event-info/>

<http://www.oceanrecov.org/>

http://www.epd.gov.hk/epd/clean_shorelines/index-2.html

<https://www.tnc.org.hk/our-work/by-country/hong-kong/hong-kong-clean-up/>

<http://www.greencouncil.org/en/index.php>

Some education programs:

Long term behaviour change of communities by educating them about how to look after the environment

<http://www.info.gov.hk/gia/general/201611/17/P2016111700393.htm>

<http://www.info.gov.hk/gia/general/201507/10/P201507100521.htm>

<http://www.ecc.org.hk/english/publicity/publicitya916.html?id=44>

Activity 2: Reporting back



1. You will have up to two minutes for your group to make its presentation.
2. Decide how you will present your information. Your teacher may tell you what you can use or you may need to ask. You could make a powerpoint, produce a poster, etc.
3. Make sure you finish preparing your group presentation in the allocated time.
4. Start your presentation with a title. It might be the heading you chose.
5. Organise your information to tell a story about how water resources are being protected and improved.
6. Share your information using the presentation method your group chose.
7. In your group decide how you will take turns to present your material. Everyone in your group must participate.
8. Wait for your teacher to give your group its turn to present.
9. While other groups make their presentation, write a list of things you could do to help protect our water resources, based on what you learn from the presentations.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Activity 3 - Looking forward

Create a postcard with a photo that explains how we can use our water better, for the benefit of people, wildlife and the environment.



When the postcards are completed, give them to someone or to people you know.

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