FEDERATION STUDY DAY 2017

(To be used as close as possible to October 26th – Federation Constitution Founding Day)

Prepared by Ann Connan for the South Pacific Area

Theme: UN Sustainable Goals

- 13 Climate Action
- 14 Life Below Water
- 15 Life on Land

Worship Service

Call to Worship

Leader: Today we are called from the ends of the earth; from the diversity of race, culture, language, the poor, the rich, the joyful, the sorrowful. All gathered in one community to praise God the Creator.

It is God who has called us into life. How we live is our response to God.

Today God calls each of us to move within creation and bring joy and renewing love.

People: God calls me today

I will seek to explore the wonders of God's creation and participate in its renewal.

I will praise and worship God.

Hymn: *Choose a hymn about God's creation, such as:*

All creatures of our God and King
or
All things bright and beautiful
or
I sing the almighty power of God
or
Praise ye the Lord! It's good to raise

Reading of Genesis Chapter 1: *The Message* by Eugene Peterson is suggested

Play:

Reader 1: Yes, in the beginning

Reader 2: God made it all.

Reader 1: And God thought it very good.

Reader 2: And God created humans in God's own image

Reader 1: to take care of it all.

Group of 7 players: [*Surprised and excited*] We're in charge of it all.

Reader 2: God said to them: "I give you all the plants and seeds and fruits for your food."

Reader 1: And God did so; and it was very good.

Player A: All

Player B: that

Player C: God

Player D: made

Player E: was

Player F: very

Player G: good.

Player E: [*Emphasizing the past tense*] **WAS!**

All Players: We're in charge.

Reader 1: The earth is God's

Reader 2: and everything in it.

All Players: Don't care. Won't care. Couldn't care less!

Reader 1: God saw all that God had made and it was very good.

Human: Look at the view from this mountain top. It's breath-taking!

Reader 2: The Lord is God – in God's hands are the depths of the earth; and the mountains belong to God.

Human: But look what I've found in this beautiful spot so far away from human habitation: it's a crushed plastic bottle. [*Holds up bottle*]

All Players: Slurp. Slurp. Slurp. Slurp. [*All drop plastic bottles*]

Reader 1: The earth is God's and everything in it.

All Players: Don't care. Won't care. Couldn't care less.

Reader 2: God saw all that God had made and it was very good.

Human: This desert area was once a magnificent rainforest full of birds, butterflies, insects and animals. But now….

All Players: Dig. Dig. Dig. Chop. Chop. Chop.

Human: The minerals are gone. The timber is all harvested.

All Players: 5 4 3 2 1 BOOM!

Reader 1: The earth is God's and everything in it.

All Players: Don't care. Won't care. Couldn't care less.

Reader 2: God saw all that God had made and it was very good.

Human: This game reserve was once teeming with elephants but now only a handful remain: all the rest killed for their tusks.

All Players: [*Take shooting stance. Aim fingers.*] Kill! Kill! Kill! Bang! Bang! Bang! Dead! Dead! Dead! Money! Money! Money!

Reader 1: The earth is God's and everything in it.

All Players: Don't care. Won't care. Couldn't care less.

Reader 2: God saw all that God had made and it was very good.

Human: Walking through these beautiful green fields beside this gentle stream, how beautiful it is! But I hear this place is the site for a new airport with jet planes to carry tourists into these once beautiful places to be filled with hotels, noise and commercialism.

All Players: [*Zooming like planes over **Readers** who duck out of the way*.]

Reader 1: The earth is God's and everything in it.

All Players: Don't care. Won't care. Couldn't care less.

Reader 2: God saw all that God had made and it was very good.

Human: Last year I holidayed at this beautiful beach of golden sand and sparkling waters crashing over the coral. Today it is covered in oil, and dead fish lie everywhere. I don't know where to put my feet!

All Players: Throw it out! Toss it away! No more use!

Reader 1: God saw all that God had made and it was very good.

Reader 2: **WAS!**

Reader 1: Yes, we have lived in luxury and self-indulgence.

All Players: Don't care. Won't care. Couldn't care less.

Reader 1 & 2: God cares. God made the world. God so loved the world. God so loved the world God gave God's Son.

All Players: So, should we care?

Reader 1 & 2: Yes, the world was given to us to care for it all.

All Players: [*Kneel*] God, forgive us our sins.

Reader 1 & 2: Let us turn to God who made the earth and everything in it. **Amen.**

Hymn: (Adapted from Norman Habel's words)

Tune: *Morning has broken*

1. **Hear this Earth mourning deep in pollution.**
   Hear this Earth mourning, death in her lungs:
   "How I keep longing for that first morning,
   when all creation broke forth in songs."
2. **Hear the trees falling deep in the forest.**
   Hear the trees calling, tortured by saws:
   "Where is the bird-life, homes for all creatures,
   living in safety – not needing laws."
3. **Hear the creek crying, crying for justice.**
   Hear the creek crying over parched ground:
   "Drought, irrigation, taking my life-blood.
   Where is my water? Where is it found?"
4. **Hear the seas raging, raging in anger.**
   Hear the seas raging over the sand:
   "Why am I warming, rising to new heights,
   causing destruction, eroding the land?"
5. **Hear that man crying, crucified, dying.**
   Hear that man crying, gasping for breath:
   "Creation's suffering. You are its steward.
   With me there's healing – earth saved from death."

Information Segment / Study Time / Discussion Groups

Choose from the components below as most appropriate for your gathering and your location.

1. Have a speaker on the theme of *climate change*; *caring for the environment*; *re-use, recycle, reduce*.
2. View the DVD "An inconvenient Truth" - A Global Warning, by former USA Vice President, Al Gore.
3. Read and discuss downloaded information from the United Nations or World Council of Churches website on environmental issues and climate change.
4. Read the articles and stories below and discuss.

Articles

a) From Melbourne, Australia's, *The Age* Newspaper, July 25th, 2017

"**El Ninos could double with even moderate warming**

Extreme El Nino events will more than double in frequency, even with the most ambitious goals to curtail global warming, exposing large regions to severe droughts and placing coral reefs in peril, a team of scientists including Australians say.

In 2015, almost 200 nations signed the Paris Climate accord, agreeing to curb greenhouse gas emissions to prevent global temperatures warming more than 1.5-2 degrees [Celsius] compared with pre-industrial times. National pledges so far point to warming of closer to 3 degrees.

Even at the lower end of that range, which implies atmospheric levels of carbon dioxide will pea frequency k by about 2040-2050 before starting to decline, big El Ninos will still become twice as common as their natural frequency to an average of about 10 per century and continue to rise further, according to research published in Natural Climate Change.

During El Ninos, the eastern equatorial Pacific is unusually warm, triggering a reversal of trade winds and a shift in rainfall patterns that often have consequences - such as droughts in Australia and the Horn of Africa, heavy rain in South America - well beyond the region. During extreme events, most recently in 2015-16, impacts can intensify.

‘[During] big blockbuster El Ninos, if they happen more frequently, we can expect more damage and loss of life because of that,’ said Michael McPhadden, a senior scientist at the US National Oceanic and Atmospheric Administration and an author of the report that analyzed 13 climate models.

‘The number of [El Nino] might not necessarily increase but the stronger ones will get stronger,’ he aid.

Global mean temperatures [GMT] are already well on the way to the 1.5-degree warming mark, rising about 1 degree since the 1860-90 period.

Cai Wenju, a principal research scientist at the CSIRO [Australia’s Commonwealth Scientific and Industrial Research Organisation] and one of the paper’s lead authors, said the frequency of extreme El Ninos is beginning to emerge from the natural variability.

There have been four such events since 1950 compared with one in the previous half century.

‘To our surprise, if you stabilize GMT at 1.5 degrees, the extreme El Ninos continue to rise,’ Dr Cai said. ‘After that, the frequency of extremes rises another 40 percent’ to as often as one in every seven years before finally stabilizing.

Aiming for that 1.5-degree warming cap is still worthwhile not least because the frequency of severe El Ninos will increase even higher if temperatures climb higher, Dr Cai said.

Moreover, the flipside pattern, extreme La Ninas, do not increase in frequency at 1.5 degrees, the researchers found, but do so at higher warming levels. Complex circulation patterns mean the threshold for extreme El Nino events is more easily crossed with on-going warming than La Ninas.

‘El Ninos are more sensitive to greenhouse forcing than La Nina but you’ll reach a point where radiative forcing from excess greenhouse gas where both El Ninos and La Ninas will experience more extreme events,’ Dr McPhadden said.

Heat goes on

Apart from the regional impacts, El Ninos typically drive surface temperatures higher as the Pacific absorbs less of the excess heat being collected in the atmosphere from the additional greenhouse gases.

The past three years - 2014, 2015, and 2016, each broke annual records as the Pacific flirted and then fell into a full-blown El Nino. Even 2017 is likely to be among the hottest, with the first six months the second warmest on record, trailing only last year, NOAA said last week.

Impacts

La Ninas have their own negative impacts, including above-average numbers of cyclone in northern Australia, but the global effects of El Ninos tend to be worse, Dr Cai said.That’s even taking into account big floods in China in 1998 during a strong La Nina.

‘El Ninos tend to have huge area of drought and the impacts may be more long-lasting than floods,’ Dr Cai said. With droughts, farmers may miss out on several planting seasons and natural eco-systems can take longer to recover compared with floods.

El Nino years have also seen severe coral bleaching and mortality as the corals respond to excess heat by expelling the algae that provide them with the bulk of their energy.

As much as half of the Great Barrier Reef corals have died during the past two summers.

The Rising background temperatures from climate change mean the heat spikes during El Ninos can be expected to make coral bleaching more common in the future.

'You can envisage these kinds of impacts with the more frequent [extreme El Nino] events in the future,' Dr McPhadden said.

The recent bleaching 'was shocking how extensive it was, and how it affected so severely areas that had not been affected before', he aid.

'Can they adapt? If not, there re some hard times ahead.'"

b) From Time.com, July 07, 2017

"**The G20 Must defend the Paris Accord - For the Sake of Our Health**

"… The biggest impact of climate change will be on our health. Think of climate change as one big pre-existing [health] condition that we will all have.

Most… understand that climate change poses a threat, but that threat appears decades off, with unclear consequences. Yet climate change is already affecting our health and the health of our children. Unless we heed these early warning signs, we will endure even greater health impacts….

Governments are together spending billions of dollars a year to promote the production of fossil fuels - oil, gas and coal - that actively contribute to air pollution, premature deaths and climate damage that are already having major impacts on our health. G20 nations should work to phase out fossil fuel subsidies urgently. Additional revenue from the elimination of these subsidies will help governments, in rich and poor nations alike, fund programs that benefit health. In 2013 alone, air pollution from burning fossil fuels cost the United States economy billions of dollars in labor output loses (because people couldn't work productively or work at all) and even more in health care costs….

With more extreme storms and flooding - events like Hurricane Katrina and Hurricane Sandy - our healthcare system is going to have to make expensive preparations….

Perhaps most ominously, Americans and people across the globe are also at risk of exposure to infectious disease outbreaks. ….previously overlooked diseases can spread quickly and unpredictably as he geographic range of disease vectors such as mosquitos and ticks changes…. Although it is not possible to know with certainty when or what the next outbreak of the next [disease] outbreak will be, we would be foolish to ignore climate change's contribution to this deadly threat….

G20 countries will need to be the champions of climate action, to take the lead from the thousands of cities, regions, businesses and investors who have come forward with increased ambition to show their respect for the Paris Agreement…. When the science is strong that climate change will have devastating effects on our health, collective action and ambitious leadership are the only ways forward."

c) From "Charities in Action - Saving the Environment by Andrew Langley (2012), page 6

What are the major threats to the environment?

"The world's **ecosystems** are being damaged in many ways. Most of these ways are connected. Scientists agree that human activity is the main cause of the damage. Here are some of the biggest threats:

- *Climate change*: Earth's atmosphere is getting warmer, due partly to a buildup of c**arbon** gases. This causes ice caps to melt, leading to a rise in sea levels.
- *The energy crisis*: **Fossil fuels** (such as coal and petroleum) will soon run out. New and **sustainable** ways of generating energy will have to be developed.
- *Pollution*: Modern society produces chemicals and waste that poison soil, air, and water. Industry and agriculture are among the biggest polluters.
- *Population growth*: The world's population is growing faster every year. We need to produce more food and other essentials and also cope with more waste.

- *Disappearing farmland*: Climate change, pollution, and other factors are ruining large areas of land. These can no longer be used for growing food."

Page 58 **FACTS AND FIGURES**

"Climate change: Some facts

- Eleven of the last 12 years have been the hottest since 1850, when records began.
- Global temperatures have risen by 1.37 degrees Fahrenheit (0.76 deg
- degrees Celsius) in the past 150 years.
- The amount of carbon dioxide in Earth's atmosphere has risen by 35 percent since 1750 - the start of the industrial age.
- Sea levels have been rising by an average of 0.118 inches (3 millimeters) a year since 1993. This was due not just to melting ice caps, but also to the fact that the oceans are getting warmer and expanding.
- The area covered by sea ice in the Arctic has fallen by an average of 8 percent since 1987, an area of 400,000 square miles (1,036,000 square kilometers).
- The proportion of carbon dioxide in Earth's atmosphere has increased from 280 parts per million before the industrial age (c. 1700 BCE) to 382 parts per million in 2006. Most of the increase is due to human activity.
- During the period from 1900 to 2006, there was an increase in rainfall over North America, Europe, and northern Asia. But rainfall decreased over land between the tropics. At the same time, the Sahel region and southern Africa, as well as parts of southern Asia, became drier.
- There were 27 full-scale storms recorded during the Atlantic hurricane season of 2005. This is more than ever before.
- Since about 1700, the oceans have become more acidic. Scientists believe this is the result of increased carbon dioxide emissions due to human activity. This acidity restricts the growth of corals, shellfish, and other sea creatures."

b) From "Environment at Risk" by Louise Spilsbury, 2006. pp 6-7;14;21;22;27;36-37

"**{risks to the environment}**

Some risks to the **environment** are natural and gradual. Throughout the history of the Earth the environment has gradually altered as **climate** has changed. Climate is the usual weather in a place. For example, Antarctica has not always been a cold, icy place. Rocks found there suggest that 50 million years ago it was warm and covered in thick forest. Since then, as the climate has cooled, fewer types of plants and animals have managed to survive in Antarctica. Many have died out or been forced to move elsewhere.

Sudden natural changes

Some natural changes to the environment are sudden. Natural risks include **earthquakes, floods** and **volcanoes**. When a volcano goes off or **erupts**, it instantly transforms the environment around it. It may throw tonnes of scalding ash and poisonous gases into the air. Rain eventually washes the ash and gas back to earth. This chokes and poisons rivers and kills plants and animals. Rivers of red-hot melted rock called lava may rush down slopes of a volcano when it erupts. Lava burns away everything in its path and forms a new layer of rock as it cools.

Slow and fast pollution

Just like natural risks, **pollution** can change environments gradually or suddenly. For example, each time farmers spray bug-killing pesticides called **pesticides** on their crops, some falls on the soil. When it rains, some of this pesticide is washed from the soil into a nearby river. Gradually the amounts of pesticide in the river grow until they harm the fish and other living things in the river.

Single, sudden pollution events can have equally damaging effects. Imagine a clean river in which a factory dumps tonnes of poisonous chemicals to get rid of them. Within minutes, hours and days, nearly all life in that river might be at risk."

“**{rising temperatures}**

Apart from providing the air we need and protecting us from **ultraviolet radiation**, the **atmosphere** plays another important role. It helps to control the temperature on Earth. Rather like the glass in a greenhouse, the atmosphere lets in heat from the Sun and stops some of it from escaping. It traps heat next to the Earth’s surface. The problem is that **pollution** in the atmosphere is making it trap more heat. The Polluting gases responsible are **carbon dioxide** and carbon monoxide. They are produced when people burn **fossil fuels**.

A warmer planet

The trapped heat seems to be warming up **climates** around the world. This is called **global warming**. Global warming has lots of effects on parts of the **environment**. In some places, such as in Antarctica or up high mountains, the extra heat is melting ice.In other places new animals, such as disease-carrying insects, are moving in. They are moving in because these places are now warm enough for them to survive. Hotter weather is drying up trees so much that they catch fire far more easily. This means that severe forest fires are more likely.”

“Polluted seas

About three-fifths of our planet is covered in seawater. Because the oceans are so wide and deep, people think that waste cannot pollute them. They think the problem will just dissolve or float away in the water. But the world’s ocean environment is being polluted. Some pollution comes directly from the growing number of cities along the world’s coasts. Some pollution washes down rivers into the sea. Some is dumped from ships.”

“**{case study} the Mediterranean**

When most people think of the Mediterranean Sea, they think of beautiful coastal villages and swimming in their clear turquoise water. What they usually do not imagine is a **polluted** sea that in places is even more dangerous to swim in. Some pollution is caused year round by towns, farms, and factories around the Mediterranean coast. But most pollution is caused by tourists.

Tourism pollution

Tourism is a really important industry for Mediterranean countries such as Spain, Italy, Greece, and France. Thousands of people make money when visitors buy their souvenirs, stay in their hotels, or eat in their restaurants. But each summer the number of visitors doubles the coastal **population** of the Mediterranean and this causes problems.

Each extra visitor creates more pollution. For example, waste water from sinks, baths, showers, dishwashers, and toilets is flushed straight into the sea. The **sewage** contains dangerous amounts of **bacteria** that can sometimes cause serious diseases. It also contains chemicals called nitrates. These encourage the growth of green slime in the water, which not only looks bad but can also damage seaweeds and the animals that eat them.

Growing problem

Poisonous substance, such as mercury, dumped in the Mediterranean Sea by factories and ships, are also causing pollution in some parts of the sea. When fish and shellfish eat small amounts of poison it may not harm them. But when seals or people eat lots of fish, the poison can then build up inside them, making them sick.”

“**{the effects of oil pollution]**

… **Not just tankers!**

Big oil spills at sea are the most obvious type of oil pollution in the sea…. most oil pollution has nothing to do with oil spills from **oil tankers** or pipes. Some oil pollution happens when people clean out ships at sea. Some happens when rain washes oily smoke from the air into the sea. Some happens when oil naturally seeps from rocks.”

“**{the world’s wild places}**

Where in the world does waster **pollute**? The answer is almost everywhere. The worst effects of waste pollution are often where people live. But waster effects even wild places, the remotest parts of Earth where very few people live.

Some waste that is dropped from ships or blown off land washes around the world's oceans. Much of this waste, such as chunks of polystyrene, plastic bottles, and ripped fishing nets, is not

biodegradable. This kind of waste can also harm marine animals. For example, dolphins and seals get tangled in old nets and then may not be able to hunt for food.Floating waste may wash up on shores hundreds of kilometres from where it was dropped. The beaches of even the tiniest uninhabited islands in the middle of the Pacific Ocean, such as Henderson Island, are dotted with litter.

Parting gift

Visitors leave waste in wild places. Some people visit wild places to work, for example to find new supplies of oil or timber they need. Tourists visit wild places to get close to amazing wildlife, scenery, and different cultures. Some of these visitors leave waste such as used bottles and cooking gas cylinders, broken flip-flops, and empty suncream tubes. It looks horrible and also leaves a problem for others o clean up."

c) From "Planet Under Pressure - Waste" by Clive Gifford (2006) page 41

"**The things you can do to reduce waste**

- Try to buy fruit and vegetables with as little packaging as possible.
- Take carrier bags with you when you go shopping rather than use new bags.
- Don't throw away clothes, toys and other goods. Take them to thrift stores, charity shops, and special recycling programmes.
- If you want to buy an item, consider buying second-hand from adverts on line or in newspapers, or from second-hand stores and charity shops.Re-use items whenever you can. For example, cut down old cereal boxes to use as document holders and reuse drinks bottles for packed lunches.
- Learn about your area's recycling schemes and reuse as much of your family's… waste as possible.
- Buy and use rechargeable batteries and fit energy efficient light-bulbs.
- Start a composting system in your garden….
- Remove tops from plastic bottles and containers and crush them before depositing them at a recycling centre. This reduces the amount of space they take up which helps save on transport costs.
- Look at ways of using less water - by taking showers instead of baths and always turning off taps.

d) "38 million pieces of plastic waster found on uninhabited South Pacific island" from the Guardian, May 16th, 2017

… Henderson Island, a tiny landmass in the eastern South Pacific, has been found by marine scientists to have the highest density of anthropogenic debris recorded anywhere in the world, with 99.8% of the pollution plastic.

The nearly 18 tonnes of plastic piling up on an island that is otherwise mostly untouched by humans have been pointed to as evidence of the catastrophic, 'grotesque' extent of marine plastic pollution….

The majority of the debris - approximately 68% - was not even visible, with as many as 4,500 items per square metre buried to a depth of 10 cm. About 13,000 items were washed up daily.

Jennifer Lavers, of the University of Tasmania's institute for marine and antarctic studies,.. found hundreds of crabs living in rubbish such as bottle caps and cosmetic jars, and has been told of one living inside a doll's head….

'This plastic is old, it's brittle, it's sharp, it's toxic. It was really quite tragic seeing those gorgeous crabs scuttling about, living in our waste.'

The largest of the four islands of the Pitcairn Island group, Henderson Island is a [UNESCO] Heritage Listed site and one of the few atolls in the world where ecology has been practically untouched by humans….

Lavers said her findings had proved to her nowhere was safe from plastic pollution. ‘All corners of the globe are already impacted.’…

The state of Henderson - ‘the most polluted, most remote island in the whole world’ -was indicative of the extent of the problem, and the ‘absolutely mind-boggling’ rate at which plastic was being produced globally….

‘Across the board, no county got a free pass on this - we found bottles from Germany, containers from Canada, I think it was a fishing crate from Zealand. What that says is we all have a responsibility in this, and we have to sit up and pay attention to that.’…

In February, scientists reported ‘extraordinary’ levels of toxic pollution in the Mariana Trench, with plastic waste facilitating the spread of industrial chemicals to one of the most remote and inaccessible places on the planet….

Laver said individuals and governments had a part to play in reducing the amount of plastic polluting the world’s oceans, but the key was urgency.

‘For me, marine plastic pollution is the new climate change, but I would like for us to not make the same mistakes. We've been arguing about climate change, and whether it exists and what is changing, for the best part of 40 years …

Let’s not wait for more science. Let’s not debate it. The rate of plastic in our oceans is absolutely phenomenal, and we need to do something now.’

e) “The Great Plastic Garbage Patch” - Wikipedia

“The **Great Pacific garbage patch**, also described as the **Pacific trash vortex**, is a gyre of marine debris in the central North Pacific Ocean discovered between 1985 and 1988. It is located roughly between 135°W and to 155°W and 35°N and 47°N. The patch extends over an indeterminate area of widely varying range on the degree of plastic concentration used to define the affected area.

The patch is characterized by exceptionally high relative concentrations of pelagic plastics, chemical sludge and other debris that have been trapped by the currents of the North Pacific Gyre. Its low density (4 particles per cubic meter) prevents detection by satellite photography, or even by casual boaters or divers in the area. It consists primarily of a small increase in suspended, often microscopic, articles in the upper water column….

A 2017 study conducted by scientists from the University of California, Santa Barbara, and the University of Georgia, concluded that of the 9.1 billion tons of plastic produced since 1950, close to 7 billion tons are no longer in use. The authors estimate that only 9 percent got recycled over the years, while another 12 percent was incinerated, leaving 5.5 billion tons of plastic waste to litter the oceans or land.

Another recent Australian study focused on the high rate of seafloor plastic pollution, thereby highlighting an often overlooked aspect of oceanic plastic pollution. The researchers from the Institute for Marine and Antarctic Studies at the University of Tasmania stated that ‘while the huge volume of plastic debris accumulating in the world’s oceans and on beaches has received global attention, the amount of plastic accumulating on the seafloor is relatively unknown….

The size of the patch is unknown, as is the precise distribution of debris, because large items readily visible from a boat deck are uncommon. Most debris consists of small plastic particles suspended at or just below the surface, making it difficult to accurately detect by aircraft or satellite. Instead, the size of the patch is determined by sampling. Estimates of size range from 700,000 square kilometres (270,000 sq mi) (about the size of Texas) to more than 15,000,000 square kilometres (5,800,00 sq mi) (0.4% to 8% of the size of the pacific Ocean), or, in some media reports, up to ‘twice the size of the continental United States’. Such estimates are, however, conjectural given the complexities of sampling and the need to assess findings against other areas. Further, although the size of the patch is determined by a higher-than-normal degree of concentration of pelagic debris, there is no standard for determining the boundary between ‘normal’ and ‘elevated’ levels of pollutants to provide a firm estimate of the affected area…”

f) The Pacific Peoples’ Story

Tuvalu is likely to be the first nation to have climate refugees. Already with rising sea levels, sea-water has moved several metres inland from the former coast and forced home owners to move. A small coral atoll nation, Tuvalu has no high ground to which its people might re-locate. The small amount of farmland is already affected by encroaching sea-water.

Kiribati, on the Equator, is in a similar position.

Low-lying islands of the middle group of islands of Tonga, Ha'apai, suffer similarly at high tides. A sea-wall has already been built on the main island of Tongatapu to keep back rising seas.

Hurricanes around the South Pacific are more frequently occurring outside the traditional hurricane season, and are much stronger and more devastating than in the past.

5. Invite your Local Government Council to provide information / a speaker on what it is doing for environmental sustainability.

6. Discussion and Practical Action

   a) Provide groups with a paper bag containing :

      - sheet of paper used on one side;
      - polystyrene coffee cup;
      - plastic bag;
      - used stamp;
      - newspaper;
      - "junk" / advertising mail;
      - vegetable / fruit pealing;
      - leaves;
      - glass jar;
      - plastic bottle;
      - drink can;
      - old clothing.

   Discuss how these items could be re-used, recycled, or replaced to benefit the environment.

   Discuss what your family does, your church does, your town/village does.

7. Ongoing Research and Action

   i. <u>Water Use</u>

      a. Research the amount of water used in making products so you can avoid those made with an intensive use of water.
      b. Investigate installing a rainwater system to flush the toilet and for washing.
      c. Turn off the tap while brushing teeth.
      d. Save the shower water to flush the toilet. Have short showers.
      e. Wash your car, using a bucket - not a hose.
      f. Only do full loads of washing, if using an automatic washing machine.
      g. Only run the dishwasher when full.

   ii. <u>Energy Use</u>

      a. Consider solar electricity.
      b. Research the energy used in manufacturing goods and the transport of those goods and buy appropriately.

c. Buy energy-efficient appliances.
d. Hang clothes to dry in the sun - don't use the dryer.
e. Use eco light bulbs.
f. Only heat or cool the room you are using.
g. Improve your home's insulation.
h. Don't leave appliances on stand-by.

iii. Reducing Waste

a. Don't buy items with more than one wrapping.
b. Buy second-hand where possible.
c. Don't use plastic bin-liners: wash out the bin.
d. Use only biodegradable detergents.
e. Compost your kitchen and garden waste.
f. Use organic products in your garden (fertilizers, pest control, companion planting).

iv. Shopping Thoughtfully

a. Research the environmental records of companies from whom you buy.
b. Write to your government about improving food labelling information.
c. Make a list before shopping to avoid buying things you do not need.
d. Cook from fresh rather than processed food.
e. Buy from and take goods to second-hand / charity shops.
f. Repair and re-use, rather than replace.

* On your return from your study / learning / discussion time sing one of the hymns from the suggestions at the beginning of the worship service.

Prayers of Praise and Confession

Leader: Living, loving God, the sights and the sounds of this world, the smells and the touch of this world are the things for which we thank you. They are a gift; they are a delight; they make our living richer and fuller. They stand as witnesses to your masterful creativity.

All creation shouts out your glory and nature sings her tuneful song.

But despite the beauty in which we bathe; despite the breathtaking canvas which surrounds us whenever we open our eyes - we have not behaved as we should.

Voice 1: *We have disrespected the very gifts made for our pleasure. And our planet is under threat.*

Voice 2: Earth is raped mercilessly and prevented from releasing her bounty.

Voice 1: *Many go without, while others say, "I must always have more."*

Voice 2: Nature's balance and creation's provision are used and abused.

Voice 1: *God, forgive the stupidity of it.*

Voice 2: Forgive the greed, the grasping, the storing up, the lack of generosity.

Voice 1: *Turn us around.*

Voice 2: Make us see sense.

Voice 1: M*ake us more careful.*

Voice 2: Give us the wisdom to treat the earth and its people as the most precious things.

Voice 1: *Your kingdom, and not ours, come on earth.*

Voice 2: Your kingdom come, because your will, and not our own, is the only sensible way.

Voice 1: *Your kingdom come in care and carefulness.*

Voice 2: Your kingdom come - and let it come quickly: for the earth has had enough. Amen.

Pledge to Creation:

We, who know the love of the Creator through the life, death and resurrection of Jesus, the Christ, are called:

- **to honour earth as the one place in the universe which God has chosen to dwell;**
- **to respect creation as inter-connected living relationships held together by the power of God in the rhythm of life;**
- **to love earth completely as God did by sending God's only Son Jesus to reconcile all things on earth with God;**
- **to oppose those powers which plunder the limited resources of this planet for profit and take food from the poor to feed the greed of the rich;**
- **to suffer with our weakening earth as we listen to the cries of pain from its forests, its rivers, its farmlands, its oceans and its atmosphere struggling against the forces of death;**
- **to celebrate the hope of the earth as it resists the poisons that threaten its life, the pollution that denigrates its goodness, and recovers from nuclear explosions and deforestation;**
- **to care for the earth as a family cares for each member – not dominating or merely using as objects – but respected because all parts are beloved creations of God.**
- **And to all this we say a resounding YES!**

Offering

During this Study Day Worship an offering, as part of our commitment
to be good stewards of all God has given us, is to be received.
This offering is the Unit's / Area's annual gift to the Federation's work.
It is to be sent to the World Treasurer
(contact world.treasurer@wfmucw.org for banking details)
or give to the World Treasurer at the Area Seminar or World Assembly.

Closing Hymn*:* "How great thou art"

Blessing:

Voices 1 and 2 carry bowls of water through the gathering,
each dipping a small branch into the water and sprinkling the heads of the worshippers.

Leader: May the moist breath of God and the life-giving water of Jesus flow through your lives and flow through this earth.

May they bring healing and hope where there are wounds and brokenness in skies above and earth below, in cities and villages, hills and plains, mountains and forests, deserts and seas.

Go in peace, serving God, each other and all creation. Amen.