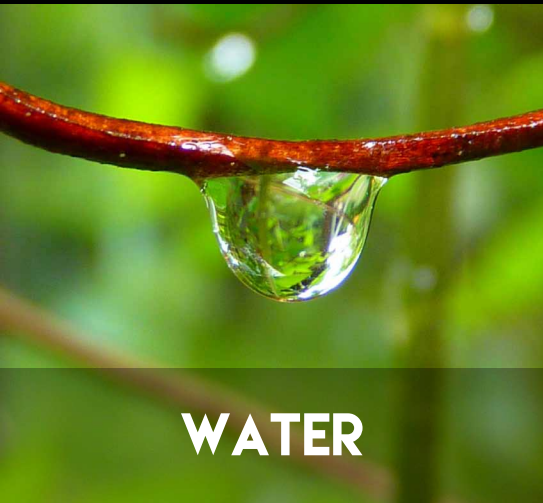




# FAITH AND THE ENVIRONMENT

toolkit

2015 EDITION



WATER



BIODIVERSITY



FOOD WASTE

# WORDS TO SHARE

This **Faith and the Environment Toolkit** is designed and developed by **Community Environment Alliance** as a resource for the **Greening Sacred Spaces** (GSS) project. GSS is a practical program developed by Faith & the Common Good to assist faith communities with environmental initiatives.

This toolkit was created to educate, empower and enable faith communities to take action on the sacred systems and resources that make up our environment and influence our sustenance. Leaders and members of faith have the opportunity to positively impact their community. We hope this 'toolbox' empowers them to address pressing environmental and sustainability concerns with their congregations. We also hope that it will inspire and enable '*Change Leaders*' in protecting and healing Mother Earth.

The toolkit focuses on three important and relevant topics that touch us all - **Water, Biodiversity and Food Waste**. As it helps build awareness about these issues, it is our hope that it will also facilitate and inspire change actions that each one of us can take to do our part in preserving the sacredness of this planet.

Working with diverse faith organizations we realize and recognize that inspiring or leading change is not a simple endeavour. Difficulty to reach out to congregation members, limited financial resources, lack of control over worship space, time commitment and manpower constraints – can make implementing greening initiatives challenging. Further, environmental concerns are complex and multifaceted. Garnering support to appreciate relevant issues or explore novel concepts can also be arduous. We found that these barriers could be overcome following a strategy of collective engagement and wider collaboration.

When passion meets conviction, the opportunities are endless!

This toolkit has been created to aid diverse faith communities on their passionate path to safeguard creation with a faith based approach. We hope that it helps everyone along the journey – from a congregation that is just starting, to one who has progressed with commitment, to a seasoned change leader continuing treading the path with dedication.

“ *We live in a disposable society. We throw so much away. But it doesn't come from nowhere. It comes from the planet and it comes from future generations' lives.* ”

- Julia Butterfly Hill

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# FOREWARD

Sustainable development in the face of climate change poses an enormous challenge for our generation, and perhaps generations to come. Numerous scientific studies and models demonstrate that our climate is rapidly changing with disruptive impacts, and that the change is progressing faster now than observed in the past 2000 years. While short-term climate variation is normal, current long-term patterns and changing trends indicate a changing climate. We have been witnessing the impacts of changing climate patterns here in Canada and around the world.

One of the greatest concerns associated with climate change is the anticipated increase in the frequency of extreme weather events. The Polar Vortex in January 2014 (impacting from midwest USA to Canada), snowing in Cairo in December 2013, Typhoon Hainan in November 2013 (causing havoc in Philippines), Super Storm Sandy in October 2012 (impacting from Maine in the USA to Cuba, Jamaica, Bahamas), the severe snow cover ever

in Russia in April 2013, the Cloudburst in Uttarakhand in June 2013 (claiming more than 5700 human lives in India along with massive environmental devastation and human health crisis) - and the list goes on. Many of us have personal experiences of the damaging consequences of these extreme weather events on the economies, human health and the environment.

Climate patterns play a critical role in shaping the natural ecosystems surrounding us and vice versa. Our transforming actions to the planet impact climate, emphasizing the interconnectedness of systems and how complex these induced changes really are. These changes have touched biodiversity, synchronized pollination of crops, spawning of fish, water supplies for drinking and irrigation, forest health, and more. Food production is another critical concern; we have already felt it indirectly with higher food costs. Also to consider is the sustenance of traditional and vernacular economies at a local, regional and global level, and public health risks.

# FOREWARD

More and more faith organizations around the world are taking active and leadership roles in healing the planet. Recognition and enhancement of faith based values that promote caring for the creation and inspire environmental citizenship is an important step in addressing the global environmental crisis. Building collective conscience and promoting collective action for a fair, just and equitable world is not an option; it is an imperative of our time. Sustainable progress of humans and that of the humanity entails all faith organizations to pledge to faith based actions on Sustainable Development and Millennium Development goals.

This toolkit is envisioned to serve as a handbook for faith organizations willing to embark on and embrace environmental consciousness with developmental action within their congregation. While this inaugural edition has been designed to enable faith organizations to learn about and take action on water, biodiversity and food waste – it is our belief that it will be an equally valuable tool for individuals, agencies and community

groups committed to environmental stewardship. We hope that the toolkit will help transform the learning into action-oriented projects for a better tomorrow.

Let us celebrate together the beauty of nature and its wonders. Let us embrace the vision and the way of living that teaches love and compassion to all; a vision and a way of living that promotes peace, prosperity and happiness for all; a vision and a way of living that promotes fairness and equitable society. This vision and the way of living will enhance our connection to the sacredness of the Creation, and guide us in shaping a world for future generations to enjoy its glory, nurture its beauty, experience its wonders and share its bounty with generations to come.

Sincerely,



Ranjana Mitra  
Executive Director  
Community Environment Alliance

# ACKNOWLEDGEMENTS

Community Environment Alliance gratefully acknowledges the financial support provided by the Ontario Trillium Foundation to help us create this toolkit.

We express our sincerest thanks to David Leeder, Nancy Stevenson, Lucy Cummings, Lisa Seiler and Jennifer Dockstator for their valuable guidance.

We would also like to share our sincere appreciation to Leslie Adams of P.O.W.E.R Halton for assisting with the content development on Biodiversity.

A special thanks to the Fo Guang Shan Temple of Toronto and Sai Dham Canada for being leaders in implementing components of this resource.

Finally, we would like to express our appreciation to the following faith communities and organizations who have worked with us over our three year journey. From them, we have discovered new opportunities to drive change.

Bharat Sevashram Sangha	Etobicoke, ON
Buddha's Light Centre	Markham, ON
Buddha's Light International Association	Greater Toronto Area
Dar Al-Tawheed Islamic Centre	Mississauga, ON
Fo Guang Shan Temple of Toronto	Mississauga, ON
Greening Niagara Committee, Anglican Diocese of Niagara	
Interfaith Council of Peel	
Islamic Centre for North America	Mississauga, ON
Islamic Circle of North America Sisters Canada	Mississauga, ON
Khalsa School Malton	Malton, ON
Masumeen Islamic Centre	Brampton, ON
MIAG Centre for Diverse Women & Families	Mississauga, ON
North Bramalea United Church	Brampton, ON
Religious Diversity Youth Leadership Project, Multi Faith Centre	University of Toronto
Sai Dham Canada	Malton, ON
Trinity United Church	Acton, ON
Unitarian Congregation in Mississauga	

## HELPFUL HINTS

1

At the end of each section in the Faith and the Environment Toolkit is the opportunity to **take notes** and to **mind map** how you and your faith community can move towards action.

We promote conserving paper and will be more than happy to email you digital copies of these worksheets so that printing can be avoided.

Please contact us by phone at 905.463.9941 or by email at connect[at]communityenvironment.org to request your copy of these digital worksheets.

The following resources can be used to learn more about mind mapping:

[www.mindmapfree.com](http://www.mindmapfree.com)

[www.mindmapping.com.au/How\\_To\\_Mind\\_Map.html](http://www.mindmapping.com.au/How_To_Mind_Map.html)

2

CEA would be happy to partner with faith organizations, individuals and agencies inspired to take stewardship actions. If you need support or have any questions, please do not hesitate to contact us at **905.463.9941** or through our website [www.communityenvironment.org](http://www.communityenvironment.org).

# GOD COMPREHENDS THE CITY FOLK

**GOD:** Francis, you know all about gardens and nature. What in the world is going on down there? What happened to the dandelions, violets, thistle and stuff I started eons ago? I had a perfect, no-maintenance garden plan. Those plants grow in any type of soil, withstand drought and multiply with abandon. The nectar from the long lasting blossoms attracts butterflies, honey bees and flocks of songbirds. I expected to see a vast garden of colors by now. But all I see are these green rectangles.

**ST. FRANCIS:** It's the tribes that settled there, Lord. The Suburbanites. They started calling your flowers "weeds" and went to great lengths to kill them and replace them with grass.

**GOD:** Grass? But it's so boring. It's not colorful. It doesn't attract butterflies, birds and bees, only grubs and sod worms. It's temperamental with temperatures. Do these Suburbanites really want all that grass growing there?

**ST. FRANCIS:** Apparently so, Lord. They

go to great pains to grow it and keep it green. They begin each spring by fertilizing grass and poisoning any other plant that crops up in the lawn.

**GOD:** The spring rains and warm weather probably make grass grow really fast. That must make the Suburbanites happy.

**ST. FRANCIS:** Apparently not, Lord. As soon as it grows a little, they cut it-sometimes twice a week.

**GOD:** They cut it? Do they then bale it like hay?

**ST. FRANCIS:** Not exactly, Lord. Most of them rake it up and put it in bags.

**GOD:** They bag it? Why? Is it a cash crop? Do they sell it?

**ST. FRANCIS:** No Sir. Just the opposite. They pay to throw it away.

**GOD:** Now let me get this straight. They fertilize grass so it will grow. And when it does grow, they cut it off and pay to throw it away?



# GOD COMPREHENDS THE CITY FOLK

**ST. FRANCIS:** Yes, Sir.

**GOD:** These Suburbanites must be relieved in the summer when we cut back on the rain and turn up the heat. That surely slows the growth and saves them a lot of work.

**ST. FRANCIS:** You aren't going to believe this Lord. When the grass stops growing so fast, they drag out hoses and pay more money to water it so they can continue to mow it and pay to get rid of it.

**GOD:** What nonsense. At least they kept some of the trees. That was a sheer stroke of genius, if I do say so myself. The trees grow leaves in the spring to provide beauty and shade in the summer. In the autumn they fall to the ground and form a natural blanket to keep moisture in the soil and protect the trees and bushes. Plus, as they rot, the leaves form compost to enhance the soil. It's a natural circle of life.

**ST. FRANCIS:** You better sit down, Lord. The Suburbanites have drawn a new

circle. As soon as the leaves fall, they rake them into great piles and pay to have them hauled away.

**GOD:** No. What do they do to protect the shrub and tree roots in the winter and to keep the soil moist and loose?

**ST. FRANCIS:** After throwing away the leaves, they go out and buy something which they call mulch. They haul it home and spread it around in place of the leaves.

**GOD:** And where do they get this mulch?

**ST. FRANCIS:** They cut down trees and grind them up to make the mulch.

**GOD:** Enough. I don't want to think about this anymore. St. Catherine, you're in charge of the arts. What movie have they scheduled for us tonight?"

**ST. CATHERINE:** "*Dumb and Dumber*", Lord. It's a really stupid movie about.....

**GOD:** Never mind, I think I just heard the whole story from St. Francis.

- *Author Unknown*

## INTRODUCTION

# The Blue Planet

### DID YOU KNOW THE NICKNAME FOR EARTH IS THE BLUE PLANET?

Since **70%** of the Earth's surface is covered in water, it can be easy to understand why. However, what may seem as an abundance of water is not actually the case when considering that **97%** of Earth's water is salt water - water that people cannot drink.

#### The remaining 3% is freshwater which we need for:

- Drinking
- Bathing
- Cooking and growing food
- Providing food like fish
- Providing energy to homes through dams
- Transporting goods by barges

Even more remarkable is that only 1% of this freshwater is accessible to humans! The remaining freshwater is 'locked up' in frozen glaciers

### DID YOU KNOW?

*70% of our available freshwater is used for agriculture.*

### THIS VITAL RESOURCE IS LIMITED

Combined with a growing human population, 66% of people around the world are projected to live under water-stressed conditions by 2025.

**Source:** [www.unwater.org/downloads/waterquality\\_policybrief.pdf](http://www.unwater.org/downloads/waterquality_policybrief.pdf)

# HIDDEN WATER

Consider this...

WE MAY ALREADY BE SAVVY IN CONSERVING OUR LIMITED FRESHWATER RESOURCES.



**TURNING OFF**  
the tap when  
we brush our  
teeth



**TAKING**  
shorter  
showers



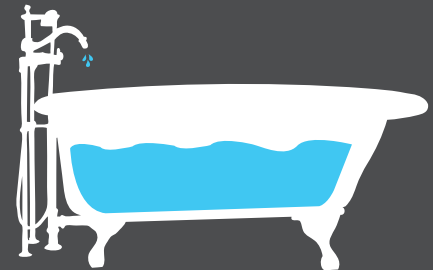
**PURCHASING**  
water efficient  
appliances

**BUT HAVE YOU EVER CONSIDERED THAT WE WASTE WATER WHEN WE THROW AWAY AN UNFINISHED APPLE?**

**CIRCLE**  
THE ACTIVITY  
THAT USES  
MORE WATER:



GROWING AN APPLE



FILLING A BATH

Now write down the steps needed to produce one apple. Start from the beginning: from growing a seed up to the moment you eat it.

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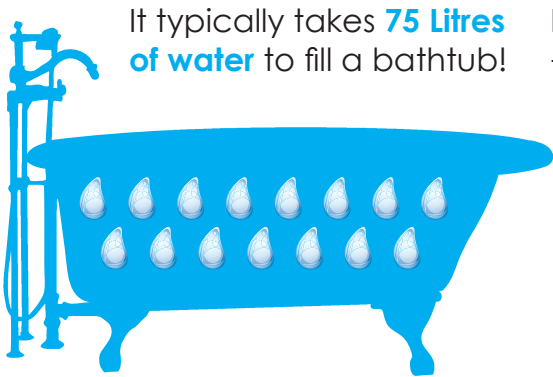
How many steps required water?



**TIP BOX**

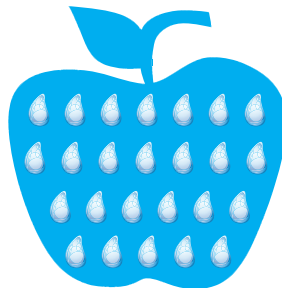
Fill your garden with plants that are native or originally from your area as they are suited for the local weather. If they are drought tolerant, frequent watering may not be necessary which means you save water and money!

# HIDDEN WATER



It typically takes **75 Litres of water** to fill a bathtub!

It takes **125 Litres of water** to produce one apple!\*



## LEGEND

 = 5 Litres of water

\*For an average apple of 150 grams. Water usage includes surface water, groundwater and rainwater consumed, as well as the amount of freshwater required to dilute any pollutants used to produce the food item.

### Sources

Mekonnen, M.M. and Hoekstra, A.Y. (2010) The green, blue and grey water footprint of crops and derived crop products, Value of Water Research Report Series No. 47, UNESCO-IHE, Delft, the Netherlands.  
[www.hydroone.com/MyHome/SaveEnergy/Tips/Pages/HotWater.aspx](http://www.hydroone.com/MyHome/SaveEnergy/Tips/Pages/HotWater.aspx)

Thinking about how much water we use goes beyond **direct usage** for personal needs and wants. It also includes the Hidden Water required to:

- **Grow** the food we eat
- **Produce** the energy we use
- **Manufacture** everyday products, like books, cars, furniture and clothes

### DEFINITION BOX

#### WATER FOOTPRINT

*the amount of water used to produce each of the goods and services we use.*



We may not see the **water footprint** of every item we purchase; hence, the term Hidden Water. However, somewhere during their lifespan, our precious freshwater was used to make them.

## Make a difference

**WE CAN EASILY INCREASE OUR 'WATER SAVVINESS' BY REUSING OR REHOMING ITEMS BEFORE THROWING THEM IN THE TRASH OR RECYCLING BIN. BY REUSING WE GAIN MORE USE OF THE FRESHWATER ALREADY USED. HERE ARE SOME SIMPLE WAYS TO BE WATER SAVVY:**

### TRY MEATLESS MONDAYS.

Eating animal products contributes to more than one-quarter of humanity's water footprint. This footprint consists of the water animals drink *but the majority of it goes to produce the food the animals eat* (Hoekstra 2012).

Difference between a Meat-eating and Vegetarian Diet in Terms of Water Use	
 <b>Non-Vegetarian</b>	 <b>Vegetarian</b>
15 000 Litres a day	12 700 Litres a day

<sup>1</sup>Based on average values for a person living in the United States or the European Union.

If you do eat meat, consider going vegetarian one day of the week, a great way to reduce our water footprint! Meatless Mondays is a global campaign that aims to reduce meat consumption by 15% to help our health and the planet's. To help get started on cutting out meat once a week visit [www.meatlessmonday.com](http://www.meatlessmonday.com) or visit [www.veg.ca](http://www.veg.ca) to check out the Toronto Vegetarian Association's website for local information on vegetarian restaurants and other helpful resources.

### Source

Allan, T. 2011. *Virtual Water: Tackling the threat to our planet's most precious resource.*

## HIDDEN WATER

# Make a difference

### ● REDUCE FOOD WASTE.

92% of our water use is hidden in our food (the water needed to grow our food). Can you believe we waste one third of our food? This is a lot of water wasted down the figurative drain! Reducing food waste means we conserve our precious freshwater.

### ● WHEN BUYING, THINK REUSABLE OVER DISPOSABLE.

For example, using a refillable water bottle for personal use or reusable cups and glasses helps save water and reduce waste.

### ● BE AWARE AND CONSUME WISELY.

Learn how much water is needed to produce everyday food items using the website [www.waterfootprint.org/en](http://www.waterfootprint.org/en). Knowing how much water went into producing your apple or the ketchup on your plate may help us realize how large our daily Water Footprints can get!

### ● PLAY A GAME.

If you want to share the concept of Hidden Water in an interactive method, try playing a game! A simple guessing game asking participants how much water is used to produce everyday food items could be played. For example, go to the website [www.waterfootprint.org/en](http://www.waterfootprint.org/en) and view the product gallery. You can create simple index cards that have the name of the food on one side and the amount of water to produce it on the other. Children and youth can use their creativity to draw in creating the cards as well!

### ● CREATE A DISPLAY.

Share knowledge through a display that showcases information on Hidden Water or perhaps a post on a bulletin board

### ● PLEDGE TO REDUCE.

Create a pledge to reduce the water footprint in your community. For example, the community can make a pledge to reduce their water footprint by 10% and progress can be tracked and shared on a display or bulletin board. Achievements can be celebrated with stars or any creative way to show your care for the environment!

#### Source

Hoekstra, A.Y. 2012. *The hidden water resource use behind meat and dairy*. *Animal Frontiers* 2: 3-8.

## BOTTLED WATER

# Why bottled water hasn't gone away



**BOTTLED WATER IS FACING CAMPAIGNS SHAMING IT FOR ENVIRONMENTAL WASTE. AND YET, IT'S MORE POPULAR THAN EVER.**

Aaron Hutchins  
 July 2, 2015  
 MacLean's News Article

Catholic students in Saskatoon won't find Dasani in their school vending machines any time soon. Citing concerns about the global threat to potable water caused by water privatization, the Greater Saskatoon Catholic School Board approved a policy on June 22 to eliminate all commercial bottled water from its schools and install water-filling stations in the hallways instead. The news was announced as a victory for the environment: There will be fewer plastic bottles in landfills, and fewer exhaust-spewing transport trucks hauling them around. "That little bottle touches a lot within our world," superintendent of education Darryl Bazylak told the Saskatoon StarPhoenix. "So, yeah, we're proud of [the policy] and believe [that], in our small way, we can make a difference in the world."

The school board was only the latest organization to ban the bottle. In recent years, universities, colleges and school boards across the country have outlawed selling bottled water on school property. That's on top of a litany of bad press of late: Nestlé tapping millions of litres of Canadian groundwater for free; Starbucks selling Ethos bottled water from the springs in drought-ridden California for \$1.95 a pop; recalls due to fears of E. coli bacteria; not to mention the damning stats showing billions of bottles find their way to landfills each year. With all the campaigns shaming environmental waste, PR

scandals, and the ready availability of home filtration systems, one might think Aquafina, Fiji, and the plethora of other bottled-water brands would be dead in the water by now.

Yet, to the aggravation of environmentalists, bottled water is not just surviving, but thriving. Global packaged-water consumption is set to hit more than 233 billion litres this year, up from 170 billion litres just five years ago, according to a recent report from Canadean, a U.K.-based market research firm. According to its forecasts, packaged water will overtake soft drink sales this year, with global consumption expected to grow further, thanks in large part to China, India and Brazil.

In North America, bottled water was the second-highest-growing beverage segment in the U.S. from 2013 to 2014 (with a 7.3 per cent increase in volume), lagging behind ready-to-drink coffee, but beating out energy drinks and sports drinks, according to data from the Beverage Marketing Corporation. Meanwhile, in Canada, the amount of bottled water sold through stores jumped by three per cent last year to reach 2.4 billion litres, according to Euromonitor International, with Nestlé controlling 30 per cent of the market.

How to explain bottled water's resilience? "Though there has been bad press surrounding the false claims of water source, there is a more deep-rooted distrust in tap water,"

## BOTTLED WATER

# Why bottled water hasn't gone away

says Fiona Baillie, a beverage analyst at Canadean. "The widely publicized concerns about chemicals found in tap water (i.e., high levels of fluoride and estrogen) are driving the consumption of bottled water, as many consumers are not willing to expose themselves to any risks associated with these chemicals."

The perception of bottled water as healthier is very much in dispute. The U.S. Centers for Disease Control and Prevention consider fluoridation of drinking water one of the 10 greatest health achievements of the last century, while the American Dental Association cites more than 350 scientific references about how water fluoridation is a safe, effective practice. That being said, it only takes the occasional news story about a boil-water advisory somewhere to leave people suspicious about what comes out of their own taps.

A bigger hurdle to doing away with the bottle is the fact that, for all the municipal campaigns assuring residents that tap water is safe, and for all the environmental campaigns about the mountains of plastic bottles in landfills, only a small minority of people have been willing to carry around refillable bottles. "[Tap water] is not convenient in many situations," says Gary Hemphill, managing director of research at Beverage Marketing Corp. "If you're going to buy a packaged beverage, they all come in some type of container, whether it's a plastic bottle, glass bottle or can." In a convenience-store fridge filled with Mountain Dew and Monster energy drinks, water is the healthiest option.

Indeed, the continued growth in bottled water comes at the cost of declining soda sales. "There is a huge growth in the water category in the U.S., driven by concerns about health and obesity," Marco Settembri, chief executive of waters at Nestlé, said recently. Those who don't want sugary cola or high-calorie beer at a baseball game will opt to buy bottled water. It's why bottled-water companies are eager to link their brands to famous athletes. Tap water can't afford a multi-year sponsorship deal with tennis star Maria Sharapova.

Meanwhile, in Saskatoon, while some schools may stop selling bottled water in the cafeteria, it won't dry up sales entirely. "Whether it's a school or a municipality taking it out of their offices, it doesn't necessarily mean people aren't drinking bottled water," Hemphill says. "They can buy it down the street."

### FACT BOX

**A 500ml water bottle can be refilled approximately 45 times for just one penny in the Region of Peel!**

**Canada has 20% of Earth's freshwater but only 7% is renewable (or currently accessible). The remaining freshwater is trapped in glaciers and underground aquifers!**

#### Sources

[www.macleans.ca/economy/business/why-bottled-water-hasnt-gone-away](http://www.macleans.ca/economy/business/why-bottled-water-hasnt-gone-away)

[www.peelregion.ca/pw/water/tapwater/myths-facts/](http://www.peelregion.ca/pw/water/tapwater/myths-facts/)

[www.ec.gc.ca/eau-water/default.asp?lang=En&n=1C100657-1#2](http://www.ec.gc.ca/eau-water/default.asp?lang=En&n=1C100657-1#2)

*The above article was published by Maclean's magazine. Facts used in the article have not been verified by Community Environment Alliance.*

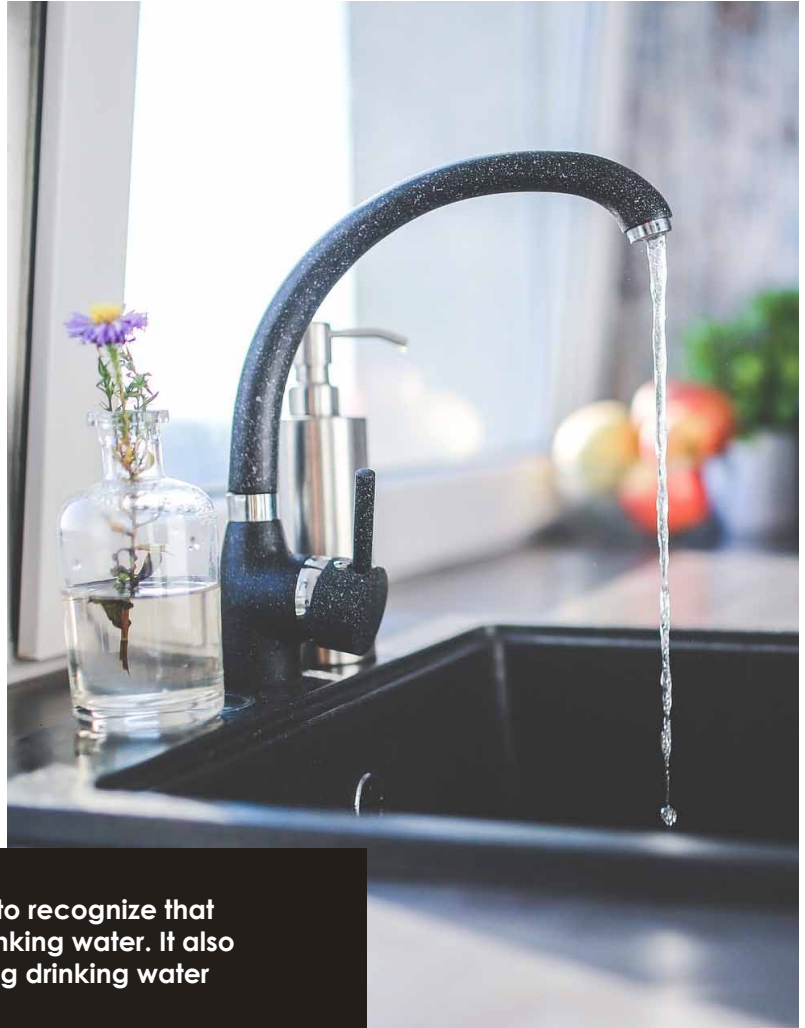
# BOTTLED WATER

Consider this...

**REGION OF PEEL AND HALTON REGION PERFORM WATER QUALITY TESTS REGULARLY**

in accordance with the *Safe Drinking Water Act, 2002* and regulations. This means the federal *Guidelines for Canadian Drinking Water Quality* are followed to ensure municipalities do not exceed maximum levels of potentially harmful substances in drinking water. This responsibility is also shared with the province or territory.

**Bottled water does not follow the same guidelines as it is treated differently under the *Food and Drugs Act*. It does not set limits on specific contaminants, except for arsenic, lead and coliform bacteria.**



**FACT BOX**

The *Safe Drinking Water Act, 2002* exists to recognize that Ontarians are entitled to expect safe drinking water. It also protects human health through regulating drinking water systems and testing drinking water.

**TO LEARN SOME COMMON MYTHS AND FACTS ABOUT TAP WATER, PLEASE VISIT THE REGION OF PEEL'S WEBSITE:**

[www.peelregion.ca/pw/water/tapwater/myths-facts](http://www.peelregion.ca/pw/water/tapwater/myths-facts)



# BOTTLED WATER

## Make a difference

### ● CONDUCT A BOTTLED WATER AUDIT.

If you are serious about reducing the number of plastic water bottles you use consider doing a bottled water audit. An audit measures how many plastic water bottles are being used and this can be done over a week, month or longer if necessary for a specific location. Knowing the number of plastic water bottles used is a good starting point in setting a goal to reduce usage. This can be done by a green team.

Check out Burnaby North Secondary School's journey in British Columbia as they took on an 'End Bottled Water' campaign for some inspiration and tips:

[www.cleanairchampions.ca/database/files/library/HSCC\\_Bottled\\_Water\\_Reduction\\_info\\_kit.pdf](http://www.cleanairchampions.ca/database/files/library/HSCC_Bottled_Water_Reduction_info_kit.pdf)

### ● CREATE A PLEDGE.

Pledge to reduce the use of plastic water bottles by 10% or more with your congregation.

### ● SHARE KNOWLEDGE.

A presentation on how plastic bottles are harmful to the environment could be done during a worship service or perhaps posters could be made to inform others.

### ● KEEP THAT REFILLABLE WATER BOTTLE FULL!

Encourage the use of refillable water containers and promote their use during outdoor activities when cups and glasses aren't as practical. If you need to refill your reusable water bottle while on the go (and divert plastic bottles from the landfill in the process), visit [www.bluew.org](http://www.bluew.org) to find a Region of Peel location near you that offers free tap water.

### ● PLAN AN EDUCATIONAL TRIP.

Visit your local water treatment facility and learn where our water comes from and how it is treated. Plan a trip for your faith community to better connect to this vital resource we sometimes take for granted.

To plan an individual or group tour of Haltons' Water Purification Plants, visit [www.halton.ca/cms/One.aspx?portalId=8310&pageId=12059](http://www.halton.ca/cms/One.aspx?portalId=8310&pageId=12059)

To plan a group tour at the Region of Peel's Lakeview Water Treatment Facility, visit [www.peelregion.ca/pw/other/lorne-park-tour.htm](http://www.peelregion.ca/pw/other/lorne-park-tour.htm)

# CLEANING PRODUCTS

From the above sections we have learned that our fresh water resources are limited and that we can take action to conserve them. However we can also make a difference in the quality of water after we use it. For example, some of our actions can pollute our water which can then harm our health and the environment. Some of these actions are as simple as keeping our house and faith community clean.

**UNFORTUNATELY OUR EFFORTS TO KEEP AREAS CLEAN AND HEALTHY MAY HAVE THE OPPOSITE EFFECT. COMMON CLEANING PRODUCTS CONTAIN CHEMICALS THAT CAN BE HARMFUL TO OUR HEALTH AS WELL AS THE ENVIRONMENT.**



## SOME INGREDIENTS TO LOOK OUT FOR

CHEMICAL	WHY IT CAN BE HAZARDOUS	WHERE IT IS FOUND
<b>2-Butoxyethanol (or butyl cellosolve)</b>	<ul style="list-style-type: none"> <li>Irritates skin and eyes</li> <li>May cause reproductive problems</li> <li>Associated with blood disorders</li> </ul>	Laundry stain removers    Glass cleaners Automobile cleaners      Carpet cleaners Windshield wiper fluid    Oven cleaners
<b>Ammonia</b>	<ul style="list-style-type: none"> <li>Irritates skin, eyes, throat &amp; lungs</li> <li>May cause kidney and liver damage</li> </ul>	Window cleaners            Drain cleaners All-purpose cleaners        Toilet cleaners
<b>Nonylphenol ethoxylates (NPEs)</b>	<ul style="list-style-type: none"> <li>Can degrade into nonylphenols (NPs) which can mimic the hormone estrogen</li> <li>Lab results show NPs can stimulate growth of breast cancer cells and have negative reproductive effects on aquatic life</li> </ul>	All-purpose cleaners        Stain removers Toilet bowl cleaners        Air fresheners Car wash products          Degreasers Liquid laundry detergent
<b>Phosphates</b>	<ul style="list-style-type: none"> <li>Acts as a fertilizer in water. Bodies of water with high concentrations will experience high growth rates of algae. This results in an algal bloom that consumes much of the oxygen in the water, potentially killing fish or other aquatic life forms</li> </ul>	Dishwasher detergents Laundry detergents Bathroom cleaners

For a more thorough list of common household products that pose a risk to our health and the environment, visit [www.davidsuzuki.org/issues/health/science/toxics/the-dirt-on-toxic-chemicals-in-household-cleaning-products](http://www.davidsuzuki.org/issues/health/science/toxics/the-dirt-on-toxic-chemicals-in-household-cleaning-products)

## CLEANING PRODUCTS

### Make a difference

A simple action to avoid exposure to these hazardous chemicals, and thus releasing them into our waters and surrounding environment, is to create our own cleaners.

#### SIMPLE GLASS AND MIRROR CLEANER RECIPE

##### Ingredients

- ½ cup of white vinegar
- ½ cup of water

##### Instructions

Mix white vinegar and water and pour into a spray bottle. That's it!



**Using this recipe is an easy action to help our water quality - it may also save money when compared to buying commercial brands in the store!**

If you want to go to the next level and create more environmentally friendly cleaning products, check out a list of recipes featured the on the David Suzuki website here:

[www.davidsuzuki.org/publications/downloads/2011/QueenOfGreen-Green-cleaning-recipes.pdf](http://www.davidsuzuki.org/publications/downloads/2011/QueenOfGreen-Green-cleaning-recipes.pdf)

**INCORPORATING THESE SMALL PRACTICES CAN MAKE A BIG DIFFERENCE, ESPECIALLY IF A FAITH COMMUNITY HAS MANY MEMBERS AND NEEDS TO CLEAN OFTEN. BEING CONSCIOUS OF EVERY CHOICE AND KNOWING WHAT WE USE IMPACTS BOTH US AND THE ENVIRONMENT IS A GREAT WAY TO NOT ONLY START CHANGE BUT TO MAINTAIN AND GROW IT.**



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# BRAINSTORMING AND MIND MAPS

# INTRODUCTION

## Biodiversity matters

**BIODIVERSITY**, short for Biological Diversity simply means “variety of life on Earth”. It is the diversity of genes, species and ecosystems and the goods and services they provide. It refers to the variety of all animals, plants and microorganisms, their genes and genetic variability, the ecological systems and the goods and services provided by ecosystems.

### Genetic diversity

Variety within the same species.

### Species diversity

Different types of species within a region or habitat.

### Ecosystem diversity

Variety of habitats and communities of plants and animals in a certain area, such as deserts, forests, and lakes.

### DID YOU KNOW?

Ontario has more than 30,000 species and is ranked among the provinces with the highest diversity of known species in Canada. Over two-thirds of these species are insects.  
Source: Ontario's Biodiversity Strategy 2011

### VALUE OF BIODIVERSITY

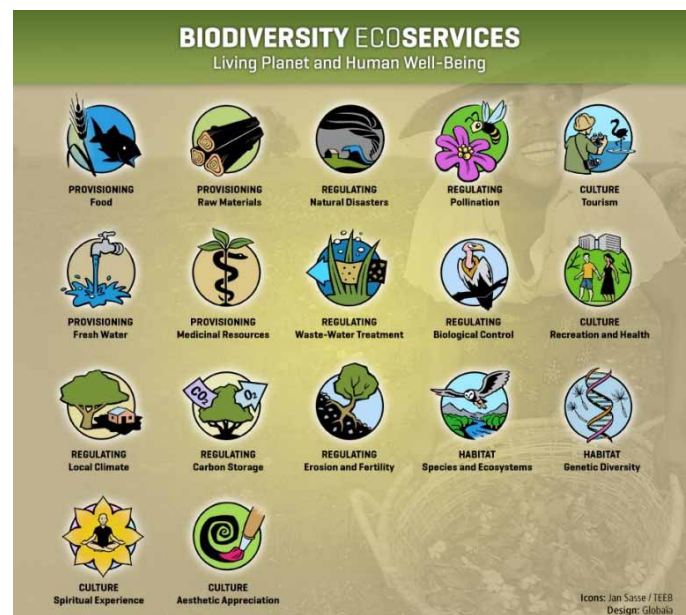
**Biodiversity offers a wealth of products and services which are vital for life on Earth for FREE!**

It cleans the air we breathe, provides oxygen, filters the water we drink, maintains our soils, supplies the raw materials we use to construct our homes and businesses, and makes up our medicines and natural remedies. It is vital for agriculture, fisheries and tourism.

Biodiversity functions create resilience so that we are able to endure future unknown conditions brought about by climate change or other events. In addition, it is the source of many of our spiritual and cultural values.

### FACT BOX

**More than 3 billion people depend on marine and coastal Biodiversity, while over 1.6 billion people rely on forests and non-timber forest products for their livelihoods.**



### Sources

The Economics of Ecosystems & Biodiversity,  
[www.teebweb.org](http://www.teebweb.org)

Convention on Biological Diversity

[www.cbd.int/doc/publications/development/poverty-alleviation-booklet-en.pdf](http://www.cbd.int/doc/publications/development/poverty-alleviation-booklet-en.pdf)

## INTRODUCTION

# Biodiversity loss

## BIODIVERSITY IS THREATENED BY HUMAN ACTIVITY.

Many aspects of modern culture and life style inadvertently result in threats to biodiversity. As biodiversity is lost, we lose the benefits that its services provide to us.

Globally, biodiversity is being lost at a rate many times higher than that of natural extinction (*Global environmental outlook report on the state of the global environment, UNEP 2002*). According to a review published in the journal *Science* in 2014, the species extinction is happening 1,000 times faster due to humans!

Individual species are being threatened by habitat loss and degradation, invasive species, and the spread of pollution and disease. The increasing human population (expected to reach 9 billion by 2050), the over exploitation of resources which will get worse as more people consume more resources and climate change add to the problem.

### HOW DOES BIODIVERSITY LOSS AFFECT US?

**Everything is connected.** What we do affects everything else in the world. Our wellbeing is connected to the wellbeing of the environment, all other forms of life and future generations. Biodiversity loss affects food security, vulnerability to natural disasters, energy security, health, and access to clean water and raw materials. It also affects our spiritual, aesthetic, recreational and religious values.

### THREATS TO BIODIVERSITY - HIPPOC

- Habitat loss
- Invasive non-native or 'alien' species
- Pollution
- Population growth
- Over consumption
- Cumulative impacts and climate change

#### FACT BOX

The monetary value of goods and services provided by ecosystems is estimated to amount to US\$33,000,000,000 per year (\$33 trillion)!

Source: World Conservation Union (IUCN)

The national parks of Canada store 4.43 gigatonnes of carbon, a service worth between \$11,000,000,000 (\$11 billion) and \$2,200,000,000,000 (\$2.2 trillion) depending on the price of carbon in the market.

Source: World Wide Fund for Nature, [www.panda.org](http://www.panda.org)

## INTRODUCTION

### Decade for Biodiversity

There is a growing global concern over the loss of biodiversity – so much so the United Nations General Assembly designated **2011 – 2020 as the Decade for Biological Diversity** to heighten the importance of the need to take action to stop the loss of biodiversity. It is critical to understand that we are a part of biodiversity and that conserving and using it sustainably is important for our future.

#### THE VISION FOR THE DECADE FOR BIOLOGICAL DIVERSITY

“By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”

## BIODIVERSITY IN CONTEXT

### THE CONVENTION ON BIOLOGICAL DIVERSITY

was adopted at the Earth Summit in 1992 held in Rio de Janeiro, Brazil, which has been signed and ratified by Canada, and 192 other countries. The binding commitments in Convention include the conservation of biological diversity, the sustainable use of its components (species, genes and ecosystems), and the fair and equitable sharing of the benefits arising out of the utilization of biodiversity.

The Convention requires countries to prepare **National Biodiversity Strategy and Action Plan** (NBSAP) and ensure that it is integrated at all levels while planning and decision making. In 2010 the Convention adopted the **Strategic Plan for Biodiversity 2011-2020** with a shared vision, a mission, strategic goals and 20

ambitious yet achievable targets, collectively known as the **Aichi Targets**.

Canada's Biodiversity Strategy was developed jointly by federal, provincial and territorial governments in 1995. Work is currently underway to incorporate the Aichi targets within the Canadian Strategy. Ontario has updated its Biodiversity Strategy in 2011 to include the Aichi Targets.

#### Learn more:

Ontario's biodiversity strategy 2011

**URL:** [viewer.zmags.com/publication/c527c66f#/c527c66f/1](http://viewer.zmags.com/publication/c527c66f#/c527c66f/1)

Biodiversity: it's in our nature, ontario government plan to conserve biodiversity 2012–2020–download

**URL:** [viewer.zmags.com/publication/c8f28fef#/c8f28fef/1](http://viewer.zmags.com/publication/c8f28fef#/c8f28fef/1)

### Our actions today affect tomorrow.

We are all part of nature's rich diversity and have the power to protect and restore it. We know that our actions are causing biodiversity to be lost at a greatly accelerated rate. These losses decrease the quality of our lives and damage the life support systems we rely on every day. But we can prevent them. The decade is a chance to think about the ways that our daily activities affect biodiversity. It's a chance to take necessary steps to change the course.

## JOIN. LEARN. ENABLE. ACT.



## TAKE ACTION

# Education on Biodiversity

## BUILD COMMUNITY AWARENESS

Create awareness in your community on what biodiversity encompasses and what it provides us, how it is threatened and lost, and actions that can help to conserve, restore and use biodiversity sustainably. This can be done in a variety of different ways to suit the resources and capacity of your community.

1. **Deliver** a worship service with a biodiversity theme - how Biodiversity is the underpinning for a healthy, safe and sustainable future and its values can be incorporated into everyday life
2. **Establish** a bulletin board for biodiversity with interesting news and facts.
3. **Organize** a biodiversity themed poster contest –display and promote the posters
4. **Organize** a film show or series on the theme of biodiversity
5. **Create** a pledge to stop the loss of biodiversity and display the pledge in a prominent location
6. **Write** about biodiversity issues in your newsletter
7. **Benchmark** the members of your faith community on their awareness of biodiversity through a survey and post it on the bulletin board



22 MAY 2015  
INTERNATIONAL DAY  
FOR BIOLOGICAL DIVERSITY  
BIODIVERSITY FOR SUSTAINABLE  
DEVELOPMENT



**BIODIVERSITY IS LIFE**

ENTER OUR  
COMPETITION!

To celebrate the International Year of Biodiversity (IYB) UNESCO Associated Schools network in the UK is launching a competition to find the school that best communicates the messages of the International Year:

- celebrating the importance of biodiversity
- making assessments of the need to protect biodiversity
- encouraging people to take action to help protect the irreplaceable natural wealth around us

Your task is to devise a creative and effective campaign that can spread the IYB message to your local community. You can submit a poster, collage, brochure, video or podcast. There will be two categories for the competition, one for primary schools and one for secondary schools.

For more information about the competition see [www.unesco.org.uk/iyb](http://www.unesco.org.uk/iyb) or contact Leo Vincent at [lvincent@unesco.org.uk](mailto:lvincent@unesco.org.uk).

Deadline for submissions: 28th May 2010

Please send your submissions to:  
IYB Competition  
The UK National Commission for UNESCO  
Suite 98, 3 Whitehall Court  
London, SW1A 2EL



Source: [www.unesco.org.uk](http://www.unesco.org.uk)

**AFFIRM YOUR COMMITMENT TO WORKING ON BIODIVERSITY. FORM A BIODIVERSITY WORKING GROUP TO PLAN AND COORDINATE ACTIONS AND ACTIVITIES. INCLUDE YOUTH, THEY HAVE A POWERFUL AND CENTRAL ROLE TO PLAY IN COMMUNITY ENGAGEMENT.**

## TAKE ACTION

## Reduce the loss of Biodiversity

## EVERY SMALL STEP COUNTS!

1

**HOST OR PARTICIPATE IN AN ANNUAL INTERNATIONAL DAY FOR BIOLOGICAL DIVERSITY (MAY 22) CELEBRATION TO RAISE AWARENESS AND UNDERSTANDING OF BIODIVERSITY ISSUES.**

Join the Convention on Biological Diversity's Green Wave initiative and contribute to a global movement. This is a good youth engagement event that can be led by youth.

The Green Wave brings together children and youth from around the world to raise awareness about biodiversity, and the need to reduce its loss.

Learn more [www.greenwave.cbd.int/en/home](http://www.greenwave.cbd.int/en/home)

2

**CONSUME LESS AND BE MINDFUL ABOUT THE IMPACT OF PURCHASES ON BIODIVERSITY.**

Consumption of resources is a root cause of biodiversity loss. Help protect biodiversity by consuming less and using products that do not harm the environment.

Create a purchasing policy that reduces harmful impacts. Buy safe, natural products without harmful chemicals, pesticides or herbicides. Use natural alternatives for cleaning that are nontoxic and even easy to prepare!

Eco labels enable consumers to determine which products are safe, and environmentally sustainable.

**Learn more about Eco Labels**

[www.ecolabelindex.com/ecolabels](http://www.ecolabelindex.com/ecolabels)

[www.davidsuzuki.org/publications/downloads/2012/qog-ecolabelguide.pdf](http://www.davidsuzuki.org/publications/downloads/2012/qog-ecolabelguide.pdf)



## TAKE ACTION

# Reduce the loss of Biodiversity

3

### REMOVE NON-NATIVE INVASIVE SPECIES IN YOUR COMMUNITY SPACE.

Investigate if there are any invasive species. If there are, take actions to replace them with native species. Label the native species with information on their benefits. Collect and share the seeds with the community.

#### Why Native Species?

Native plants and trees are important for supporting local wildlife by providing shelter, food and a source of protein (support insects) for many other animals such as birds. Native species also require less care since they are better adapted to the local environment and are a source of seeds to continue the native plant populations in the future. Also some species of wildlife are entirely dependent on specific native plants to survive and can disappear from an area when the native plant species disappears. For example, the monarch butterfly caterpillar is entirely dependent on milkweed for food.

**Source:** Canadian Wildlife Federation  
Access the Native Plant Encyclopedia for Canada  
[www.cwf-fcf.org/en/discover-wildlife/flora-fauna/flora](http://www.cwf-fcf.org/en/discover-wildlife/flora-fauna/flora)



## INVASIVE SPECIES

Plants and animals that are **not native** can have negative effects on the environment, economy or health. We are aware of impacts of a few species such as the Emerald Ash Borer, Zebra mussel and Purple Loosestrife. Invasive species has been identified as a direct cause of biodiversity loss.

#### Resources

##### Learn more about invasive species and how to get involved

Environment Canada: [www.ec.gc.ca/eee-ias/default.asp?lang=En&n=805A5D5C-1](http://www.ec.gc.ca/eee-ias/default.asp?lang=En&n=805A5D5C-1)

Ontario's Invading Species Awareness Program: [www.invadingspecies.com/get-involved](http://www.invadingspecies.com/get-involved)

##### Access the guides by the Ontario Invasive Plant Council to identify potentially invasive garden plants and promote suitable alternatives that are either native or non-invasive species:

Guide for Southern Ontario: [www.ontarioinvasiveplants.ca/files/GMI2012web.pdf](http://www.ontarioinvasiveplants.ca/files/GMI2012web.pdf)

Guide for Northern Ontario: [www.ontarioinvasiveplants.ca/files/GMI\\_2012\\_web\\_North.pdf](http://www.ontarioinvasiveplants.ca/files/GMI_2012_web_North.pdf)

## TAKE ACTION

## Reduce the loss of Biodiversity

4

## SET UP A POLLINATOR "WAY STATION" WITH POLLINATOR FRIENDLY PLANTS AND INVITE A VARIETY OF POLLINATORS TO YOUR SPACE!

Way stations are habitats for pollinators such as butterflies, bees and birds that enable them to produce successive generations. The plants necessary for pollinators is declining due to extensive use of pesticide and herbicide in farms, by roadsides and homes. We therefore need to create, conserve, and protect pollinator habitats.

Consider planting **native plants** to attract pollinators.



## WHY POLLINATOR GARDENS?

Pollinators move pollen from the male to the female part of a flower to fertilize the plant. There are a variety of pollinators, including insects, birds, mammals and reptiles with insects being the primary pollinators (Potts et al. 2010). Production of at least one third of the world's food, including 87 of the 113 leading food crops, depends on pollination carried out by insects, bats and birds. This ecosystem service is worth over US\$ 200,000,000,000 (200 billion) per year (IUCN).

According to a new study by IUCN and partners (Global Trends in the Status of Bird

and Mammal Pollinators, 2015) the number of pollinating bird and mammal species is declining, with more species moving towards extinction. Approximately 90 per cent of flowering plants are pollinated by animals, and humans rely heavily on many of these plant species for food, livestock forage, medicine, materials and other purposes.

**Read the article**

[www.iucn.org/?19038/Pollinating-birds-and-mammals-declining-reveals-first-global-assessment-of-trends-in-the-status-of-pollinators](http://www.iucn.org/?19038/Pollinating-birds-and-mammals-declining-reveals-first-global-assessment-of-trends-in-the-status-of-pollinators)

**Resources**

Free pollinator planting guides: [www.pollinator.org/guides.htm](http://www.pollinator.org/guides.htm)  
 How to plant a canoe garden: [www.homegrown.projexity.com/initiatives/QZAyaDvDxbAU5O6nxvjiPTPo0e](http://www.homegrown.projexity.com/initiatives/QZAyaDvDxbAU5O6nxvjiPTPo0e)  
 Pollination basics: [www.pollinator.ca/bestpractices](http://www.pollinator.ca/bestpractices)  
 TRCA: [www.trca.on.ca/dotAsset/151799.pdf](http://www.trca.on.ca/dotAsset/151799.pdf)  
[www.trca.on.ca/dotAsset/150579.pdf](http://www.trca.on.ca/dotAsset/150579.pdf)  
 Canadian pollination Initiative: [www.uoguelph.ca/canpolin](http://www.uoguelph.ca/canpolin)  
 Bumble Bee Watch: [www.BumbleBeeWatch.org](http://www.BumbleBeeWatch.org)

## TAKE ACTION

# Reduce the loss of Biodiversity

## 5 PLANT NATIVE TREES

**TREES PROVIDE A RANGE OF ENVIRONMENTAL, SOCIAL AND ECONOMIC BENEFITS THAT IMPROVE OUR QUALITY OF LIFE. THEY CLEAN OUR AIR AND PROVIDE FOOD AND HABITAT FOR WILDLIFE AMONG OTHER THINGS.**

**Plant native trees in your community.**

[www.treesontario.ca](http://www.treesontario.ca)

**Celebrate “National Tree Day” during National Forest Week in September.**

[www.nationaltreeday.ca](http://www.nationaltreeday.ca)

**Consider planting edible fruit trees.**

Learn about funding opportunities.  
[www.treecanada.ca/en/programs/edible-trees/how-apply](http://www.treecanada.ca/en/programs/edible-trees/how-apply)

**Grow clean air! Offset your emissions through tree planting.**

[www.treecanada.ca/en/programs/grow-clean-air/how-become-carbon-neutral](http://www.treecanada.ca/en/programs/grow-clean-air/how-become-carbon-neutral)

**Check the carbon calculator.**

[www.treecanada.ca/en/programs/grow-clean-air/carbon-calculator](http://www.treecanada.ca/en/programs/grow-clean-air/carbon-calculator)

6

Create a hiking club to encourage people to get outdoors and appreciate nature.

7

Restore an area such as a local pond or stream to its natural state with community funds or grants.

## BENEFITS OF TREES

### Environmental Benefits

Trees moderate the climate by lowering temperatures, improve air quality by absorbing pollutants, manufacture precious oxygen, conserve and clean water by natural filtration, prevent soil erosion and support wildlife by providing a place to live.

### Social Benefits

Trees improve health by protecting people from harmful ultraviolet radiation, reduce crime by having a calming effect leading to fewer incidences of violence, and provide recreational opportunities.

### Economic Benefits

The economic benefits of trees can be both direct and indirect. Trees can lower air-conditioning and heating costs by decreasing energy use. They also help to control storm water. Trees enhance the beauty of communities, which attract businesses and tourists.

### Source:

[www.americanforests.org/bigtrees/tree-protection-toolkit/tree-benefits](http://www.americanforests.org/bigtrees/tree-protection-toolkit/tree-benefits)

Tree Benefits Calculator:

[www.treebenefits.com/calculator](http://www.treebenefits.com/calculator)





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# BRAINSTORMING AND MIND MAPS



## INTRODUCTION

# Food Waste

### WHEN YOU THINK OF THE WORD WASTE, WHAT COMES TO YOUR MIND?

According to the Food and Agriculture Organization (FAO) food waste is the wholesome edible material intended for human consumption but is discarded, lost, degraded or consumed by pests at any point in the food supply chain. 1/3rd of food produced for human consumption is lost or wasted globally. This amounts to about 1.3 billion tons per year (i.e. 1,300,000,000 tons). Astonishingly, it has been stated by the FAO that if half of this food was recovered world hunger could be fed!



#### FACT BOX

The estimated per capita food waste by consumers in Europe and North-America is 95-115 kg/year, while in sub-Saharan Africa and South/Southeast Asia it is only 6-11 kg/year.

Source: Food and Agriculture Organization of the United Nations.



Food loss and wastage occurs at multiple points along the **food supply chain**. The food supply chain refers to the processes of how food from a farm ends up on our tables. The processes include production, processing, distribution, consumption and disposal.



### FOOD LOSS

**On the farm:** Food loss during this point can happen when edible crops are left in the field or when there is crop damage during harvesting.

**Storage:** Food can be lost to pests, disease, contamination or by naturally drying out.

**Processing:** While being processed, food loss may occur when cleaning, de-hulling, grinding, cutting, cooking, sieving and more.

**During transport:** Poor transport infrastructure could cause spoilage and/or bruising.

**Consumption:** Loss at this point may result from poor storage/stock management in the home such as discarding food before serving (i.e. spoilage) or inefficient food preparation.

#### Sources

Parfitt, J., M. Barthel, and S. Macnaughton. 2010. Food waste within food supply chains: quantification and potential for change to 2050. *Philosophical Transactions of the Royal Society B* 365: 3065-3081

Toolkit: Reducing the food wastage footprint. Food and Agriculture Organization of the United Nations. 2013. [www.fao.org/3/a-i3342e.pdf](http://www.fao.org/3/a-i3342e.pdf)



## INTRODUCTION

# Food Waste

**BY WASTING FOOD, NOT ONLY ARE WE WASTING MONEY, BUT ALSO THE RESOURCES NEEDED TO PRODUCE AND DISTRIBUTE IT.**

Our limited resources of water, land, and energy are consumed to produce and transport food to us. When we throw away extra food on our plate or let food spoil in our cupboards and fridges, we also throw away these vital resources.

In Canada, \$31,000,000,000 (\$31 billion) in food is wasted each year (Chavich 2015). \$13,000,000,000 (\$13 billion) of this is thrown out at the consumer level (van der Werf 2015). Single-family households in Toronto throw away 275 kg of food each year. On top of this money loss, Toronto taxpayers also pay \$10 million a year for getting rid of food waste that is not composted (David Suzuki Foundation).

## Wasting away

*It's easy to assume food waste is someone else's problem—restaurants? grocery stores?—but your own fridge is the real culprit*



**MACLEAN'S**

Chart source: *The Waste Not Want Not Cookbook* by Cinda Chavich (Touchwood Editions)

### Sources:

[www.macleans.ca/society/life/how-to-solve-the-food-waste-problem](http://www.macleans.ca/society/life/how-to-solve-the-food-waste-problem)

Chavich, C. 2015. How to solve the food waste problem: billions of dollars worth of good food is thrown away each year. Now some businesses and cities are saying no. *Maclean's*.

Van der Werf, P. 2015. Love to hate food waste: welcoming a mini-renaissance involving the first 'R' and food waste. *Solid Waste and Recycling* April/May: 33-35.

David Suzuki Foundation

[www.davidsuzuki.org/what-you-can-do/food-and-our-planet/help-end-food-waste](http://www.davidsuzuki.org/what-you-can-do/food-and-our-planet/help-end-food-waste)

# FOOD WASTE AND GREENHOUSE GAS EMISSIONS

Consider this...

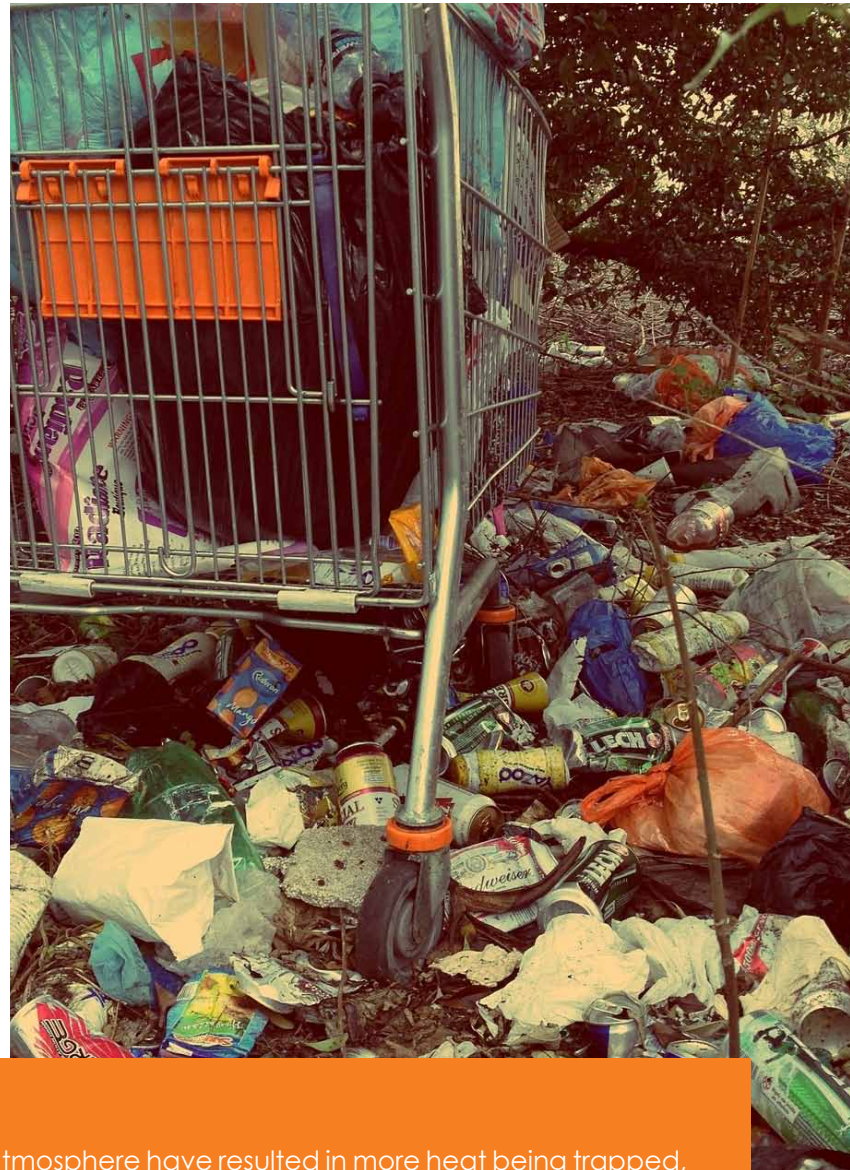
**WE THROW AWAY LARGE QUANTITIES OF FOOD FROM OUR HOMES; IN THE PROCESS WE WASTE THE PRECIOUS RESOURCES USED TO PRODUCE IT. BUT WHERE DOES THIS WASTED FOOD GO AND WHAT DOES THIS MEAN TO US AND THE ENVIRONMENT?**

Well, our food waste contributes to an enormous amount of **greenhouse gases (GHGs)** to the atmosphere each year - 3,300,000,000 tonnes (3.3 billion tons) of it!

GHGs like carbon dioxide, methane and water vapour naturally occur in the atmosphere and capture outgoing heat leaving Earth. GHGs are important. Without GHGs the Earth would be too cold to sustain life. According to the World Meteorological Organization the average surface temperature on Earth would be -19°C! However, we currently emit GHGs at a high rate into the atmosphere due to our actions.

When it comes to food waste, GHG emissions mostly happen when food is produced, processed and transported.

Another source of emissions is landfills where food waste breaks down. When this happens, methane is released, a potent greenhouse gas that traps heat 21 times greater than that of carbon dioxide.



## CLIMATE CHANGE

Increased GHG emissions in the atmosphere have resulted in more heat being trapped, thus warming the earth. This has caused significant global problems which affects each one of us. It has raised temperatures and sea levels and changed patterns of rainfall and snow. It has increased the risk of flooding, fires, drought and violent storms. Climate change has also affected our health, it has increased the risk of heat related illnesses and infections. These are just a few issues, but the problem is much bigger.

## TAKE ACTION

# Make a difference

We need to be aware that food waste is more than just the loss of food. It also leads to the loss of resources and increased greenhouse gas emissions. This awareness can help us make better decisions to reduce our food waste.

**Here are some suggestions in taking action to shrink our food waste footprint:**

### ● BUY WHAT YOU NEED.

Throwing away spoiled fruits and vegetables that have been sitting in the fridge for too long is a common source of food waste. Take note of what you have stocked in your kitchen before heading to the grocery store so you know what you need to purchase. This can be combined with a weekly menu plan to buy a targeted shopping list!

### ● SERVE SMALL AMOUNTS.

Oftentimes our eyes are hungrier than our stomachs and we take more food on our plate than we can eat. This excess food is scraped from our plate and ends up in the bin. Instead, have guests take smaller servings and ensure them that there are more for seconds. Any leftovers can be properly stored for later use.

### ● SCREEN THE SHORT FILM "WASTE".

WASTE is a short film commissioned by the United Nations Environment Programme and the World Wildlife Fund. This educational film is a powerful tool explaining food waste and the precious resources wasted with it (including water). Screening this film at a worship service or an Earth Day event can help transfer knowledge to others. View it online [www.unep.org/filmPlayer/videoplayer.asp?id=27690&l=en](http://www.unep.org/filmPlayer/videoplayer.asp?id=27690&l=en)

### ● USE LEFTOVERS.

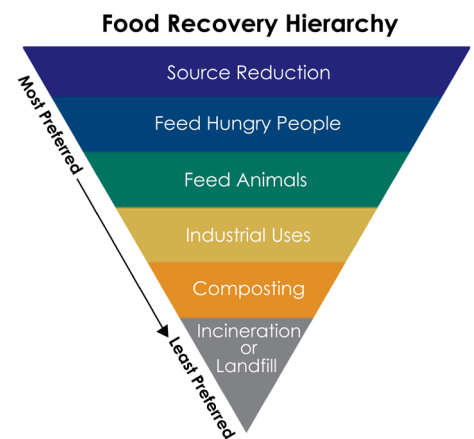
Using leftovers as ingredients in a future meal is a great way to reduce our food going into the bin.

### ● DON'T BE SHY TO PURCHASE DISFIGURED FRUITS AND VEGETABLES.

Fruits and vegetables naturally come in different shapes and sizes: not all tomatoes are perfectly round. "Irregularly" shaped fruits and vegetables have the same nutritional benefits as their aesthetically pleasing counterparts that we have become accustomed to in advertisements. Since they don't look 'normal' they won't make it to grocery shelves for our picky eyes (about 20 per cent of field-grown produce is perceived to be too "ugly" to meet regular retail standards!) and may be wasted. But this can change.

Your grocery store may already have a special section for these disfigured fruits and veggies and sell them at a reduced price, a perk for the wallet! If your grocery store doesn't, ask them if they plan to in the future and tell them that you would like to purchase them.

**Source:** Intermarché,  
France supermarket chain



**Source:** [www.leanpath.com](http://www.leanpath.com)

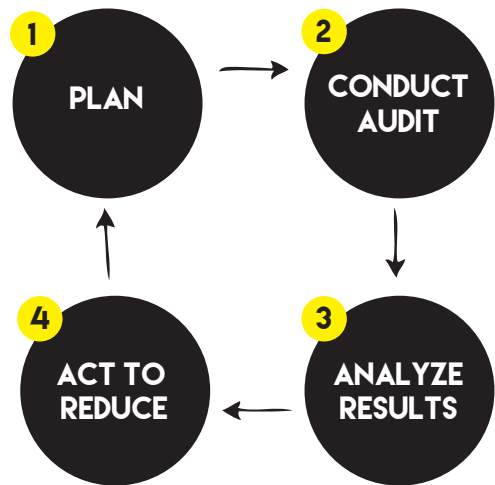
## TAKE ACTION

### Make a difference

#### ● CONDUCT A FOOD WASTE AUDIT.

A food waste audit will help you understand if you are wasting food and if so, how much. This is a great way to measure waste and to understand how the waste is being generated. This knowledge will help in reducing wastage. It can direct which actions of change need to be taken to modify shopping, cooking, or storage habits that result in food waste.

How to conduct a food waste audit in 4 steps



#### 1 PLAN THE AUDIT

It is important to plan the following activities before the actual audit takes place:

- **Audit team** – form a team; youth are a good starting point. Train the team to conduct the audit and finalize all details as a team including the roles of each team member. Identify a champion(s) in the team.
- **Establish the goal of the audit** – understanding the present status, identifying opportunities to reduce food waste and a repeat audit to measure change.
- **Days** – choose days that best represent the normal operations. For best results conduct the audit without prior notice.
- **Duration** – an audit can be conducted over the course of a day, meal, or special event. Repeat the audit three times to collect three separate sets of data (i.e. on three separate days, meals or events)
- **Type of waste to be measured** - There are three types of food waste that can be measured:
  - a. *Spoiled waste*: produce that has gone off, or has been contaminated, and is unusable

b. *Prep waste*: food waste generated as part of meal preparation and cooking process (eg. veg and meat trimmings, cooking errors and prepared food that cooked but not served). Take care while preparing meals to minimize this waste.

c. *Plate waste*: prepared food that was taken on the plate but not consumed

- **Method of collecting data** – decide how the food waste will be collected for weighing (in separate plastic bags or containers).
- **Locations for the audit** – identify the locations that can be the source of food waste such as Kitchen, Dining Room or at Events.
- **Tools for weighing** – Weighing scale, gloves and masks
- **Recording/ tracking** – use the Food Waste Audit Sheet either on paper or online. Include the number of persons per day, meal, or special event.

## TAKE ACTION

# Make a difference

### 2 CONDUCT THE AUDIT

Conduct the baseline audit to understand the present status:

- **Take the gross weight.** Set up three containers lined with bags or just bags and label each as Spoiled waste, Prep waste, or Plate waste.
- **Record** the values in the **Food Waste Audit Sheet** (refer page 39). Pictures of the waste can also be taken to help analyze the results/findings.

### 3 ANALYZE THE RESULTS

- **Calculate** and record the **net weight of food waste** by deducting the weight of empty container or bag in which the food waste was collected.
- Add the total figures for the different types of food waste for the **overall waste quantity per audit**.
- **Calculate** the **average value of food waste** over the three separate sets of audit data.
- **Annualize totals** – i.e. calculate the amount of food waste per year.
- **Calculate** the **food waste per person**. This can be done by dividing the annualized weight by the total number of people or congregation size responsible for generating the food waste.

### 4 ACT TO REDUCE

- **Communicate the audit results and learning's to the volunteers, staff or congregation members.** This is very important and could be either announced, put on a bulletin board or website/newsletter.
- **Create a reduction plan with set targets and strategy to reduce** - Specific actions can be taken to lower each waste type. For example, if large quantities of food are cooked but not always eaten (Prep waste), consider cooking less food. If one or two bananas are consistently thrown away each week (Spoiled waste), consider buying less. These small steps can help us reduce waste, diverting it from landfills and making the use of our precious resources more efficient. It will also help in cost savings!
- **Create awareness on food waste** and the **reduction plan within the congregation to help reach the target.** Creating a successful engagement plan to make sure that everyone feels part of the plan is key to successfully meeting the targets.
- **Review** the **status of the reduction plan regularly** with the food waste team.
- **Repeat the food waste audit** after implementing the reduction strategy **to measure change.**
- Review and repeat the food waste audit on an ongoing basis to measure **continuous improvement.**
- Do not forget to thank the food waste audit team members. Celebrate the success with everyone!

Adapted from Lean Path, How to conduct a food waste audit, [www.LeanPath.com](http://www.LeanPath.com)



## FOOD WASTE AUDIT SHEET

Team members:					
LINE NO	AUDIT ACTIONS	DAY 1	DAY 2	DAY 3	TOTAL
<b>AUDIT DETAILS</b>					
1	Date				
2	Time				
3	Number of People Present <i>Meal or event</i>				
4	Total Number of People Present <i>Add number per day</i>				
<b>DATA SUMMARY</b>					
5	Weight of container or bag (Kg)				
6	Gross Weight (Kg) <i>Weight of container or bag (line 5) + food waste</i>				
	Spoiled waste				
	Prep waste				
	Plate waste				
7	Net Weight (Kg) <i>Gross weight - Weight of container or bag (line 5)</i>				
	Spoiled waste				
	Prep waste				
	Plate waste				
8	Food waste generated per day (Kg) <i>Add net weight per day</i>				
9	Total food waste generated during audit (Kg) <i>Total weight of day 1, 2 and 3</i>				
10	Average food waste generated per day (Kg) <i>Total waste (line 9) / Number of days</i>				
11	Average food waste generated per person per day <i>Total waste (line 10) / Number of people (line 4)</i>				
12	Annualized total weight (Kg) <i>Average waste per day (line 10) X 365 days</i>				
	<b>Target 1</b> <i>(Example- reduce food waste generated by 20 % in 1 year)</i>	<b>Actions:</b>			
	<b>Target 2</b> <i>(Set reasonable and SMART targets that is achievable)</i>	<b>Actions:</b>			

A goal should be **SMART: Specific, Measurable, Achievable, Realistic and Time-bound.**



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## ACTION ON THE GROUND

### Featuring Sai Dham Canada



Sai Dham Canada (Sai Dham) is a charitable organization based on the teachings of Shirdi Sai Baba. Located in Malton, Ontario, Sai Dham is committed to 'service to humanity' and wanted to reduce food waste amongst its devotees. Food is important to Sai Dham as Shirdi Sai Baba strongly believed in feeding the hungry. He believed that no one should go to bed hungry, as a hungry stomach leads to an unsatisfied living being. Thus, Sai Dham serves food every Thursday and Saturday to devotees after prayer service. However they noted that when 'there is a lot of food, there can also be wastage of food.'

Working with the children of Sai Dham who attend Sai Dham Siksha Kendra, a school for students aged 5 to 16 years that emphasize 'becoming better, empathetic and compassionate human beings', food waste was discussed during two separate workshops. Students were engaged and asked why we should care about food waste and learnt precious resources are also connected to this waste.

Students became enabled and took the lead on conducting a food waste audit in Sai Dham on four separate days when food is

served. Getting messy, 'they collected food waste from leftover food stuff and rotten vegetables from the fridge and food from plates...' The results of their work 'shocked and disappointed' them: Sai Dham did generate food waste.

Students took action to inspire families not to waste food by:

- Making posters about food waste
- Talking to both adult and children devotees at Sai Dham on how to take only what you need on your plate

Adult volunteers were also involved by:

- Asking devotees if they liked the food and about the portion they would like *before* serving them
- Ensuring left over food started going to the devotees homes at the end of the night

These simple actions have resulted in the reduction of food waste at Sai Dham. By learning and sharing how food waste affects us all, we too can make positive change and help reduce our global food waste footprint!

# BRAINSTORMING AND MIND MAPS







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Anielyn Benasa is a passionate visual designer and creative thinker. With a background in Communications and Design, she engages every project with dedication, imagination and intelligence. Her aim is to create consistent communication pieces that have purpose, clarity and flare.



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