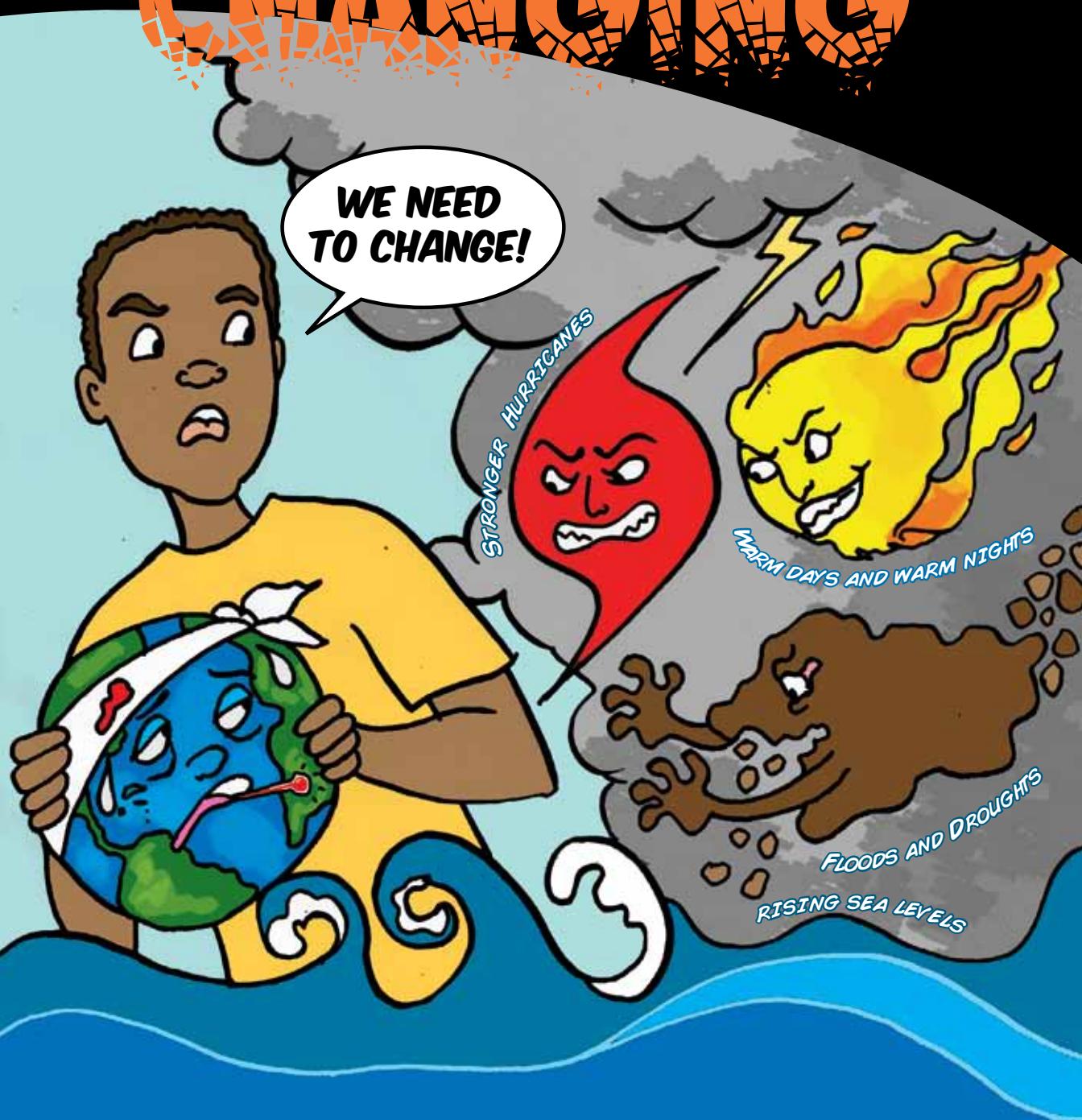


OUR CLIMATE IS CHANGING



*DANNY AND HIS COMMUNITY FACE CLIMATE CHANGE
IN JAMAICA*



GOJ/EU/UNEP CLIMATE CHANGE ADAPTATION & DISASTER RISK REDUCTION PROJECT

Climate Change-We have to change!

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Danny and His Community Face Climate Change in Jamaica
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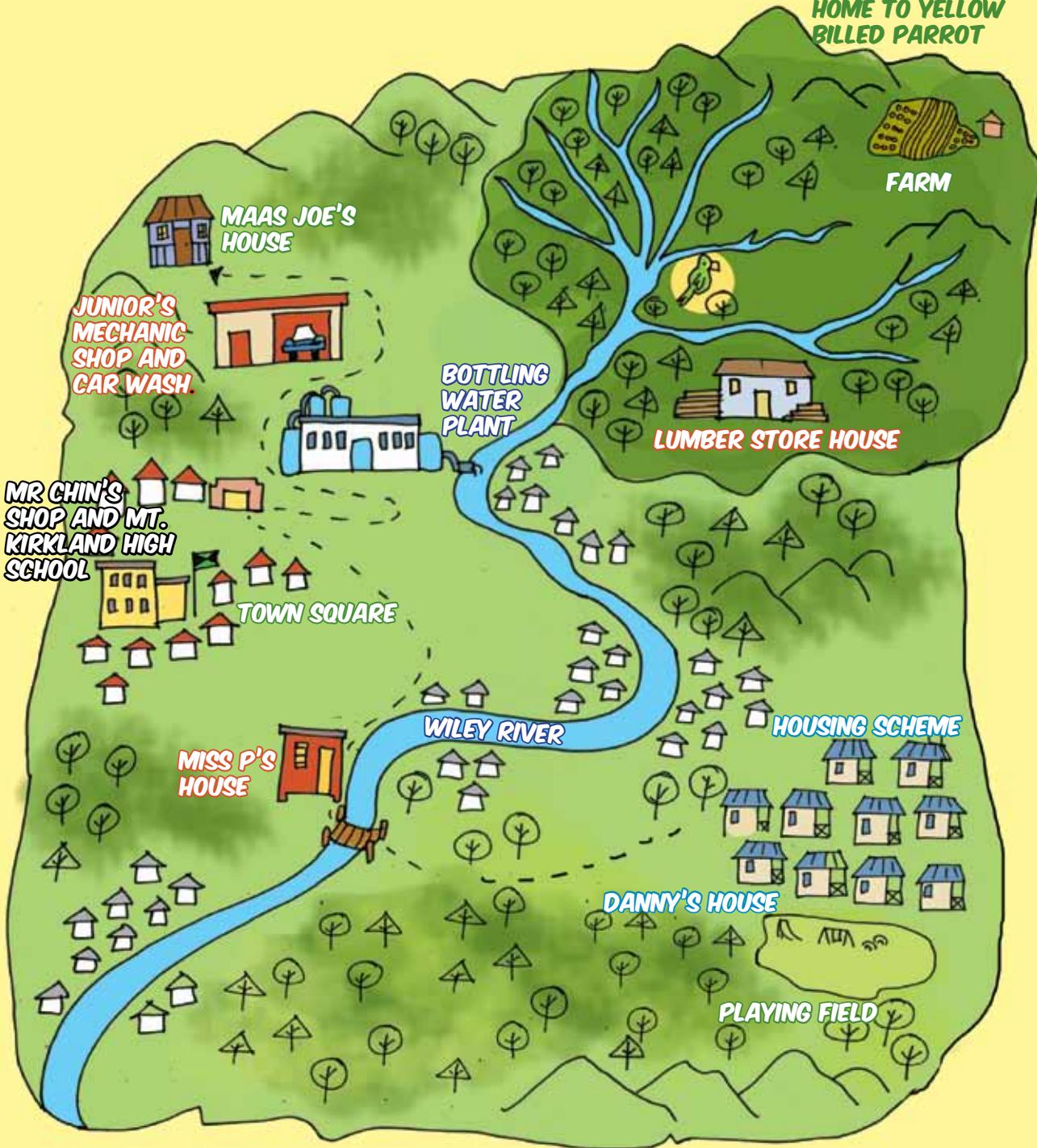
Other education resources from the Climate Adaptation and Disaster Risk Reduction Project can be found on:
<http://myspot.mona.uwi.edu/physics/csgm/climate-resources>

Where possible print on recycled or reused paper



MAP OF THE MT. KIRKLAND COMMUNITY

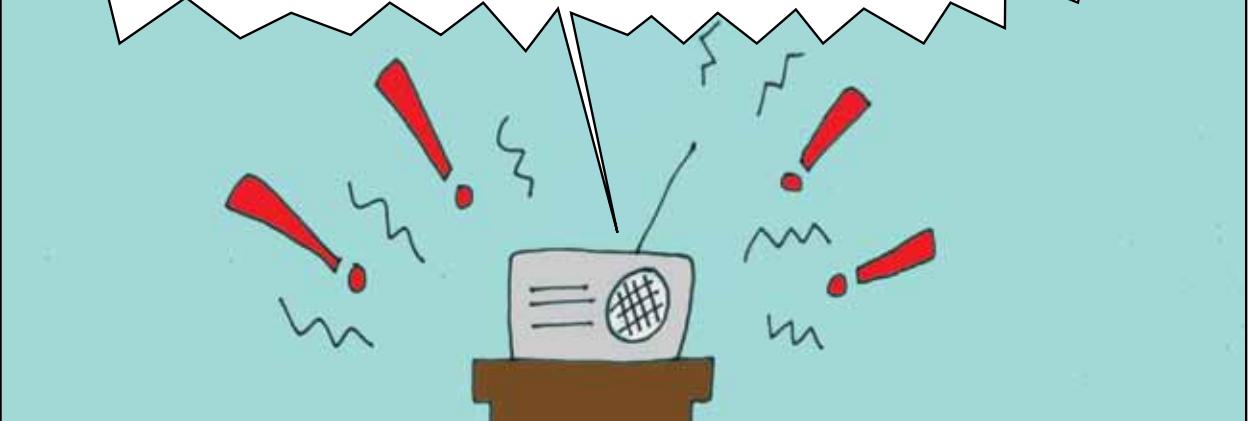
WATERSHED AREA
HOME TO YELLOW
BILLED PARROT



Mount Kirkland is a dry limestone forest area, nestled in the mountainous region of rural St. Andrew. It is home to endemic plant species as well as the endangered yellow billed parrot. Mount Kirkland has the longest and widest river in the parish of St. Andrew, known as the Wiley River.



The Meteorological Service of Jamaica reports that at 3pm today, Hurricane Pam is about southeast of Kingston and St. Andrew. The centre of the hurricane will move across Jamaica from southeast to north within 36 hours.
The island is therefore under a hurricane warning.

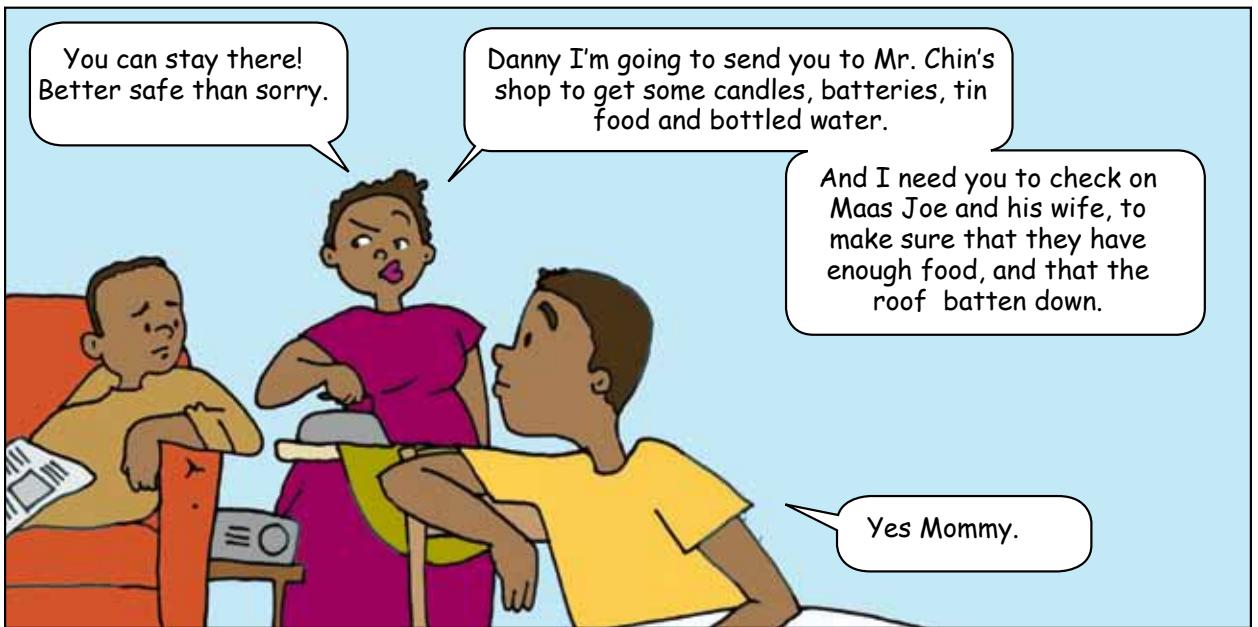


Lebert, this thing sound serious; we need to prepare ourselves and ensure we have enough food and batteries. The roof also need to batten down properly.

Sheryl how you can worry up yourself so?

Cho! Nutten nah come. Is di same ting dem did seh last year, an none neva come!





You can stay there!
Better safe than sorry.

Danny I'm going to send you to Mr. Chin's shop to get some candles, batteries, tin food and bottled water.

And I need you to check on Maas Joe and his wife, to make sure that they have enough food, and that the roof batten down.

Yes Mommy.



Lebert, you not going to check on the lumber storehouse, to see what you can do.

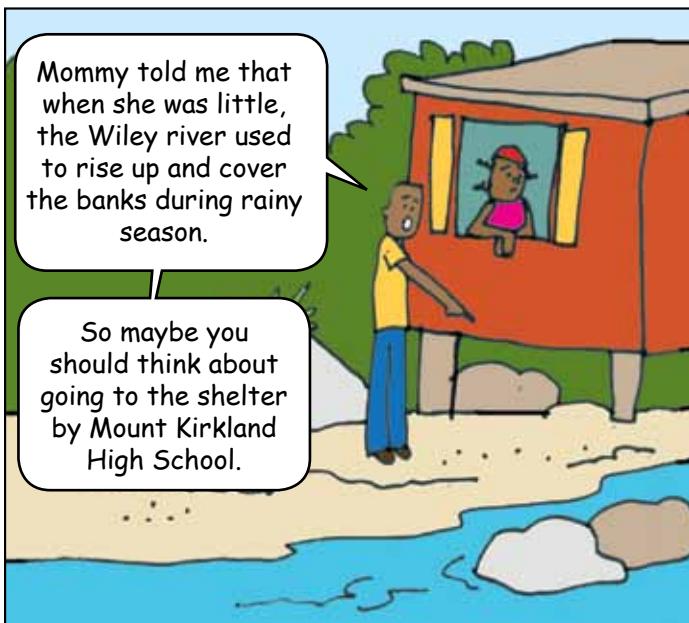
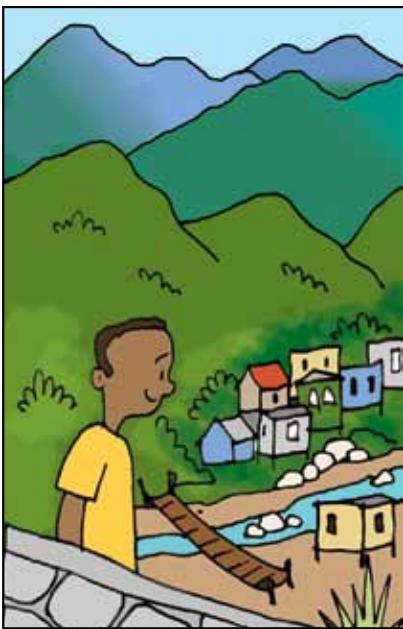


Danny, come play football wid me nuh!

Danny, you're a good boy. Yu know how long mi ask Dwayne fi help me prepare. All him a do is ramp and play ball.

Dwayne, yu nuh hear seh hurricane a come. There is no time to play ball!

.....Im going to the shop to get some things for my mother.





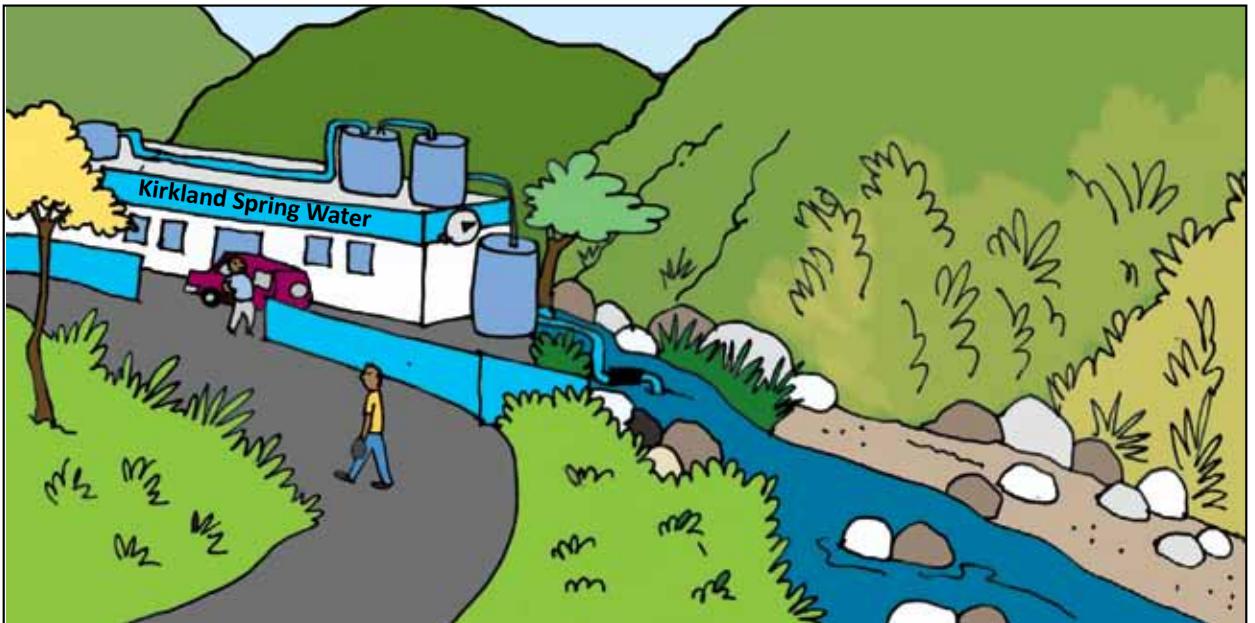
5 Tin mackerel!

3 Tin a corn beef!



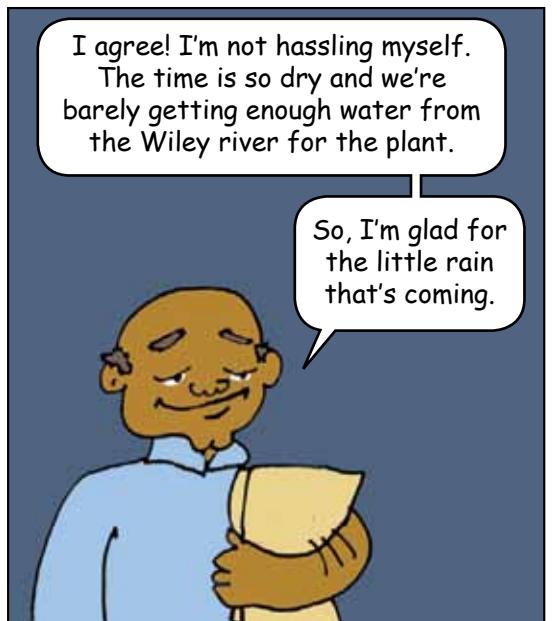
2 dozen candles, 2 pack a AA size battery!

3 pound a sugar, 3 \$200 phone card.



Hi Danny, how is your father?

He's alright Mr. Brown. He says he's not worried about this hurricane.



I agree! I'm not hassling myself. The time is so dry and we're barely getting enough water from the Wiley river for the plant.

So, I'm glad for the little rain that's coming.

Well my mother says that its not little rain coming... it's a hurricane and we should prepare.

Alright Danny, I have to run...later.

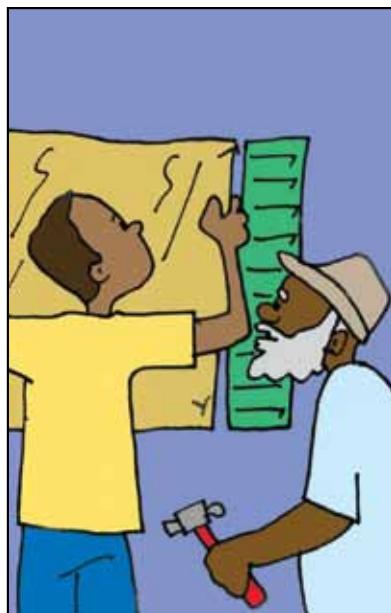
Bye Mr. Brown.

Danny, yu aright?

Yes, i'm ok. What are you doing?

Mi have to pack up and prepare fi dis hurricane.

Customers cars are here and mi cant afford fi lose di business.



DURING THE HURRICANE

Hurricane Pam has started to affect the eastern parts of the island with hurricane force winds and heavy rainfall. Pam is now a Category 4 and will move across the parishes of Kingston and St. Andrew, St. Catherine and Clarendon within the next 6 hours.

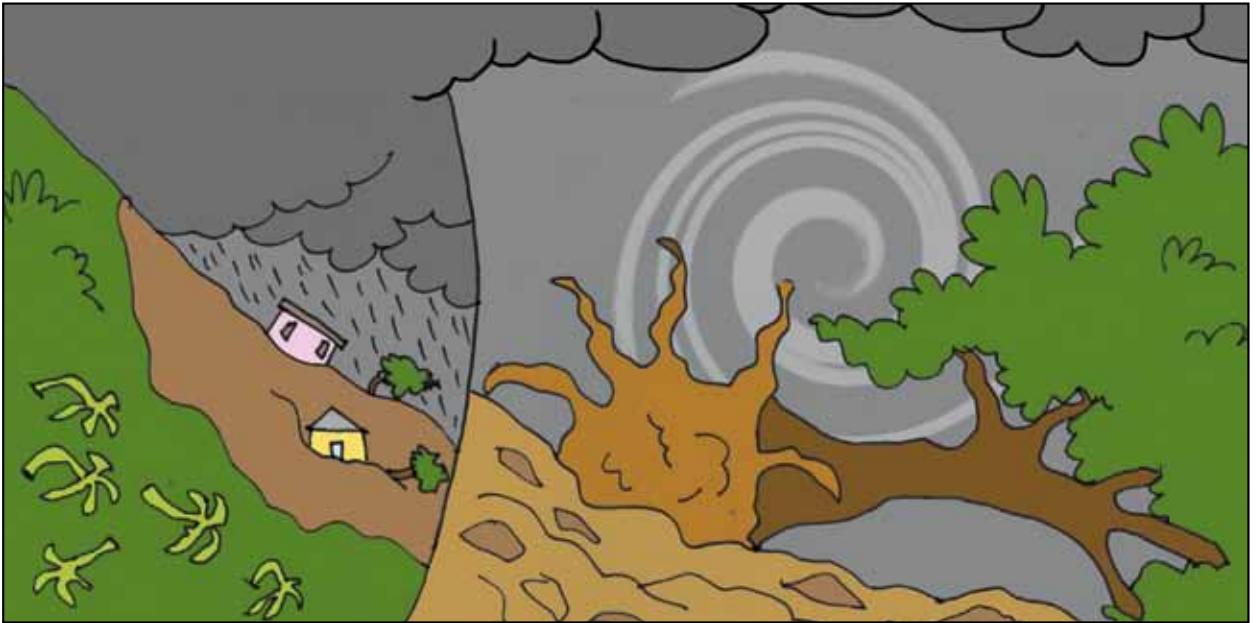
The Office of Disaster Preparedness is imploring persons in flood prone areas to relocate to the nearest shelter.



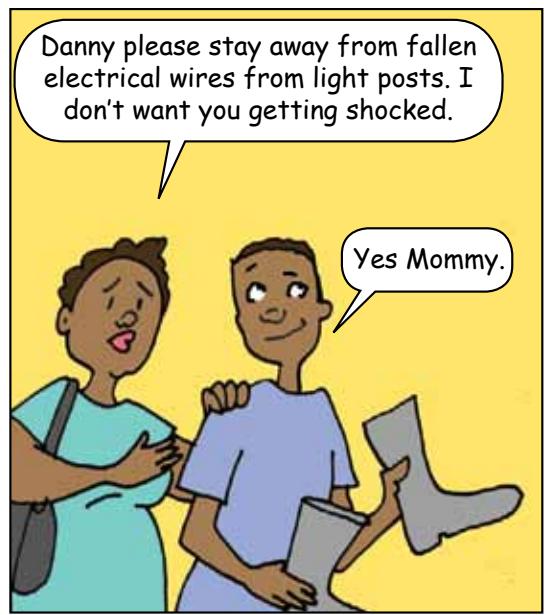
Please note that during the 'EYE' of the hurricane, citizens are advised to stay indoors and not venture out.

The Full Fury of Hurricane Pam is seen within the next 6 hours in the Mount Kirkland Community.

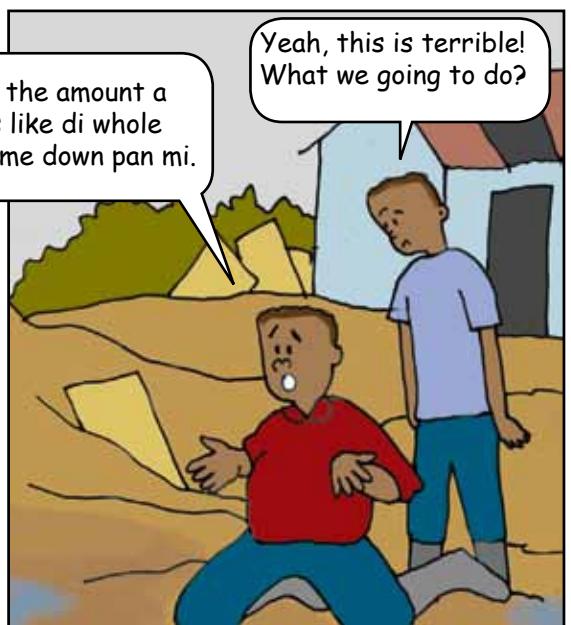
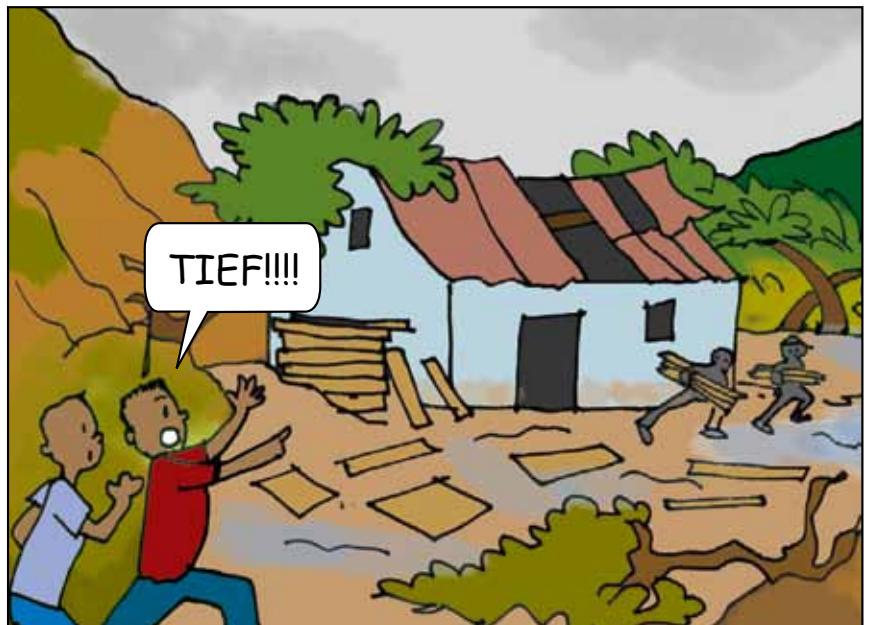
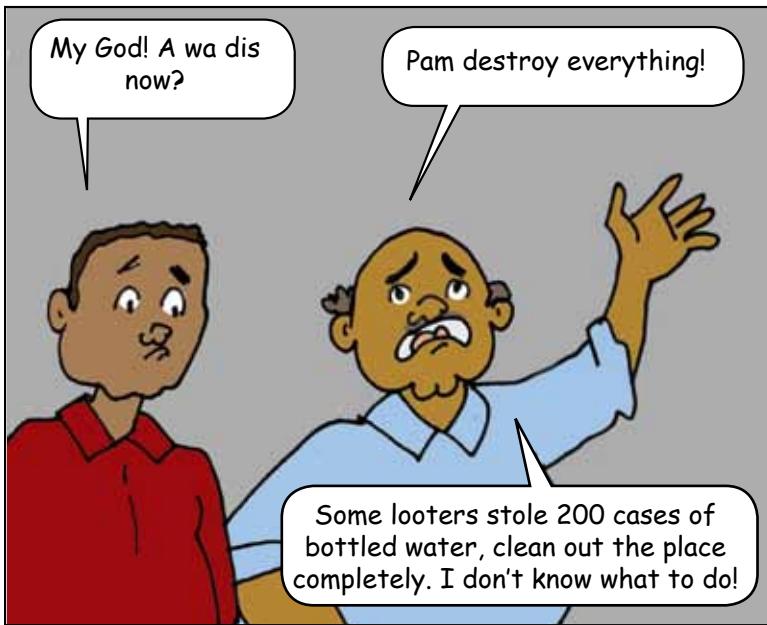


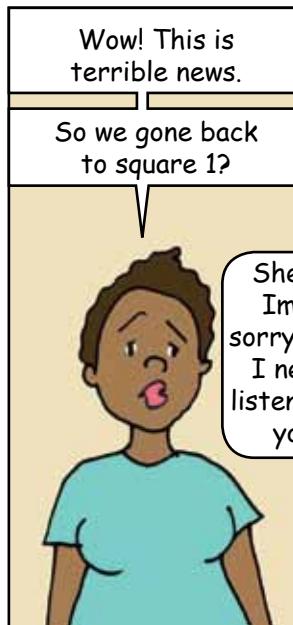
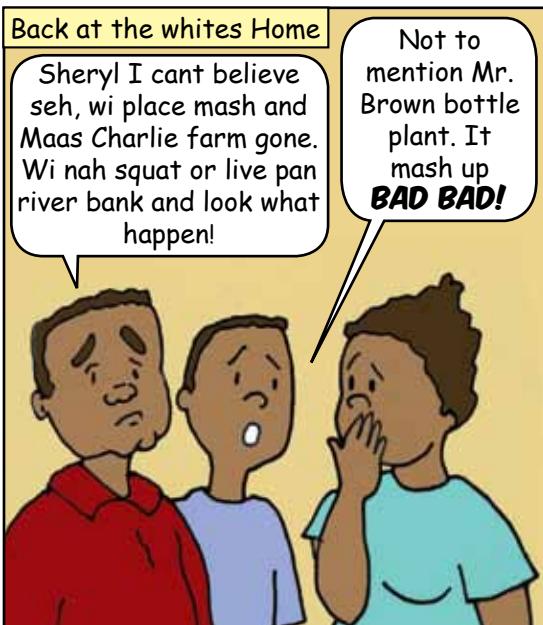


AFTER THE HURRICANE

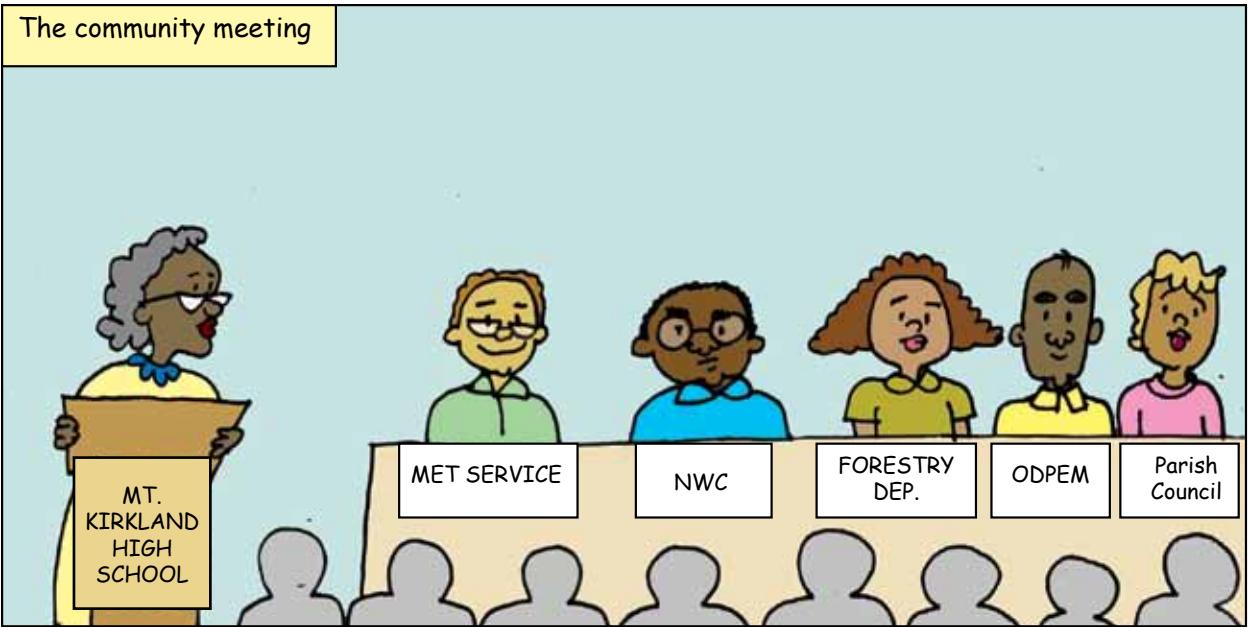








The community meeting



I've never seen anything like this before. Some of us didn't expect this amount of rainfall and kind of damage from Hurricane Pam. I'm still trying to figure out what really happened.



KIRKLAND SPRING WATER

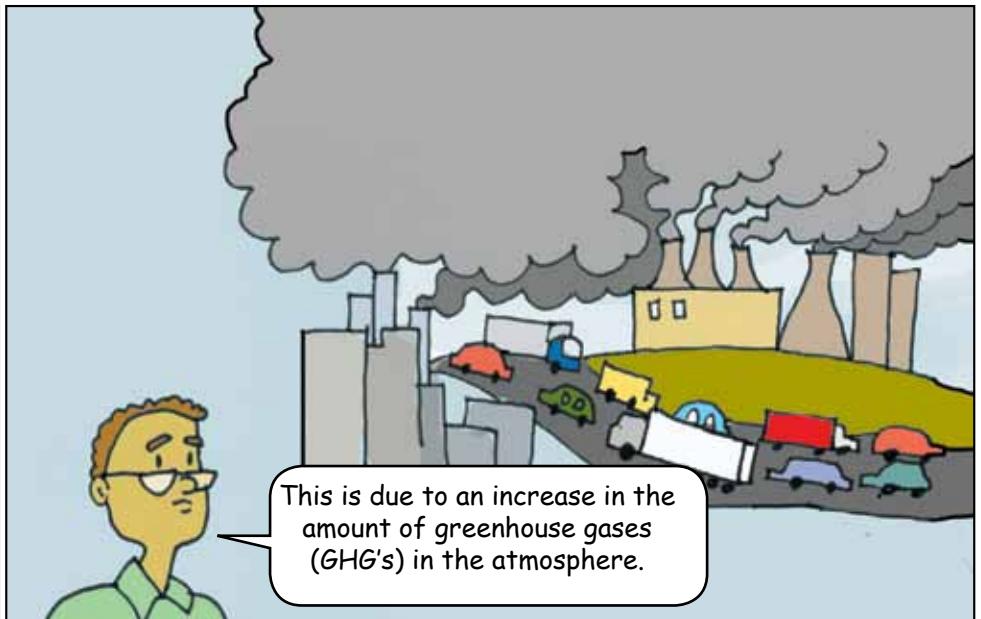
Well sir, the bottom line is that our *CLIMATE IS CHANGING*. In Jamaica, we're experiencing:



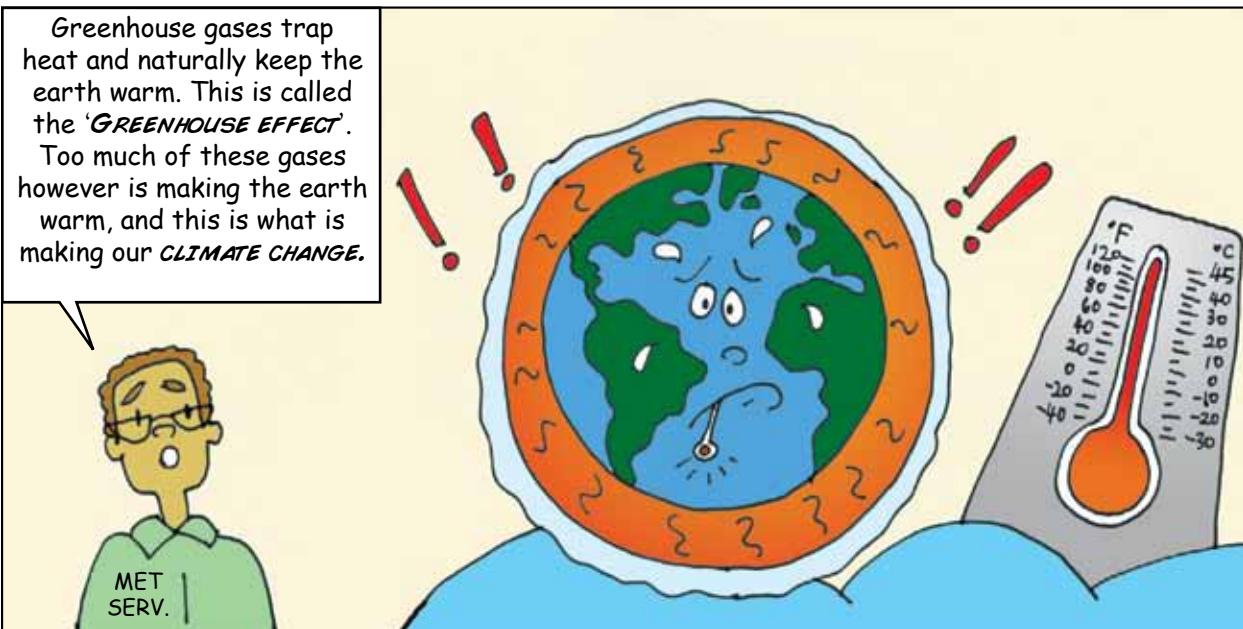
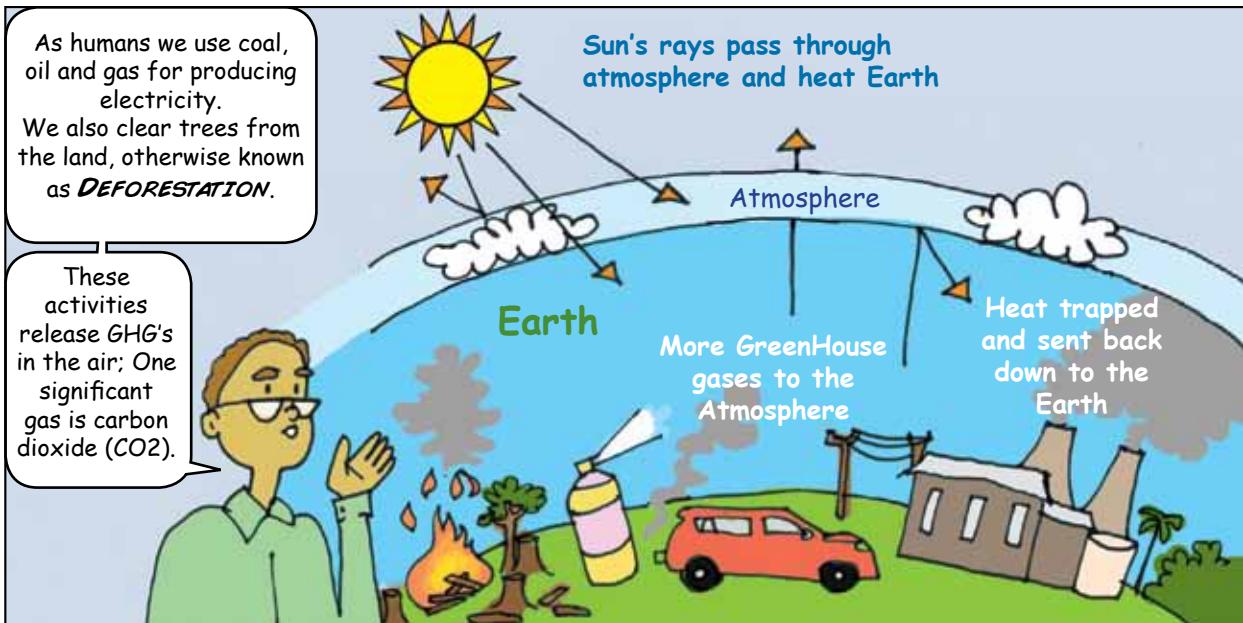
MET SERV.

1. warmer days and warmer nights
2. stronger and intense hurricanes
3. longer periods of drought
4. rising sea levels in coastal areas

What is causing our *CLIMATE TO CHANGE*?



This is due to an increase in the amount of greenhouse gases (GHG's) in the atmosphere.



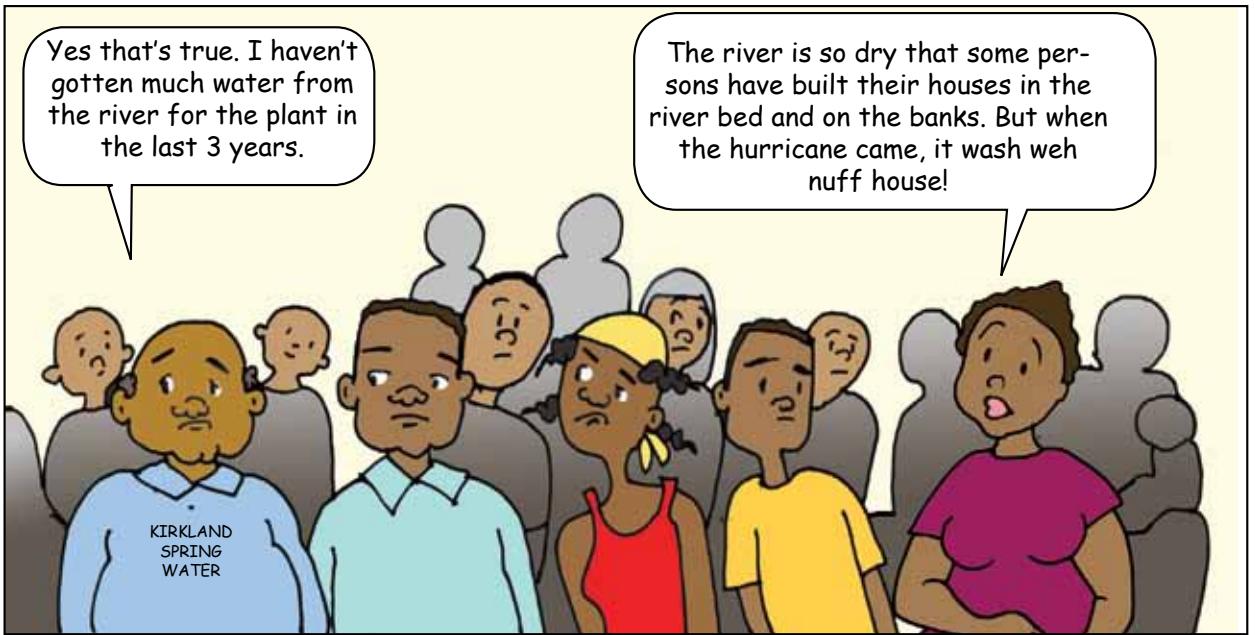
Oh! So is this why time is so **HOT**?

..and why hurricanes are so **STRONG**?

Yes it is.

...and it is also one of the reasons why we've been having water shortages. The Wiley river has dried up over the last five years.

MET SERVICE NWC FORESTRY DEP. ODPEM Parish Council



Well, what about me, weh nuh live pan di river bank, but still wash weh? All mi crops and animals wash weh during di heavy rain.



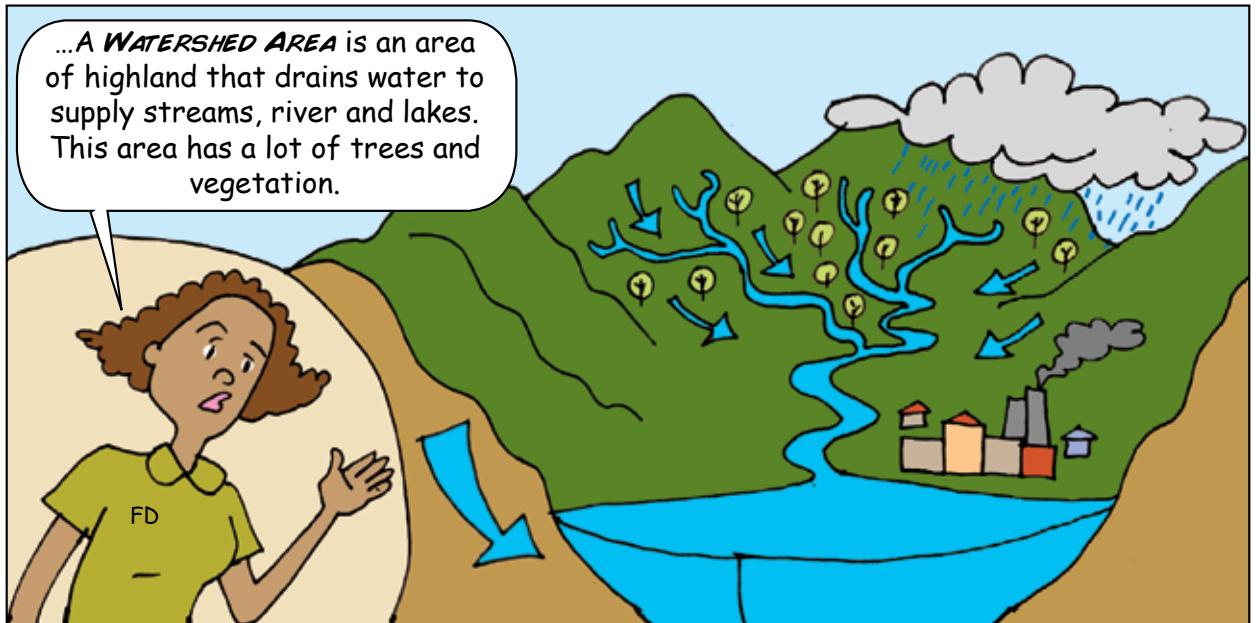
Actually, our Forest Ranger has reported to us that a lot of the trees in the **WATERSHED** area, have been illegally cut down.



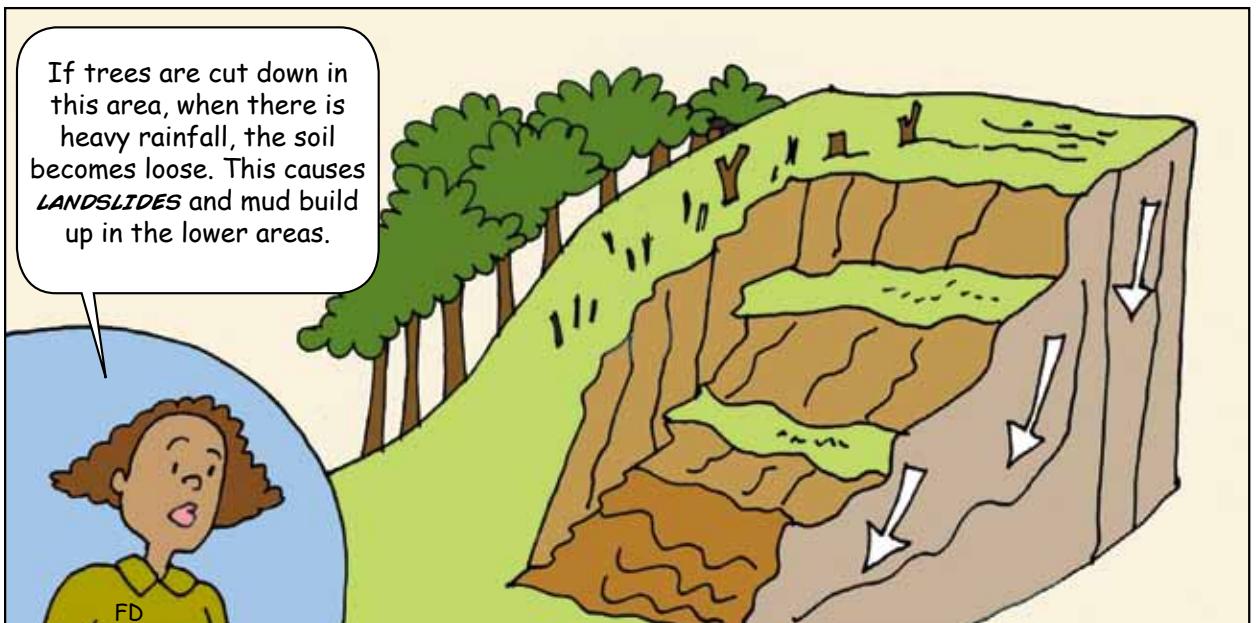
But Mr. White, no up dat way, mi si yu a go fi chop lumber?

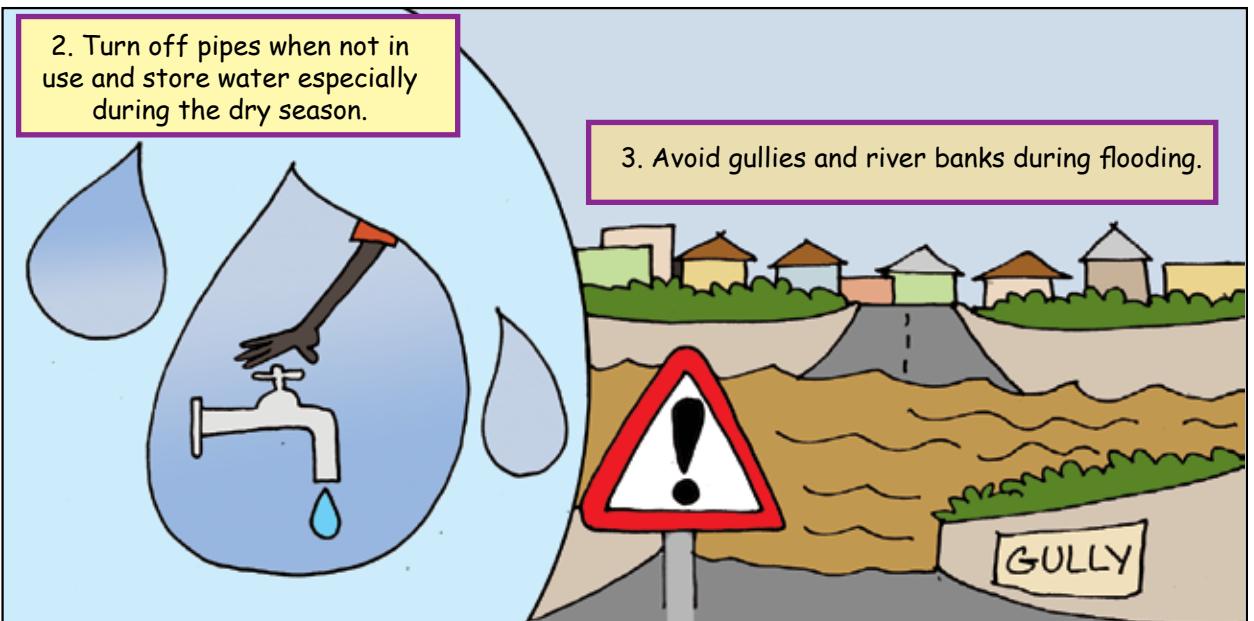
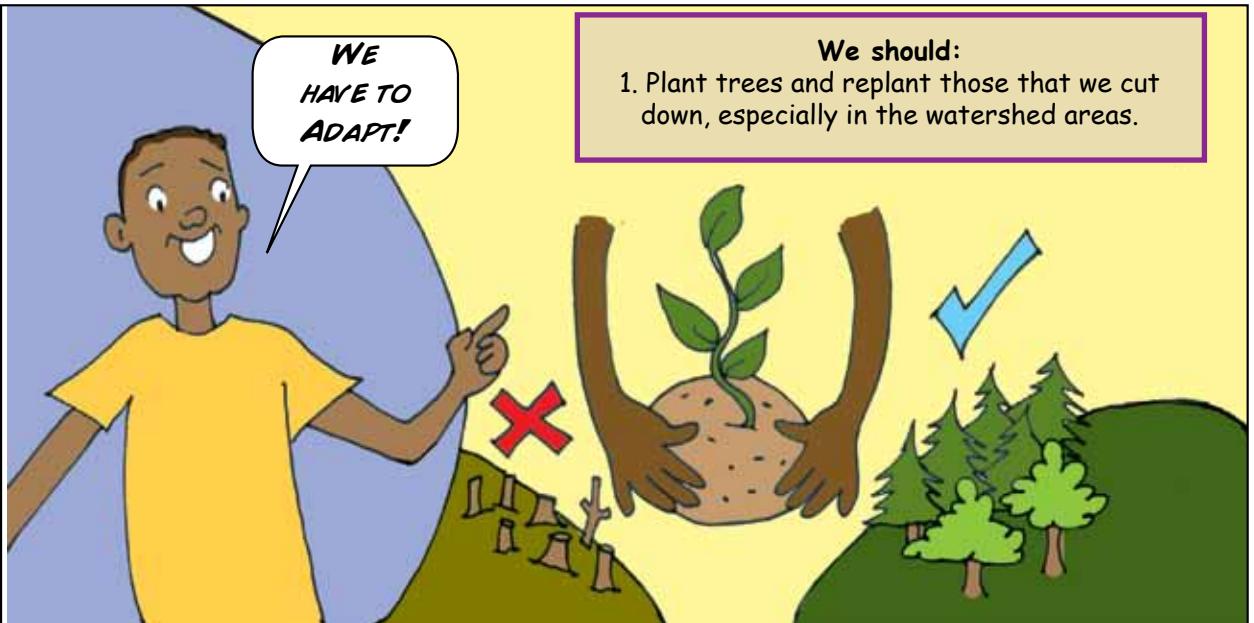


...A **WATERSHED AREA** is an area of highland that drains water to supply streams, river and lakes. This area has a lot of trees and vegetation.

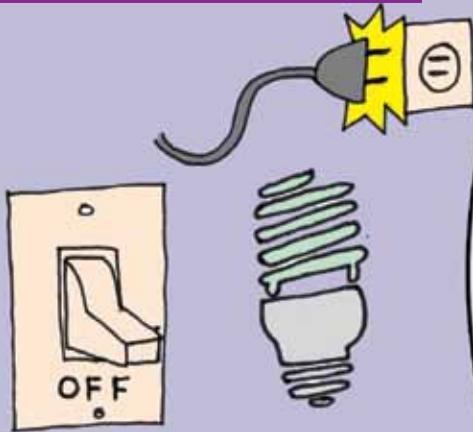


If trees are cut down in this area, when there is heavy rainfall, the soil becomes loose. This causes **LANDSLIDES** and mud build up in the lower areas.





4. Turn off lights, and plug out some appliances when not in use.



5. Obey disaster warnings given by the authorities.



6. Tell others at school, home and work about **CLIMATE CHANGE**.

Thank you young man, you are very bright!

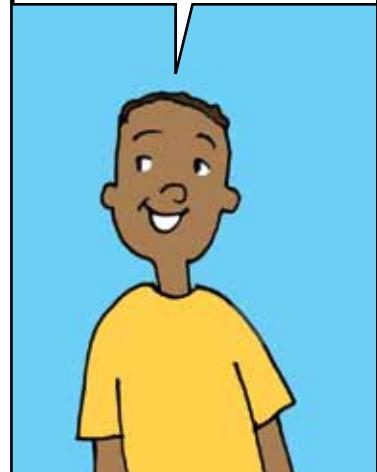


We also need to protect our natural environment. Do you know that Mount Kirkland Forest is home to the endangered yellow billed parrot?

Also, some of the plants in the forest can be used for medicinal purposes.



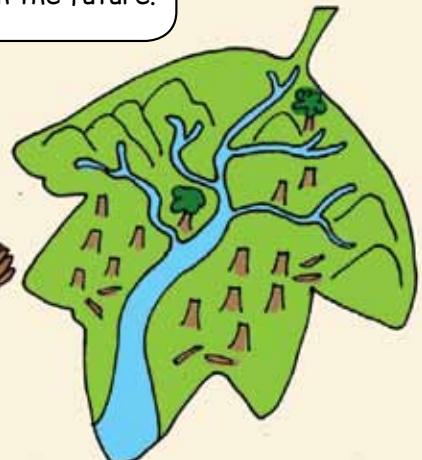
Don't allow it be destroyed by **CLIMATE CHANGE OR HUMAN ACTIVITY**.



Residents, we have learnt so much today, but what are we going to do, to ensure that we are prepared, if this happens again?



Wi have to plant back di tree dem weh chop down in di **WATERSHED** area, if wi want no more **LANDSLIDES** in the future.



We can provide you with the seedlings for replanting and guide you in the process.



It is illegal to cut trees from forest reserves. You can however get permission to cut from some areas in the management area. We can show you where and how to cut these trees.



You can also form a local forest management committee to watch over forest reserves and forest management areas.

I volunteer to set up this forest management committee and get permission to cut from certain parts.

I don't want anyone cursing mi fi dis kind of damage again!



All this sounds good!



So:
we will plan a day where we,

1. Plant the seedlings in the watershed area.

2. Mr. White has offered to start up the forest management committee, to ensure no one cuts trees from reserve areas.

3. We need to get permission from the Forestry Department, in terms of where persons can cut from and how to cut those trees.



There needs to be a balance between our eco-system, and livelihoods.

It's all about **SUSTAINABLE DEVELOPMENT!**



Was there anything else?



Yes! when wi get hurricane warnings from ODPEM, wi must listen to dem.



If wi living in a flood prone area, wi need to go to a shelter.



If wi thinking about building a house on the river bank or in the gully, wi not to do it!



ADAPTATION A WEH WI SEH!



THE END.



GOJ/EU/UNEP CLIMATE CHANGE ADAPTATION & DISASTER RISK REDUCTION PROJECT

Climate Change-We have to change!

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Danny and His Community Face Climate Change

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Our *CLIMATE* is changing because humans have increased the amount of *GREENHOUSE GASES* (GHGs) in the atmosphere. *GREENHOUSE GASES* are actually necessary, as they help to keep the earth's surface warm by trapping the earth's heat (*THE GREENHOUSE EFFECT*). Without this warmth the earth would be unbearably cold. When we burn fossil fuels to provide electricity for our homes and businesses or when we cut down trees, these actions release carbon dioxide ((CO₂) into the atmosphere. This makes the earth very, very warm (*GLOBAL WARMING*) and in turn causes our *CLIMATE* to change..

ADAPTATION is all about making places safer or doing the right things to protect against the negative effects of *CLIMATE CHANGE*. We can: a. Protect our *FORESTS* e.g. planting more trees, to replace those that were cut down especially in the watershed areas. b. Protect our Coast e.g. replanting mangroves and taking care of coral reefs. c. Be prepared for extreme weather events like storms by listening to important weather messages on the TV/ Radio.

HELP DANNY FIND THE WORDS IN THE CHART BELOW:



FIND - A - WORD

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

<i>CLIMATE</i>	<i>FUEL</i>	<i>ENDANGERED</i>	<i>FOREST</i>
<i>ADAPTATION</i>	<i>WATERSHED</i>	<i>GLOBAL</i>	<i>DEFORESTATION</i>
<i>FOSSIL</i>	<i>SPECIES</i>	<i>GREENHOUSE</i>	<i>DROUGHT</i>
<i>EROSION</i>	<i>LANDSLIDE</i>	<i>SUSTAINABLE</i>	<i>GAS</i>
<i>DEVELOPMENT</i>	<i>HURRICANES</i>	<i>RESERVE</i>	<i>WARMING</i>

ANSWER SHEET

O	E	S	U	O	H	N	E	E	R	G	M	R	R	O
S	G	P	O	B	A	L	L	S	N	L	A	E	E	L
L	N	E	L	S	P	E	C	I	E	O	C	S	Y	I
C	I	C	H	A	N	G	E	V	E	B	V	E	Z	T
S	M	I	O	D	E	R	E	N	G	A	A	R	Q	L
H	R	E	R	I	A	L	O	P	O	L	A	V	V	D
W	A	S	P	W	T	T	K	M	F	O	R	E	S	T
A	W	D	R	O	U	G	H	T	T	I	O	D	S	D
T	W	I	W	C	D	E	R	E	G	N	A	D	N	E
E	C	A	A	I	O	L	M	O	O	T	S	L	O	V
R	L	T	M	M	B	I	M	T	C	O	I	R	I	E
S	H	U	R	R	I	C	A	N	E	S	O	O	S	L
H	T	O	R	T	L	S	T	E	S	S	V	S	O	O
E	A	N	S	I	F	O	U	O	O	L	O	I	R	P
D	T	H	M	D	R	r	F	U	E	L	O	O	E	M
F	E	A	E	P	S	O	O	K	J	N	G	N	N	E
K	T	A	S	U	S	T	A	I	N	A	B	L	E	N
E	D	I	L	S	D	N	A	L	D	E	H	U	R	T
H	U	D	E	F	O	R	E	S	T	A	T	I	O	N
C	A	D	A	P	T	A	T	I	O	N	O	P	F	R



Glossary

Adaptation: involves adjusting natural and human systems to a new and changing environment (IPCC 2001). In this case, this new and changing environment is as result of changing climatic conditions. Adaptation therefore includes planting trees, restoring mangroves, rainwater harvesting, training persons in emergency management and leaving flood prone areas to stay at emergency shelters (Climate Change Resources for Jamaica Website).

Climate Change: Changes in the average state of the climate over long periods of time (IPCC 2007). These changes can be due to: (a) natural variations e.g. changes in the earth's orbit or (b) human activity which change the composition of gases in the atmosphere (e.g. burning fossil fuels such as oil, coal and gas for electricity).

Drought: A long period of time when there is little or no rain.

Deforestation: The act of cutting down or clearing trees from a forested area. This can be done to facilitate farming, housing developments or to extract lumber (The Free dictionary). Additionally, deforestation can also result from wildfire or tree diseases.

Endangered species: These are plants and animals at risk of becoming extinct. This could be due to hunting, habitat destruction, climatic conditions and changes in predator-prey ratios. (Dictionary.com)

Endemic: Something that is native to a particular country, region or culture e.g. plants, animals

Erosion: The wearing away of soil and rocks by wind and water. Erosion further increases when there is deforestation.

Fossil Fuel: Fuel such as coal, oil, or natural gas which come from the dead remains of plants and animals.

Forest Reserves: Sections of land in Jamaica, which are protected by the government for the purposes of conserving soil and water resources, providing parks and other recreational facilities for public use, protecting and preserving habitats, flora and fauna. Cultivation, grazing, burning and clearing of vegetation are prohibited or strictly regulated in these areas (Jamaica Forestry Department Website).

Global warming: A significant increase in the earth's average temperature due to increases in concentrations of greenhouse gases in the atmosphere. Greenhouse gases include: Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O) and Ozone (O₃). Global warming is also largely due to human activity (Climate Change Resources for Jamaica Website).

Greenhouse effect: Warming of the earth, due to the presence of greenhouse gases (CO₂, CH₄, N₂O and O₃) in the atmosphere, which trap heat **from the earth**, making earth habitable (Climate Change Resources for Jamaica Website).

Hurricane: An intense weather system (cyclone) with wind speeds of 74 mph or higher (National Oceanic and Atmospheric Administration). It consists of strong winds, heavy rains, and causes flooding. The Atlantic hurricane season runs from June 1st to November 30th each year.

Landslide: Movement of mass rock, debris or earth down a slope. This happens when gravity exceeds the strength of earth materials (Department of Geo-Science, University of Wisconsin- Madison Website)
Reforestation: the process of planting trees that were previously removed from forested areas (IPCC 2001).

Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development 1987). Sustainable development promotes a balance between the society, economy and environment as it relates to managing the earth's limited resources.

Watershed: An area of land where water drains from under it or on top of it, to the same place. This water then supplies streams, river and lakes. The Watershed area usually has a lot of trees and vegetation (United States Environment Protection Agency Website).

ADAPTATION A WEH WI SEH!

