Topic 1- A Precious Water Resource (Key Stage 2)

English voice over script and super:

Super: Topic 1 A Precious Water Resource Key Stage 2

FVO: Topic 1 A Precious Water Resource Key Stage 2

Water Save Dave: Hello and welcome to this meaningful journey about water resources. I am your tour guide, Water Save Dave, you can call me Dave.

Super:
W = Water
S = Supplies
D = Department

Water Save Dave: First, let me introduce myself. Did you notice my "W"-shaped pants, the "S"-shaped mark on my belly, my "D"-shaped mouth, and also my body shape is like a water droplet...? You've guessed it! I'm the mascot for the Water Supplies Department, or WSD for short.

Super:
22 March
World Water Day
Cherishing water resources
Promoting water conservation

Water Save Dave: I was born on the 22nd of March in 2016, which is also the World Water Day. That's why I was born for a special mission: to advocate cherishing water resources and promoting water conservation.

Super:
Global water resources
Local water resources

Water Save Dave: Today we are going to cross over hills and valleys to understand the global issues on water resources. We are also going to listen to the stories of the

children living in rural areas all over the world. Lastly, we will return to Hong Kong and understand our local water issues. I hope that after the tour today, all of you can learn to cherish water resources.

Boy: Hey Dave, if 70% of the Earth's surface is water-covered, then water is supposed to be abundant. Why are you still telling us to save water?

Water Save Dave: Good question. Let's go to the first stop of our journey to find out the answer!

Water Save Dave: Do you know what seawater tastes like?

Boy: Yes, I do! It's very salty.

Water Save Dave: That's right. Seawater contains a very high concentration of salt, therefore it is not suitable for us to consume directly. If our body takes in too much salt, it will be a great burden to the kidneys. That's why we can only drink fresh water.

Girl: So how much fresh water and seawater are there on Earth actually?

Super:
100 glasses
2 and a half

Water Save Dave: Let's have a look at the world map here. Even though you may think that we really have a plentiful source of water because two thirds of the Earth's surface is water-covered, the truth is, most of the water you see is seawater, whereas only 2.5% of all water on Earth is fresh water. Say we have a hundred glasses of water in the world, only 2 and a half glasses have fresh water. But still, not all of the fresh water can be used!

Girl: Why?

Super:
Less than 1%

Water Save Dave: Among the fresh water resources in the world, a large part of it is the polar ice caps that have not yet melted. Therefore, the amount of fresh water we

can really use is less than 1%.

Super:
100 glasses
Not even 1 glass

Girl: Does that mean... if we have a hundred glasses of water, we can't even use one glass?

Super:
Uneven

Water Save Dave: Exactly. What's worse is that the distribution of fresh water across the globe is very uneven.

Boy: How is that so?

Super:
Fresh water resources
China
Russia
USA
Canada

Water Save Dave: Apparently, most of the fresh water resources in the world are concentrated in just a few countries, such as China, Russia, USA and Canada etc.

Boy: Whoa, if they already accounted for most of the fresh water in the world, then the other countries would likely be in shortage of fresh water...

Super:
Africa
Middle East
Geographic and climatic constraints
Lack of fresh water resources

Water Save Dave: That's very true. Regions such as Africa and the Middle East are threatened by geographic and climatic constraints, therefore their fresh water

resources are really scarce, and they are constantly under water shortage. Let's go to the next stop, and check with the children in Africa to know more about their situation!

Girl: Hmm... The water here looks really dirty!

Water Save Dave: Yes indeed. But many people are still drinking this water.

Girl: They'll likely get diarrhea if they continue to drink this filthy water!

Super:
Only source of water

Water Save Dave: Sadly, that's possibly the only source of water for the local residents. They drink this water just because they have no choice at all.

Super:
340000
2.1 billion

Water Save Dave: According to the reports of the WHO (World Health Organization) and UNICEF (United Nations International Children's Emergency Fund), every year, 340,000 children under the age of 5 die from diarrhea because of consuming dirty water. In a bigger picture, 2.1 billion people in the world lack access to safe drinking water, which is 3 out of every 10 people in the world!

Super:
Dorcas

Water Save Dave: Let's hear Dorcas, one of the many children suffering from lack of clean water, share her life story.

Video

Super:

FVO: Their pictures worth a thousand words. A grandmother worn down by the AIDS virus with a little girl who cares for her. At only 9 years old, she's her grandmother's lifeline to food and to water. It's the water that worries the grandmother most.

Grandmother Mara: It is because we see a lot of things in the water..

FVO: Dorcas is the water-bearer for her grandmother Mara, weak and frail from disease. The water she carries is beyond hideous.

Dorcas: The water that we would drink, you could see the dirtiness just by looking at it. You could tell it's not something you'd want to be drinking.

Grandmother Mara: Dogs, cows and pigs would drink from the same source.

FVO: And not only would they drink from the pond, sometimes the animals would die there.

Dorcas: There was a dog that died inside. We only found out when the skin floated to the top.

FVO: Dorcas and her grandmother suffered from constant diarrhea. Dorcas had missed so much school to take care of her grandmother, and sometimes she herself would be too sick to go.

Grandmother Mara: Dorcas would miss school because of me. I would always be down in bed.

Video ended

Girl: I never thought that some children in the world need to share and drink the same water with pigs and cattle!

Boy: Not just that. As you can see, the water is even contaminated by the dead bodies of animals. That's horrible!

Water Save Dave: That may sound impossible to us living in Hong Kong, but in different parts of the world, this is truly happening to a lot of people, on a daily basis. Apart from getting sick because of drinking the contaminated water, as the grandmother said in the video, children like Dorcas need to get water and take care of their family at the same time. Water-carrying has already become a daily challenge for these people who live under inadequacy of water supply.

Water Save Dave: Shall we listen to another child talk about his story of getting water?

Video

Super:

FVO:

Violet: Every morning I'm up before the sun. Three times a day I walk two miles to fetch water for my sister, my grandmother and me. While I walk I dream of going to school. I dream of becoming a doctor. My name is Violet and I am a Zambian.

FVO: Zambia is my home, and I know how deeply it is hurting. Everyday more than 1,600 children under the age of five die from diarrhea caused by unsafe drinking water. That's more than AIDS and malaria combined.

Kid A: There are a lot of times that I miss school because I am fetching water. The water that we drink is very dirty. We get skin diseases and stomach diseases that make us lose weight.

Kid B: It happened while I was out fetching water at the river. I was carrying two containers of water when I slipped and fell. I can't go to school because it's too far for me to walk.

Video Ended

Boy: Poor kids. They have to walk 2 miles for water... how long is that?

Super:
24 laps

Water Save Dave: Two miles is about 3.2 km. Violet has to fetch water three times a day, two miles per trip, that means about 9.7 km! In terms of a standard running track, that's more than 24 laps!

Girl: They wake up even earlier than when we go to school, plus they need to walk such a gruelling path just for water... I can't even run a lap on the sports ground without panting, but she can even walk with such a weight on her shoulders, that's absolutely not easy!

Boy: Oh, remember that kid who lost a leg? He can't go to school, nor play football...

That's very sad. They have to pay such a price for fetching water, but the water is even of bad quality. What a pity… the size of their buckets is so limited, the water collected probably is just enough for their daily usage.

Girl: Water is so precious to them; they don't even have enough for drinking. I suppose they can't even bathe often. I've experienced what it's like not to bathe for one day, that's already too uncomfortable for me!

Super:
4.5 billion

Water Save Dave: You're right. Even when they can finally bathe, they have to use dirty water, and they risk getting infections which can cause skin diseases. Also, they do not have a safely managed facilities to transport and store the water, so even clean water would easily get contaminated in the end. More than 4.5 billion people in the world lack safe management of hygiene facilities, that's about 6 out of every 10 people!

Water Save Dave: You should all understand now that it's not a guarantee for everyone to have clean water right from the tap.

Boy: Yeah. What if they place a few buckets right outside their home to collect rainwater? Then they would not have to take such a trek to fetch water. Rainwater might even be cleaner.

Super:
Extreme weather
Drought

Water Save Dave: I like your attempts to solve the problem. However, the problem is not that simple, because rainwater is not something that is always available for them to collect, especially under such extreme weather conditions now, due to global warming. Droughts are more frequent and fiercer than ever. Some places have very low rainfall year-round, or even get no rainfall.

Boy: No rain? That means no water as well!

Girl: Apart from that, without water for irrigation, crop failure is common. Even

drought resistant crops cannot grow well in dry soil due to deprivation of nutrients.

Super:
Essentials of life

Boy: Both humans and animals need water to survive. So not only do crops die, livestock would too.

Water Save Dave: Seems like you both get the idea of it. Crop failure, plus death of livestock, would lead to famine. Just like in East Africa, those people are constantly under the threat of climate change. Because of frequent droughts, nomads who rely strongly on pastureland are under an unprecedented crisis. Let's hear one of these families share their story.

Video

Super: Families chasing the rain

FVO: This family is on the move, chasing the rains that have been forecasted. They have moved four times in the last four months. Vast herds of livestock have been completely wiped out by the drought.

Lady: I had two hundred sheep, and they completely perished, totally gone. They were hit very hard by the drought. We are so dependent on the rain, we can't exist without it. Neither the people nor the animals will survive if there is no rain.

FVO: Across Somalia, around 3,000 people a day are being displaced by the drought, and nearly 3 million are facing severe hunger.

Video Ended

Girl: Oh my goodness, all of their 200 sheep died...

Boy: They also had to chase the rains and move accordingly. They don't even have a fixed home!

Girl: After listening to their stories, I think we are extremely blessed to be living in Hong Kong, without worrying about the cleanliness of water and water supply.

Water Save Dave: We really are blessed. But don't let that mislead you to think that water shortage only happens in developing countries. A lot of developed countries also experience such a problem, including those water rich countries we mentioned earlier. They are also facing threats of drought.

Super:
Southern part
Midwest

Water Save Dave: For instance, the southern part of the United States and the Midwest also experienced serious droughts in recent years. In fact, water deficiency isn't that distant of a problem from us!

Girl: Where are we now?

Water Save Dave: Welcome to your next stop - China.

Boy: Our textbooks always tell us that China holds plentiful resources of every kind. Why is it still under the threat of drought?

Super:
1.4 billion
Dry weather in inland areas

Water Save Dave: Yes, surely China has relatively more fresh water resources, but don't forget the massive demand from a population of 1.4 billion. Inland areas always experience dry weather and low rainfall, sometimes even drought.

Super:
Water crisis
Global problem
2025

Water Save Dave: The whole world is facing a water crisis now. If we don't start implementing water conservation measures to save water, it's forecasted that around half of the world's population will be living in water deficient regions by 2025.

Girl: You always say we need to save water. So how much water are we actually using?

Water Save Dave: Good question. What do you think?

Girl: I don't have any ideas!

Super:
157 L/day

Water Save Dave: Let me give you a hint. Just across the delta is Macau, also a Special Administrative Region. Their domestic water usage per capita is 157 litres a day.

Super:
143 L/day

Water Save Dave: Singapore, as one of the Four Asian Tigers, has many similarities with Hong Kong, such as its limited resources and area, population density etc. Their domestic water usage per capita is 143 litres a day.

Water Save Dave: So then, guess how much water do Hong Kong people use for domestic water usage every day?

Super:
130 L/day

Boy: I guess... 130 litres per day?

Super:
About 60 big bottles

Water Save Dave: Bingo! The answer is about 130 litres a day, which is about 60 big bottles of 2-litre soft drinks!

Girl: That doesn't seem like a lot. At least we are using less than Macau...

Water Save Dave: That's not true.

Girl: Huh?

Super:
130 L/day
2L x 65
110 L/day
2L x 55

Water Save Dave: Because that is not counting the water for toilet flushing. Besides, the world average for domestic water usage per capita is about 110 litres a day, so the domestic water usage in Hong Kong is still considered high.

Boy: Then what is the suggested amount of water use?

Super:
50L – 100L

Water Save Dave: Actually, according to the WHO, 50-100 litres can be more than enough to satisfy our daily needs.

Boy: In that sense, we are way above that standard!

Water Save Dave: Yup. Annually speaking, Hong Kong has used up to 1 billion cubic metres of fresh water in 2018.

Girl: Sounds like a massive number. But I have no idea how much that actually is. How much is one cubic metre?

Super:
$1m^3$
1000 L
500 bottles

Water Save Dave: It is equivalent to 1000 litres, that is 500 big bottles of 2-litre soft drinks.

Super:
500 billion

Girl: A billion... that is 500 billion 2-litre soft drink bottles! My goodness, that is an insane amount!

Super:
2500m^3
1 billion m^3
400000

Water Save Dave: Let me explain using a simpler example. A world-class swimming pool has 2500 cubic metres of water. 1 billion cubic metres is equivalent to 400,000 swimming pools of water.

Girl: Can't believe Hong Kong people use so much water in a year...

Boy: Where did all this water go?

Super:
Domestic
Service trades
Other
= 1 billion m^3

Water Save Dave: Out of the total water consumption, domestic consumption, just like the water we used at home, takes up the largest portion with over 50%. Second is service industries and commercial use of water, such as in restaurants and hotels, taking up a quarter of the total water consumption in Hong Kong. Other uses include fresh water used for toilet flushing, by industry, government establishments, construction and shipping. Cumulatively, the total fresh water use annually is 1 billion cubic metres.

Boy: If Hong Kong people use so much water, won't the water charge be very expensive?

Super:
4-monthly intervals
1^{st} tier of 12m^3
Free of charge

Water Save Dave: Domestic consumers are usually billed for their water charges at 4-monthly intervals according to the meter readings taken. The first tier of 12 cubic metres is free of charge, afterwards the charges get more expensive according to use. In fact, the water charges in Hong Kong are much cheaper than the other cities in the world.

Girl: That's why Hong Kong people lack the sense of water conservation as they think water is cheap and readily available.

Boy: Right. Where does all our water come from in the present?

Super:
Rainwater from local catchment 21%
Seawater for toilet flushing 22%
Dongjiang water 57%

Water Save Dave: The water in Hong Kong is mainly supplied by three sources, rainfall collected from local catchments, imported water from Dongjiang in Guangdong and seawater for toilet flushing. In 2018, they consist of 21%, 57% and 22% of the total water consumption in Hong Kong respectively.

Girl: I see, only a small portion of water is actually coming from collected rainwater.

Boy: How does the rainfall gathering process work?

Water Save Dave: Rainfall is first collected by water catchments, which then flows into impounding reservoirs. This map shows the distribution of catchment areas and reservoirs in Hong Kong, yellow indicates the catchment areas. The rainwater collected is directed to reservoirs, indicated by the blue regions.

Girl: What is the largest reservoir in Hong Kong?

Super:
Largest area
Plover Cove Reservoir

Water Save Dave: There are currently 17 impounding reservoirs in Hong Kong. The one with the largest area is the Plover Cove Reservoir. It is also the first "reservoir in

the sea” in the world. It was an unprecedented project, and an imposing construction at the time.

Boy: In the sea? How can it be built?

Water Save Dave: The engineers first block off the bay with dams, then the seawater inside the lagoon is extracted and replaced with fresh water. And so a “reservoir in the sea” is built!

Super:
Plover Cove Reservoir
Dam

Water Save Dave: In those days when water shortage was a common problem in Hong Kong, life was hard. Plus, the available valleys for building reservoirs had almost been used up. The Water Authority at that time passed Plover Cove during a cruise, and had an idea of building two dams to connect Tai Mei Tuk, Sha Tau Kok peninsula and other small islands, to form a reservoir. After a series of site visits, the construction commenced and it successfully became the first “reservoir in the sea” in the world.

Boy: With such a high population density in Hong Kong, it’s difficult to find a suitable place to build reservoirs. To build in the sea is really a smart solution.

Super:
Largest area
Plover Cove Reservoir
Largest capacity
High Island Reservoir
Most recent

Water Save Dave: Plover Cove Reservoir is the one with the largest area. As for the largest capacity, that goes to the High Island Reservoir in Sai Kung. That is also the most recent reservoir.

Girl: Then which one is the first reservoir built in Hong Kong?

Super:
First Reservoir

Pok Fu Lam Reservoir

Boy: This I know! That is the Pok Fu Lam Reservoir in Hong Kong Island.

Water Save Dave: Correct!

Girl: So how does the water stored in reservoirs reach our home?

Super:
Reservoir
Water Treatment Work
Service reservoir
Consumers

Water Save Dave: Rainfall collected in reservoirs will be transported to the 20 Water Treatment Works in Hong Kong. After undergoing different stages of treatment, the water is clean enough to be transported to pumping stations, then stored in service reservoirs. Lastly, the water will be supplied to consumers through the water distribution network.

Boy: Hey Dave, I don't understand. If Hong Kong is collecting rainwater, why do we still need to import Dongjiang water?

Water Save Dave: Even though there are 17 reservoirs to collect rainwater, but the local yield is still highly influenced by the precipitation every year. In dry seasons with not much rainfall, long periods of sunshine will evaporate a large amount of water from the reservoirs, leading to low storage levels.

Girl: I remember that we always have Very Hot Weather Warnings in the past two years, it's scorching hot every day!

Water Save Dave: Yes, exactly. In 2018, Hong Kong experienced a "mini-drought". It was so dry that some reservoirs like the Lau Shui Heung Irrigation Reservoir exposed the yellow sand on the bottom, and some even were cracked because of the dryness.

Boy: That must be very serious.

Super:

Once every few days
From 1960s

Water Save Dave: Therefore, only rainwater collection cannot provide a stable supply of fresh water to Hong Kong people. Back in the days when the population of Hong Kong was exponentially increasing, so did the water demand. There was a water shortage and water can only be supplied once every few days. To alleviate the problem, the Government started to import Dongjiang water from the Governments of Guangdong Province, from the 1960s onwards.

Girl: Where exactly is the origin of Dongjiang water?

Super:
Source of Dongjiang
Heyuan
Dongjiang Intake
Gongguan Qiaotou
Dedicated Aqueduct

Water Save Dave: Dongjiang is one of the three tributaries of the Pearl River. Its sources are located at the Xunwu, Anyuan and Dingnan counties of Jiangxi Province. Dongjiang passes through Heyuan, Huizhou etc. The water supplied to Hong Kong is pumped from the pumping station in Taiyuan at Dongguan.

Boy: With Dongjiang water, seems like Hong Kong people won't have to worry about water shortage.

Water Save Dave: That's not true. The supply of Dongjiang water is still limited.

Boy: Why is that?

Super:
2004
30%
2009
22%

Water Save Dave: Because even Dongjiang River is affected by the problem of

droughts. Southern China has been impacted quite a lot by climate change in recent years, and precipitation is steadily decreasing. According to the Department of Water Resources of Guangdong Province, in 2004 and 2009, the average precipitation in the Dongjiang River basin has been decreased by 30% and 22% compared to normal respectively.

Girl: Apart from drought, are there any other problems faced by Dongjiang?

Super:
Uneven distribution
1.4 billion
Average water resources per capita

Water Save Dave: Of course, there are. Due to the uneven distribution of fresh water in China and the large population of 1.4 billion, the average water resources per capita are quite low. Besides, cities in Guangdong province are all rapidly developing, adding a huge burden on the demand of Dongjiang water.

Super:
2008
Dongjiang River Basin Water Resources Allocation Scheme

Water Save Dave: To cope with the challenges of the competition of water resources in the Pearl River Delta, and to improve ecological conservation and the sustainability of water resources, Guangdong Province implemented a Dongjiang River Basin Water Resources Allocation Scheme in 2008 to limit the quantity of water drawn by cities along the Dongjiang River, including Hong Kong.

Girl: Oh no! Will we lose all our fresh water one day?

Water Save Dave: That is possible. Therefore, to save Hong Kong from a situation of water shortage, the Hong Kong Government has already been designing effective and sustainable strategies to manage water resources. As for you two...

Super:
Save more water
Minimise wastage

Girl & Boy: We got it, we will definitely save more water and minimise wastage!

Water Save Dave: Great! We all have to work hard for water conservation!

Super:
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