

the pipeline

Fall 2021 ~ 26th Edition

SASKATCHEWAN WATER AND WASTEWATER ASSOCIATION



content

June 2021 - Summer

On the Cover

Saskatchewan Sky

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kelly kish

SWWA Pipeline Editor

Bare Necessities - <https://youtu.be/08NIhjpVF5U>



Conference is fast approaching, and we will be down to the bare necessities. We are so excited to be able to be together in person though it will most definitely look a bit different this year than in years past.

The tradeshow is on, suppliers are getting ready to see many of you for the first time in almost two years. We have made a few changes to keep our numbers down on the tradeshow. This year booths will have the same two people for both days at each booth. This may mean that for some of you, the rep who would normally come visit you may not be at the show. Stop in say hi to the reps that are at the show and let them know you appreciate them coming. The watering hole will be just a watering hole this year, we will not be having finger food. Stop in before heading out for a bite Wednesday after the sessions or head out and come back and check out the booths after a bite.

Covid has resulted in many changes throughout the industry. Many have retired, some have moved around, and others have made changes that mean they are no longer part of the industry. These past 18 months have shown us we are resilient and continue to rise above what gets thrown our way. Let's celebrate that!!

The Tuesday night networking event has been cancelled. We encourage you to get together if you are comfortable with that and enjoy smaller group get togethers. I think this may be the conference that I get more sleep than any other year. Hospitality rooms that have happened in the past are not this year, fun can still be had it will just look different.

In this issue we have: the conference agenda, Covid Measures update for the event, Golf highlights and a lineup of contributors who have been amazing keeping up their pipeline articles for us. It is always great to see different perspectives on the industry and of course ways to combat the things life has been throwing at us.

For those attending the annual event we have calendars for all the attendees. Start planning now to submit your photos for the 2023 calendar you will get next year and send those photos to the office.

Thank you to all the sponsors who are supporting the annual event this year. Your support through this partnership helps us create an amazing event every year.

Pre-registration is Nov. 2 from 5:30pm till 7:30 at TCU place. Please remember you will need proof of a negative test in the 72 hours before coming or proof of vaccination. Once verified come on in and pick up your registration package, not coming in Tuesday? No problem we will back first thing in the morning. A reminder walk up registrations will not be accepted.

Stay up to date on all the latest updates for the annual event by checking in on the website. All updates will be posted as received or as changes happen on the annual conference tab for attendees and the booth registration area for exhibitors.



susan
dobrowney
SWWA President

Wow and just like that we're into the fall! And what a beautiful fall it has been so far. This summer we experienced extreme heat and dry conditions. We were looking forward to a bountiful harvest, not so for many this year. Lack of moisture and intense heat has taken its toll resulting in poor crops. Others may be more fortunate, and the crop will be fair. For an agricultural province this will mean more challenges ahead for us.

In all aspects of our industry, it has been a challenging summer. Here in Saskatoon, we have seen lower than usual river flows and higher than usual demand. This often means that staff and equipment is working at or near capacity leaving little margin for error or chance.

Having great co-workers and maintenance staff is crucial. Collaborative teamwork is essential.

As we enter the fall our focus will change to regular and scheduled maintenance, the start of larger projects and completion of others. Preparing for the colder weather ahead.

As industry professionals and stewards of the environment we all strive to treat and deliver a product that is safe for our customers: then collect, re-treat and sometimes reuse that product before discharging it to its final destination. All with minimum service disruptions and as timely as possible.

August saw our annual golf tournament this year at Dakota Dunes. Another great day and an opportunity for many of us to enjoy fellowship with friends old and new. The day started with a shot gun start and ended with a steak supper. It was another successful event. Great job to our organizers. We are planning next years event. Check our SWWA website for details and updates. <https://www.swwa.ca>

The SWWA Board is excited for the return of our annual in-person conference November 3-5th. It provides an opportunity to meet with other members, suppliers, and session speakers. Check the for all the up-to-date information about up-and-coming events as well as the latest protocol for COVID-19.

The SWWA board thanks each and everyone of you for the important and valuable job you do every day.



dawn
dierker

Training Manager
ATAP Infrastructure Management Ltd.

The Importance of Gathering

This month's issue of the Pipeline is the conference edition and that made me think of the importance of gathering as a group and learning from one another. In the past 18 months we have found ourselves restricted from gathering due to a world-wide pandemic. Did the world stop turning because we couldn't gather? No, but there sure are a lot of things that had to be done differently or had to be put on hold while we waited for the world to return to normal.

Conferences are a time where we come together as an industry, or in this case an association, and share learning, see new products and services while we socialize.

Many of our leadership teams, if they are only concerned with financial matters, may not see the benefit of these gatherings. However, there is great value in connecting with others in the industry and learning what they bring to the table.

Over the years I have witnessed lifelong friendships and professional relationships develop at conferences. Many times, there will be a presenter that resonates with an attendee and it sparks a conversation that leads to issues in a community being resolved. Key note speakers may not always have a message that deals with water or wastewater related subjects, but there are important leadership or community empowerment messages that are carried back to the attendee's home town.

Conferences are a great place to learn about new technologies and innovations that may help us do our job better or more efficiently. They are also a good place to get some face-to-face time with company representatives and suppliers. Trade shows give suppliers and service providers an opportunity to show off their latest products and services while forming strong personal connections with their clients.

The social aspect of a conference is also not time wasted. When industry workers come together they can form strong networks of people that can support them when they have questions. Over the years I have met many operators and administrators at conferences that will call if they have a question. If I, or one of my co-workers cannot answer their question we can usually send them to some-one who can. I have also met many industry experts that I can call when faced with a difficult issue.

I hope that you will attend this year's Annual SWWA Conference. A lot of time and energy goes into making this an enjoyable and educational experience for members. When you are there seek out people that you can add to your network and please stop by and have a chat. We are looking forward to seeing you in November.

Golf

The SWWA golf tournament will be held at the **Jackfish Golf Course**

More information to come in the new year.

Can't golf no problem - not all of us can, just sign up and give it a whirl from never before golfers to advanced we all have a great time out on the course with laughter flowing frequently.



teresa
walker
Inspirational Facilitator

The Ride

After September long weekend plus a few extra "bonus days of summer weather" I found myself packing up majority of my "lake life" at the new to me trailer I purchased this spring.

Majority of time from May long weekend until September long weekend was spent near or on the water, soaking in sunshine, exploring new territory, an abundance of campfires and connecting with new neighbours.

A time to reconnect with self, others, and the new surroundings.

Before leaving I took a few moments to sit quietly on my dock to soak all the moments of summer 2021 in.

Once again, the common theme within is to keep appreciating and being grateful for the moments as they arise.

Life is an amazing journey - a complete roller coaster of emotions and events at times.

It's important to be buckled in safely as we laugh, scream, flip, twirl around, soar to new heights and then plunge at speeds never imagined.

Our "safety" is our SELF AWARENESS, our SELF CARE, our own TOOLS we have discovered that work for us during the ride we call our life.

Occasionally, the ride slows, and we may find ourselves at the top and we look around...we see further than we have ever seen, notice things we may never have before...we smile...soak it in...and the ride continues.

At other times we may be experiencing the fast-paced loops and lose our sense of direction. We may feel physically ill and want nothing more than to get off the ride any way possible!

And yet the ride continues...

This is how life is...full of ups and downs, high paced, intense moments where we may find ourselves screaming to stop, for someone to help us, or closing our eyes because we can't bare to see what's coming next.

And then there are the moments where we are laughing, hands in the air full of wonder & amazement - thrilled, excited, and loving every second.

Summer of 2021 provided a variety of highs and lows; moments of thrills & excitement as well some ill feeling moments and wanting to "stop the ride" for even a little while.

This is life. Life is like a roller coaster, and we are all trying our best to stay on the tracks, hold on and enjoy the "high" moments.

'Hold on tight,
but not too tight
... and keep riding.'

No matter where you may find yourself along "The Ride" let's connect.

www.teresawalker.com to learn more.

HOLE SPONSORS:

1. Mueller
2. SaskOCB
3. Wolseley
4. Waste'n'Watertech
5. Vega Instruments
6. Venables
7. JS Industries
8. ATAP
9. Aquifer
10. Cleartech
11. Southwest Paving
12. Fabco Plastics
13. Mid Continental Pump
14. Ford Meter Box
15. Uniflange.
16. Flocor
17. Klearwater
18. Gee Bee Construction



jordan webb

Mueller
SWWA Supplier Rep

SWWA Golf Tournament 2021 – Dakota Dunes

I would like to start by saying it has been a while! Fortunately, 2021 co-operated and we were able to have and enjoy another SWWA golf tournament. The turnout was fantastic with 85 golfers happy to be outdoors and socialize again. Dakota Dunes was enjoyed by all with the course being challenging (we had a lot of lost balls) and venue new and grand. I would also like to thank all who attended, sponsors (without them this could not happen), Dakota Dunes staff and all volunteers who helped make this happen. I am looking forward to seeing all of you next year in 2022 at Jackfish and if I do please make sure to stop and say hello!

All the best.



Lunch was sponsored by N.S Pawliuk & Son,
Golf Banquet Supper by Acti-Zyme, Beverages by Cleartech, and
Water by Anderson Pumphouse

85 golfers happy to
be outdoors and
socialize again.

We Are WaterAid



Who we are

We are WaterAid, an international charitable organization, determined to make clean water, decent toilets and good hygiene normal for everyone, everywhere within a generation.

Since we started in 1981, we've remained focused on these three essentials. Without them, people can't live dignified, healthy lives. But with all three, they can unlock their potential, break free from poverty, and change their lives for good. Children grow up healthy and strong, women and men get to earn a living, and whole communities start to thrive.



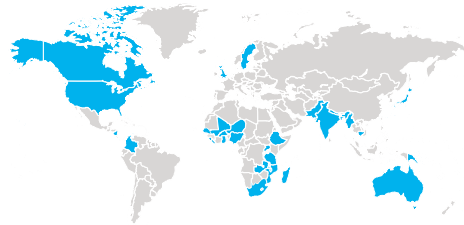
WaterAid/Ernest Randiarimbalala

The facts

771 million people don't have clean water close to home. That's 1 in 10 people.

1.7 billion people don't have a decent toilet at home. That's 1 in 5 people.

2.3 billion people lack soap and water for handwashing at home. That's 1 in 3 people.



Where we work

We transform millions of lives every year, working in 28 countries across Africa, Asia, Central America and the Pacific. Offices in Canada, UK, US, Australia, Sweden, Japan and India, backed by thousands of supporters, help make this possible.



What we've achieved

Since 1981 we've directly reached **27 million people with clean water, 27 million people with decent toilets, and 20 million people with good hygiene.**

But that's just the beginning. To reach even more people, we:

- Demand action from governments.
- Link communities with law and policy makers.
- Change attitudes and behaviour.
- Share knowledge with others.
- Rally support for the human right to clean water and sanitation.



Now that her village has a filtered hand pump, Julia from Bangladesh has access to clean water close to her home.



Get involved your way

There are loads of ways to get involved with us – take part in an event, raise funds and awareness with your community, or volunteer.

Whether you want to do something on your own, in a group, with friends and family, or with colleagues at work, we're here to support you.



Find tools and inspiration at wateraid.org/ca

And follow us:

- [facebook.com/wateraidcanada](https://www.facebook.com/wateraidcanada)
- [@wateraidcanada](https://twitter.com/wateraidcanada)
- [@wateraidcanada](https://www.instagram.com/wateraidcanada)



Globally, between 1 April 2019 - 31 March 2020, WaterAid reached:

402,000 household with clean water and 700,000 with decent toilets.



1,910,000 household members with good hygiene.

456,000 school students with good hygiene

1,315,000 people gained access to decent toilets through healthcare centres.



1,309,000 people gained access to good hygiene through healthcare centres.



1,012,000 people gained access to clean water through healthcare centres.

182,000 school students with clean water and 212,000 with decent toilets.

Advancing gender equality through WASH

Menstrual hygiene is an essential component of women's and girls health and wellbeing. But thousands of schools, workplaces, and healthcare facilities worldwide do not have adequate sanitation facilities for women and girls to safely manage their periods. As a result, many do not attend these public places during their monthly cycle, compromising their health and putting them at a disadvantage compared to their male counterparts.

At 12-year-old Jemima's school in Papua New Guinea, both girls and boys used to use the same toilet block, which was dirty and ill-equipped for menstrual hygiene management. This made many of the girls uncomfortable during their periods and discouraged them from attending school.

With the help of WaterAid, the school now has a separate toilet block for girl students with special facilities to help them safely manage their periods. Now, Jemima and her friends can go to school with confidence.



WaterAid/Habibul Haque

WELCOME TO THE SWWA ANNUAL CONFERENCE!

covid and the conference

We are so excited to be preparing to host you in person. We know you may have questions about attending conference this year, but rest assured we are committed to delivering the safest experience possible.

The Annual SWWA Conference 2021 will operate under all current and applicable Public Health Orders in the Province of Saskatchewan, found here.

You will need to provide either proof of full vaccination status OR proof of an approved negative COVID-19 test to attend Conference.

FAQs

The following FAQs provide information on what to expect when you attend the SWWA Conference & Tradeshow.

Do I have to be vaccinated to come to conference?

You have the choice to provide proof of full (double) vaccination status OR proof of a negative COVID-19 test to attend conference, as per the Province of Saskatchewan's Public Health Order. SWWA will accept any physical or digital proof of vaccination record provided by your local health authority.

If you are choosing to provide proof of vaccination, the LAST DAY you can receive your second shot and satisfy the 14-day waiting period before conference is October 18, 2021.

Can I attend conference with a proof of a negative test result?

Yes, we will accept proof of a negative test result, if it is approved under the Public Health Order:

- Must be from an authorized private provider
- Must not be from Saskatchewan Health Authority or self-administered
- Must be from within the previous 72 hours

IMPORTANT CONSIDERATIONS

- If you are an exhibitor choosing to provide a negative test result, you will not be allowed in the facility if you test positive at any time during the week.
- If you are unvaccinated and test positive, the Public Health Order requires you to self-isolate for 14 days.
- If you are unvaccinated and a close contact of someone who tests positive, the Public Health Order requires you to self-isolate for 14 days.

How will SWWA check for proof of vaccinations and test results?

All vaccine and test verification will take place at TCU Entrances.

For anyone choosing to provide test results, proof of a valid negative test will be required at every point of entry into the building.

How can I get tested?

Testing is the responsibility of the attendee or exhibitor. A valid test will be acceptable for 72 hours. Approved private testing in Saskatchewan is available through:

- Haztech
- Quantum Genetix
- Nobel

More information on testing can be found here.

For further details or clarification, contact the SWWA Office at office@swwa.ca



What happens if I test positive partway through the week?

You will not be admitted to the SWWA Conference or Tradeshow without a negative test result. As per the Saskatchewan Public Health Order if you test positive:

- You are also required to self-isolate.
- Your unvaccinated close contacts are also required to self-isolate.
- Your vaccinated close contacts are to self-monitor for symptoms but would be able to remain at the show.

What if I'm unable to get the vaccine?

Medical exemptions for anyone must include written confirmation from a medical professional as per the Public Health Order. Anyone with a medical vaccine exemption will still be required to provide proof of a negative COVID-19 test.

If I've already had COVID-19, am I considered immune and exempt from the Public Health Order?

No, the Saskatchewan Public Health Order will not recognize previous infection as a valid exemption, and you will still be required to provide proof of vaccination or proof of a negative COVID-19 test to attend Conference.

Will SWWA keep my medical information?

No, SWWA will not retain any records of private medical information.

Do I have to wear a mask at Conference?

Under the current Public Health Order, masking is required in all indoor public spaces at the event with the following exceptions:

- While eating or drinking (seated)
- Anyone engaged in public speaking, performance, or leading a public event if they are maintaining social distance of 6 feet.

The current Public Health Order governing masking is set to be reviewed at the end of October by the Province of Saskatchewan. Any changes to the order will be communicated by SWWA before the event week.

Will there be food and drink options?

Yes, prepared meals will be available during the conference as well as beverage services.

What cleaning and sanitization measures are in place? Enhanced cleaning and sanitization protocols are in place at TCU Place, – the highest level of cleaning and disinfecting levels available.

Can I get refund?

Exhibitors who decide not to attend the SWWA Tradeshow before the entry or registration deadline of October 8, 2021 will receive a credit for the following year.

If, for any reason, the SWWA Annual Conference is cancelled attendees will be refunded in full.

What if the Public Health Orders change before conference?

SWWA will follow all current Public Health Orders related to COVID-19 in Saskatchewan. If any of the orders change, SWWA will communicate those changes to Exhibitors and the Attendees/Presenters as soon as possible.

First Time Conference Goers

For those attending the conference for the first time here are some tips and things to know to help you be in the loop.

If you have pre-registered for the event you can pick up your conference delegate package at TCU place in the main foyer on Tuesday night prior to the conference opening.

The conference does not actually begin until Nov. 3, 2021.

In order to earn the 1.2 CEU's you must attend 3 technical sessions and receive stamps in all three, 3 workshops and again stamps must be given for in, and the keynote speaker with stamps in.

If you are not eligible for the 1.2 CEU you will need to sign in for the workshops on the sign in sheet – certificates will be emailed out to your email on file within the 3 weeks following the event.

Meal tickets and a banquet ticket can be found inside your package and must be turned in at every meal.

TIP #1

Keep your meal tickets and banquet ticket inside your name badge holder

Meals are provided for all days except for Wednesday breakfast.

Hotel information can be found on the SWWA website – it is best to book early as possible.

TIP #2

Network, Network, Network – We cannot say this enough! Conference is a great time to network and get to know those in communities around you. They could help you or vice versa with things you or they are dealing with.

Tip #3

Talk to the suppliers at the tradeshow, they are there to help you and watch for the sponsor signs in some booths these are the groups who are partnering with the SWWA to keep the conference prices lower and to help create an optimal delegate experience.

Tip #4

Finger food is offered at the tradeshow along with free beverages, finger food is not supper, so you will probably want to get a bite afterwards.

Tip #5

Want to meet your SWWA board look for the guys and gals wearing matching shirts of green, orange, blue, and purple with the SWWA logo on. They are hard to miss!

exhibitor Information 2021

All exhibitor information can be found on the SWWA website here -

<https://www.swwa.ca/booth-registration/trade-show>

The exhibitor move in schedule is posted and an agenda, we are currently waiting on the exhibitor package from the group who will be doing the exhibition setup. Once received it will be posted with all other exhibitor information. Showtime Events will be handling the exhibition setup, shipping of booths etc.

A reminder that all exhibitor rep names are past due – submit your booth names ASAP to ensure a printed name badge is available. Please note: all exhibition booths must use the same two reps for both days of the event. This is a COVID only measure and hopefully 2022 will see things back to 100% normal.

The supplier directory is in the finalizing stage and will be posted in the next couple weeks. If you did not get your business card in for the deadline or you have decided not to show in this year's tradeshow you will not be in the updated version being finalized. The next update will be for March 20, 2022. The deadline to make the supplier directory with any changes is Feb. 14, 2022.

All conference sponsors will be contacted in January 2022 to reserve a booth for the 2022 show as an appreciation of the company partnership. Tradeshow 2022 will open in late Spring and all booths who have chosen to not attend this year and have been credited will be contact prior to the event being made available. All those attending the show this year will be given the choice to choose booths after the sponsors and prior to those booths with credits.

SWWA

From the SWWA Office

Welcome to the updated SWWA website. We have really upgraded some features and we hope you are finding it easier to use.

EVERY MEMBER REQUIRES AN EMAIL – no email no membership, everyone with a phone has an email. Need help setting it up let me know I can walk you through it.

Every member requires an email to be in the database. You cannot share emails because each email assigned to a member is connected to that member email.

NEW – EVERY MEMBER NOW HAS A MEMBER NUMBER

So WHY the upgrade?

1. The database was corrupted due to shared emails in the system and after the system crashed twice creating a lot of work it was decided it was better to make some big changes to prevent it from happening again.
2. We wanted something that was user friendly – Our good friends over in AB had a great website and the benefits of sharing a similar site with different looks appealed because now we can share the cost of future upgrades.

What YOU need to know:

1. Membership is in the name of the individual and is required to be renewed yearly
2. If you were sharing an email with someone or you had not renewed before the upgrades were implemented and IF you have not renewed yet you will need to register a profile and buy a membership
3. KNOW your member number – if anyone is registering you for events, they will need it
4. Your membership follows you – if you retire or move jobs update your profile by logging in and making changes

IMPORTANT!!!

If your admin registers, you for SWWA events they will need to have a profile – no membership is required but they will need a profile to register you.

Have them set it up prior to the busy conference season

STAY CONNECTED:

NEWSLETTERS – if you unsubscribe you are responsible for staying up to date on what is happening with SWWA

Follow us on FB or LinkedIn to stay in the know

Above all learn, ask questions, network, and have

SWWA Conference Agenda Overview

Nov. 2 Pre-Registration 5:30pm-7:30pm TCU Place

Date: Wednesday, November 3, 2021

7:30am - Noon Conference Sign In/Walkup Registration
Location: Front Door Lobby

8:30am - 9:15am	#1 TS Elimination of Prechlorination at Buffalo Pound Water Treatment Plant is Not a Permanent Solution Blair Kardash	#2 TS SaskWater Melfort WTP Upgrade- Upgrade Project with Design Build Delivery Method Jason Stusick, MPE	#3 TS City of Saskatoon Emergency Planning Pamela Goulden-Mcleod
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9:15am-9:45 Gallery A/B Coffee Gallery C/D Coffee Centennial Hall Coffee

9:45am - 10:30am	#4 TS Lake Diefenbaker Irrigation Projects (WSA) Patrick Boyle, Clinton Molde, Dwayne Gelowitz	#5 TS Fundamentals of Aerobic Granular Sludge Paula Dorn, Aqua-Aerobia Systems Inc	#6 TS Turning your staff into Change Champions Dorian Wandzura
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10:30am Gallery A/B Gallery C/D Centennial Hall

10:45am - 11:30am	#7 TS Mental Health Shelly Howe	#8 TS Effects of Wastewater and Treatment Plant Upgrades on Downstream Canadian Water Streams in Prairies Peter Leavitt	#9 TS Buffalo Pound WTP Renewal Project Update Ryan Johnson
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11:45 - 1pm Lunch -Centennial Hall

11:45 - 1pm Lunch -Centennial Hall

1:00pm - 4:30pm	#1 WS Smart Utilities Network Andrew Bisso	#2 WS Water Security Agency	#3 WS Ammonia and Chlorine in Water Enisa Zanacic
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4:00pm - 6:00pm Tradeshow Booths Open & Finger Foods
Location: Grand Salon

6:00pm *Silent Auction open 4-9pm*

6:00pm - 8:30pm Watering Hole & Tradeshow booths open
Location: Grand Salon

Date: Thursday, November 4, 2021

8:30-8:45am AGM/Open Meeting - Centennial Hall

8:45-9:15am OCB Update

9:15-10:30am Keynote speaker- **Dr. Jody Carrington**
Location: Centennial Hall

10am-noon Tradeshow open - Coffee
Location: Grand Salon

12:00pm-1pm Lunch on tradeshow floor
Location: Grand Salon

1:00pm - 4:30pm	#4 WS Cybersecurity Public Safety Canada	#5 WS Lagoons to Collection line maintenance Jonathon Lee and Allen Schiestel	#6 WS Infrastructure Asset Management -Level of Service and Risk Dorian Wandzura
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6:00-6:30pm Banquet Cocktails Gallery A/B Gallery C/D Centennial Hall

6:30-10pm Banquet Awards Ceremony and Entertainment
Location: Grand Salon

Date: Friday, November 5, 2021

7:30-8:30am Breakfast
Location: Centennial Hall

8:30-9:00 am WSA Update- Jeff Patterson

9:00-11:30am #7 WS
Energy Health Management
Joe Roberts

conference events

silent auction

Nov 3 from 4-8:30pm - lots of ticket draws for items, 50/50 tickets, support WaterAid through purchasing silent auction bids and tickets for items.

entertainment

Sponsored by



andrew grose

For over 2 decades Andrew Grose has charmed countless audiences with his hilariously relatable material and quick wit. He's appeared on some of the most prestigious stages in Canada from Montreal's Just For Laughs to the Calgary Stampede Grandstand Show. He's performed on countless television specials and at all the major festivals in Canada including the Edmonton Comedy Festival which he's produced for the last 9 years. For the past 7 he's been the co-host of one of the most popular radio shows in Edmonton. In 2019 he decided to hang up the radio mic and return to stand-up comedy full time. Originally from Charlottetown, P.E.I. Andrew makes his home in Edmonton, Alberta where he organized the Laughing For Cancer Benefit which raised over \$1,000,000 for cancer research and treatment in Alberta. He is the perfect entertainment and we are excited to welcome him back to the SWWA Conference.



keynote speaker

Sponsored By



dr. jody carrington

Over the past 15 years, Dr. Jody Carrington has assessed, treated, educated and empowered some of our most vulnerable and precious souls on the planet. She is a child psychologist by trade, but Jody rarely treats kids. The answer lies, she believes, in the people who hold them. Especially when kids have experienced trauma, that's when they need big people the most. Some of her favourites include educators, parents, first responders, and foster parents. Jody has shifted the way they think and feel about the holy work that they do.

Before Jody started her own practice and speaking across the country, she worked at the Alberta Children's Hospital on the inpatient and day treatment units where she held families with some of the difficult stories. They taught her the most important lesson: we are wired to do hard things. We can handle those hard things so much easier when we remember this: we are wired for connection.



This all started when Jody received her Bachelor of Arts with Distinction from the University of Alberta. She completed a year-long internship with the Royal Canadian Mounted Police during that time, and worked alongside families struggling with chronic illness at the Ronald McDonald House. She received her Master's degree in Psychology at the University of Regina and completed her PhD there as well, before completing her residency in Nova Scotia.

Her first book, Kids These Days: A Game Plan for (Re)Connecting with those we Teach, Lead & Love, came out in 2019 and sold 20,000 copies in just three months. It is now on Amazon's Best Sellers List.

If you have any items you would like to donate for the silent auction please contact the swwa office.

noteworthy conference sponsors



FORD METER BOX

SaskOCB.ca
Operator Certification Board



The Saskatchewan Operator Certification Board

Your Certification Renewal and Continuing Education Units

How do I know when to renew my certification?

Renewal forms are mailed to operators, usually 2 to 3 months before the renewal date. If your renewal date is approaching and you have not received your notice, you can download the renewal form from our website: <https://saskocb.ca/wp-content/uploads/Renewal-Application-August-16-2018-1.pdf>

What do I need to renew my certification?

You will need a renewal application, \$150.00 renewal fee and one (1) Continuing Education Unit (CEU) every two (2) year renewal period. You cannot repeat the same CEU's for two consecutive renewals

(i.e. – if you took First Aid for your last renewal, you cannot repeat this course and use it for this one).

How do I obtain CEU credits if there are no in person courses or conferences available?

There are several courses now available through internet webinars, video conferences and online registrations. You can refer to our CEU approved list on our website for more information and options. Some courses will be noted as “online”, “webinar”, etc if it has been approved as such. You can check out the course facilitator websites for further details or contact them directly.

I have extra CEU credits from my last renewal, can I use them for this one?

CEUs must be earned during your current certification period (i.e. – May 2019 – May 2021) so any CEUs earned prior to that date will not be accepted.

I want to take a course for my CEU credit but it is not listed on the approved list. What can I do?

You can complete a CEU Evaluation Form for the course, including an agenda and detailed timeline and submit to our office. The Board will review it at the next Board meeting and, if approved, it will be added to our approved list and uploaded to our website.

The form can be found on our website - <https://saskocb.ca/wp-content/uploads/CEU-Evaluation-Form-June-10-2020-1.pdf>

I do not have access to the internet and online learning options, can I get an extension on my renewal?

At this time, we are not able to extend renewal obligations for anyone not able to obtain their CEU credits. If you cannot obtain CEUs you can contact our office or the EPO in your area for further instruction. EPOs can be found on the Facility Classification List on our website under the Operator Certification tab - <https://saskocb.ca/certification/>

Where do I find the Board meeting dates and submission deadlines?

All meeting dates and deadlines are listed on the home page of our website – www.saskocb.ca

How do I submit my documents to the OCB office?

Email, fax or Canada Post mail are all accepted ways to submit your documents to the OCB.

You can always call or email us with your questions:

Email – info@saskocb.ca

Phone – 306-789-3430

Fax – 306-789-3429

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SaskOCB
Operator Certification Board

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- 2. Used 2017 Flygt Submersible Pump**
5.0 HP, Model # NP-3102, 1745 RPM, MT IMP 462 Vol. 4" c/w FLS Adaptive N Flush Valve Ready - 25' of cable
\$3,000



- 3. Used 2010 Flygt Submersible Pump**
5.0 HP, Model # NP-3102, 1745 RPM, MT IMP 462 Vol. 4" c/w FLS Adaptive N Flush Valve Ready - 25' of cable
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- 4. NEW Goulds Submersible Sewage Pump**
20HP Model #4N512N3EF, 4" Discharge, 230 Volt, 52 amp, 1750 RPM, IMP diameter 9.75" - 25' of cable
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Please be sure to check that you have the invite in your email - it will arrive the Monday prior to the webinar. You will need to ensure that you allow Zoom to access your audio.

If you are using an iPad or another device please be sure that your zoom app is up to date prior to the webinar start. Please login 10 minutes prior to and be sure to check the following things:

1. When zoom asks to be allowed to access your speakers say yes - saying no means you will not hear the webinar
2. All are put on mute upon entering so the speaker does not receive any unnecessary background noise during the presentation.
3. The chat at the bottom of the screen is used for asking questions - you can address to everyone or you can send it to the SWWA office
4. Questions will be done for the most part at the end of the session, unless asked if there are any

The SWWA office will not be available for troubleshooting other than in private chat in the webinar.



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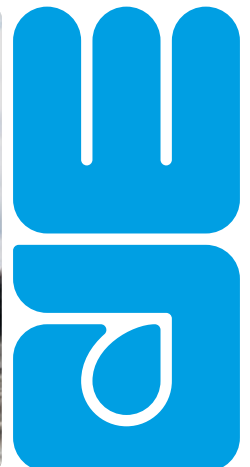
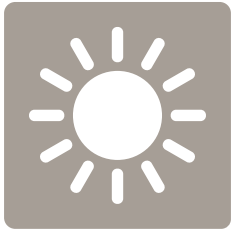
or contact **Nefertiti Saleh** at nsaleh@wateraidcanada.com for more information.

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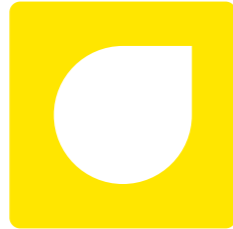
Living in a fragile world

The impact of climate change on the sanitation crisis



WaterAid

Introduction



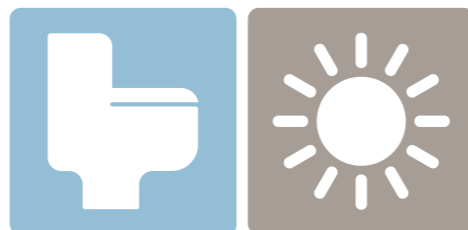
Everyone, everywhere has the right to safe and accessible sanitation. However, two billion people do not have access to a decent toiletⁱ at home.¹

Poor sanitation is linked to the transmission of deadly, preventable illnesses, such as cholera, diarrhoea and dysentery. Tragically, more than 310,000 children under five – that is one child every two minutes – die every year of diarrhoeal diseases as a result of lack of access to decent toilets and also clean water.^{2,3} Inadequate sanitation is also a main factor in the transmission of neglected tropical diseases, such as trachoma and intestinal worms.

Less than half of the world's population can rely on a toilet that is connected to a system that safely manages and disposes of human waste.¹ Many people still lack access to even basic sanitation, and so have to use hanging latrines or pits that empty into rivers or lakes – that people collect water from for drinking, cooking and cleaning. Others have to share their toilet with multiple households.

Further, today 9% of the world's population – that is a staggering 673 million people – have no choice but to defecate outside due to lack of access to a toilet.¹ Women and girls in particular can be exposed to gender-based violence, including sexual assault, when open defecation is their only option. Human faeces contaminates water sources, exposing vulnerable communities to harmful bacteria and viruses that lead to fatal illnesses – such as cholera – placing more pressure on over-stretched healthcare services.

At current rates of progress, everyone in sub-Saharan Africa will not have access to safely managed sanitation until 2403ⁱⁱ and in some countries the proportion of the population without access to a decent toilet is increasing.¹



● **Adjeratou, 37, stands next to a new family latrine in the commune of Tenkodogo, in the Centre-East region, Burkina Faso. May 2019.**



WaterAid/Basile Ouedraogo

i A hygienic household toilet, where human waste is not treated but ends up in rivers or is dumped in the surrounding environment after emptying.
ii This is calculated by extrapolating a yearly rate of progress of 0.21 for the region from the time period 2000–2017.

The world's sanitation crisis is nothing short of a global disgrace, and now climate change threatens to escalate it. Between 2030 and 2050, a quarter of a million additional deaths per year are predicted due to climate change – many of these deaths will be related to preventable diseases linked to poor sanitation.⁴

Frequent, extreme weather events – such as severe cyclones, heavy rainfall and rising sea levels – often cause damage to already weak sanitation infrastructure.

Inadequate sanitation perpetuates a vicious cycle of disease and poverty, because when communities do not have access to decent toilets and clean water, disease spreads fast.

Good sanitation services and disaster-resilient infrastructure is needed to withstand health and climate change crises. But national governments and the global community are failing to respond.

The worldwide COVID-19 pandemic has highlighted the importance of everyone having access to basic resource, such as clean water, to stop the spread of disease. Climate change is a growing global crisis too and decent toilets are a vital resource that can help protect vulnerable people from its impact.

The communities featured in this report are living with the devastating intersection of poor sanitation, the adverse effects of climate change and the uncertainty of fragile health services. Safely managed and resilient sanitation is one of the first lines of defence against climate change and disease outbreaks, so we need to act now to save lives.

● **Kalabogi village is situated in the Sutarkhali Union at Dacope Upazila. Most people in this area use the open-air hanging toilets which empty into the river. Often households are forced to throw children's faeces directly into the tidal water. Dacope, Khulna, Bangladesh. August 2020.**



WaterAid/Habibul Haque

Toilets around the world



Living without access to a decent toilet has a direct impact on the health, education and livelihoods of billions of people around the world, and certain groups – such as women and girls – are more affected by poor or non-existent sanitation facilities. Women and girls are disproportionately impacted by the sanitation crisis; lack of access to decent toilets makes it extremely difficult for them to manage their periods with the dignity and privacy they deserve both at home and school.

The needs of disabled people and those with limited mobility are also often overlooked when it comes to providing sanitation services. People with disabilities face multiple barriers when using facilities, such as steps leading to toilets and narrow doorways. A lack of inclusive facilities means disabled people often have to perform dangerous and unhygienic practises, for example wheelchair users are forced to crawl on the floor of latrines.

Everyone, everywhere has the right to safely managed sanitation, but progress on achieving this goal is still very slow.



WaterAid/Tapas Paul

What does access to sanitation look like around the world?¹

- Safely managed sanitation:**
 A hygienic household toilet where human waste is treated and safely disposed of or reused. This is the standard set by the UN's Sustainable Development Goals (SDGs).
 How many people have this?
3.4 billion (45%)
- Basic sanitation:**
 A hygienic household toilet, such as a pour-flush latrine, where human waste is not treated but ends up in rivers or is dumped in the surrounding environment after emptying.
 How many people have this?
2.2 billion (29%)
- Limited sanitation:**
 A hygienic toilet that is shared between several households.
 How many people have this?
627 million (8%)
- Unimproved sanitation:**
 A toilet that does not hygienically separate human waste from contact with people, such as a latrine over an open pit or body of water.
 How many people have this?
701 million (9%)
- Open defecation:**
 People relieving themselves outside, for example in open fields, near railway tracks or in secluded areas.
 How many people do this?
673 million (9%)

● A ramp has been established for the aid of the disabled patients at the Kolagaon Community Clinic, Sunamganj Tahirpur, Bangladesh. October 2019.

● Jamila carries water to use for the toilet on the banks of the river Rupsha. Tidewaters overflow this area regularly and cyclone Amphan destroyed most of the riverside toilets. Gorkathi, Chalna, Khulna, Bangladesh. August 2020.



WaterAid/Habibul Haque

How good sanitation keeps people healthy



WaterAid/Basile Ouedraogo

Inadequate sanitation can lead to the spread of diseases in vulnerable communities and similarly under-resourced healthcare facilities are left to fight these health crises. One in ten healthcare facilities have no sanitation and 1.8 billion people lack basic water services at their local facility.⁵

This leaves health services in a weakened state and under more strain to cope with infectious diseases, such as superbugs and cholera, that can be spread by poor sanitation and unhygienic environments. Some of these health threats are now exacerbated by extreme weather episodes caused by climate change, placing a further burden on healthcare systems and health workers, and compounding the desperate situation faced by communities.

Decent toilets are essential for people to live healthy, productive and dignified lives, but not enough is being done to ensure the most vulnerable communities have access to sanitation services as a basic human right.

● Sétou stands next to a family latrine in Dio-Ba, Kati district, Koulikoro region, Mali. October 2019.



WaterAid/Habibul Haque

● Tania, 26, lives in at the bank of the river Rupsha with her husband and two sons. Her family uses open-air toilets. Tidewaters overflow this area regularly. Gorkathi, Chalna, Khulna, Bangladesh. August 2020.

Cholera

Cholera is a disease of poverty and inequality, afflicting and killing the most vulnerable people in the world. It is commonly spread by water infected with bacteria found in human faeces. The disease causes diarrhoea and vomiting, and can lead to severe dehydration and septic shock, which can be fatal.

Estimates suggest there are around 2.9 million cases of cholera and 100,000 deaths every year.⁶ Communities most affected by cholera tend to lack decent toilets, clean water and good hygiene – all essential for stopping its spread.

Despite the World Health Organization (WHO) making global recommendations aimed at reducing cholera deaths by 90% and eliminating the disease in 20 countries by 2030,⁷ progress has been minimal. Countries with the lowest levels of access to sanitation are least likely to have plans that align with global recommendations.⁸

But now climate change makes eliminating the deadly disease harder than ever.

Increased flooding further aids the spread of cholera, with sanitation infrastructure (such as open sewers) overflowing and spreading human waste. Furthermore, climate change has caused a rise in temperatures, conducive to the growth of cholera bacteria and combined with intense rainfall, the bacteria can spread to places not previously exposed to cholera.⁹

Cholera outbreaks are often predictable and largely preventable; decent toilets are needed to help eliminate the disease.



WaterAid/Farzana Hossain

Superbugs

Resilient water and sanitation systems are fundamental in tackling one of the world's top health threats – antimicrobial resistance (AMR).

While overuse of antibiotics is a significant factor behind AMR, poor sanitation can also play a part. Human waste carries millions of bacteria, including superbugs,¹⁰ so if water sources are contaminated, people can become exposed to harmful diseases.

The WHO has reported that AMR is on the rise in every part of the world.¹¹ While more research is needed on the link between AMR and climate change, studies have suggested a connection between increasing temperatures and the rise of AMR.¹¹

Access to decent toilets must form part of the global effort to tackle AMR.

COVID-19

COVID-19 has affected every corner of the globe and has further highlighted the divide in global health through social inequalities. This pandemic has exposed how governments have neglected to invest in the basics of clean water, soap and decent toilets for decades.

Nearly a third of the world's urban population live in informal settlements and while health agencies recommended physical distancing to prevent the spread of COVID-19, vulnerable communities contend with overcrowded living conditions and busy communal toilets.

Although more research is needed in this area, shared sanitation facilities could contribute to the spread of the virus responsible for COVID-19. When used by infected individuals, communal toilets could become a source for exposure – especially where people do not have access to clean water and soap.¹²

● Onita at her toilet in the Assasuni district, Bangladesh. September 2019. A five-year project funded by Severn Trent will improve sanitation and water services for 100,000 people in the area.

Sanitation and climate change



Climate change is a devastating reality that vulnerable people are living with right now. Extreme weather episodes have become a staple in our world. Between 1995 and 2015, flooding alone made up 47% of all weather-related disasters, affecting 2.3 billion people, with 95% of those living in Asia.¹³ But as the number of extreme weather events (including severe droughts and rising temperatures) increase due to climate change, already-stretched sanitation services become damaged or malfunction causing these infrastructures to fail, with catastrophic consequences for the communities they serve.

With the impact of climate change already felt across the world, water and sanitation systems are buckling under the strain of its severe effects. There needs to be a much greater focus placed on climate change adaptation. Protecting sanitation services from climate change strengthens the resilience of entire communities, helps them bounce back from weather disasters more quickly and takes the pressure off health services. Sanitation plans that don't take into account climate vulnerability and extreme weather events are likely to fail in the long term, leaving entire communities at risk of illness and death.

Floods

Water-related weather events – such as storms, cyclones and increased rainfall – have caused devastating floods around the world. Toilets become damaged or are destroyed, leading to spillages and increases in the practise of open defecation. This poses an extreme risk to human health, as water sources used for drinking, cooking and cleaning can become contaminated with human faeces.



WaterAid/Habibul Haque

Sumi, 18, lives on the banks of the Sutarkhali river with her family. The community use hanging toilets that empty into the river. Dacope, Khulna, Bangladesh. August 2020.

Rising sea levels

A rise in sea levels can expose sewage pipes to corrosive saltwater. With sewage pipes mostly built underground, sea level rises will make installing and maintaining these pipes difficult. Water can also flow back into sewage systems, leading to untreated sewage flowing out and getting into waterways.

Dry periods

Rising temperatures can contribute to water scarcity and prolonged periods of drought put further strain on depleted water supplies. As water sources dry up, communities may find they do not have enough water to empty their pour-flush toilets or latrines. Those who have to fetch water – usually women and girls – to maintain latrines, will have to depend on water sources that are further away, and may instead avoid using water, deciding to practise open defecation.



WaterAid/Habibul Haque

Many of the countries that are most vulnerable to climate change also have some of the lowest levels of access to sanitation in the world. Niger is ranked the second most climate-vulnerable country in the world,¹⁴ but a staggering 86% of the population do not have a decent toilet.¹

The greatest injustice is that the people who will suffer most from our changed climate, have done the least to cause it. Africa, which is the second most populous continent in the world, accounts for less than 4% of total global carbon emissions,¹⁵ but is home to 33 of the 50 countries most vulnerable to climate change.¹⁴

Mofizul uses an open-air hanging toilet on the banks of the Sutarkhali River. There are no water or hygiene facilities. Dacope, Khulna, Bangladesh. August 2020.



WaterAid/Habibul Haque

Open-air hanging toilets are common in this area and human waste is emptied into rivers. Kalabogi, Dacop, Khulna, Bangladesh. August 2020.

Table 1: Sanitation access for the ten countries most at risk from climate change.¹⁴

Country and climate vulnerability ranking ⁱⁱⁱ	Percentage of people without access to basic sanitation ¹	Number of people without access to basic sanitation ¹
1. Somalia	62	9,090,773
2. Niger	86	18,563,589
3. Solomon Islands	66	406,370
4. Chad	92	13,656,965
5. Micronesia	12	12,338
6. Guinea-Bissau	79	1,479,012
7. Sudan	63	25,708,250
8. Liberia	83	3,928,735
9. Mali	61	11,248,414
10. Eritrea	Data unavailable	Data unavailable



ⁱⁱⁱ 'Vulnerability' refers to a country's vulnerability to climate change and other global challenges, in combination with its readiness to improve resilience. It aims to help governments, businesses and communities to better prioritise investments for a more efficient response to the immediate global challenges ahead.



More money is needed to protect vulnerable communities from the impacts of climate change. Current investment is not enough.



In 2017–18, a total of \$579 billion was provided as climate finance, from both public and private actors. Of this, public finance (from multilateral and bilateral sources) accounted for \$253 billion or 44% of this total.

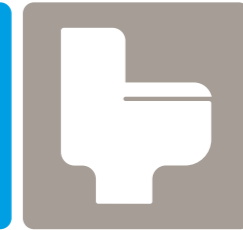
Despite being a basic human right and a first line of defence, a paltry amount of climate finance is currently invested in getting clean water to everyone, everywhere. Money for water, sanitation and hygiene (WASH) adaptation accounts for just \$9 billion, or 1.6%, of total climate finance. The ten countries with the lowest number of people who have access to water close to home get on average 84 US cents per person, per year to help tackle the impacts of climate change on their water services – despite also being some of the most vulnerable communities in the world.¹⁶

● A child is using an open-air hanging toilet. Without water or somewhere to wash hands, it's impossible to maintain good hygiene practises. Kalabogi, Dacope, Khulna, Bangladesh. August 2020.



WaterAid/Habibul Haque

Why doesn't everyone have a decent toilet?



Despite commitments by governments and international donors to improve sanitation, little is being done to ensure this human right becomes a reality. This is due to:

Government inaction

One of the key obstacles has been the absence of political will, with national governments failing to prioritise sanitation services for vulnerable communities. Governments often underestimate the role of WASH as a significant indicator of a country's progress.

Inadequate investment

In a WHO and United Nations (UN) WASH survey completed by 115 countries and territories representing 60% of the world's population – including 93% of the population of least developed countries – out of 104 respondents, only six reported having the necessary components (including sufficient financial resources) in place for urban sanitation and only three out of 101 for rural sanitation.¹⁷ But toilets are a good investment, every \$1 invested returns \$5.50 in increased productivity.¹⁸

People

There are insufficient human resources to reach sanitation targets. Building and maintaining decent toilets will require a considerable workforce, including sanitation workers who provide an essential service emptying pits and maintaining sewers. But these workers often face dangerous working conditions and are on the margins of society.



WaterAid/Sam Vox



● Salim, 71, stands next to the small temporary toilet he built round the back of his house in Dar es Salaam, Tanzania. January 2020.

● Paul, 42, manual emptier, inside a pit, emptying a family latrine. Ouagadougou, Burkina Faso. July 2019.



WaterAid/Basile Ouedraogo

What does climate-resilient sanitation look like?



There are ways that sanitation systems can be adapted to become climate change-resilient.

These include:

- **Appropriate technologies** that ensure sanitation infrastructures are resilient to extreme weather episodes. For instance, building raised toilets with ramps for accessibility can prevent floods from damaging the structure and waste spilling into the environment.
- **Early warning systems** that signal the arrival of extreme weather events can enable households and sanitation workers to take precautions to protect toilets and sanitation systems.
- **Investing in human resources** to ensure that the delivery and running of sanitation services is uninterrupted by extreme weather. More sanitation workers and specialists are required to respond to this challenge and need to be offered training and decent working conditions.
- **Identifying** areas vulnerable to climate-related weather episodes and prioritising those areas for climate-resilient sanitation investments. For instance, authorities should avoid setting up sewage treatment facilities in areas prone to flooding.
- **Strengthening services** to complement appropriate technologies and robust infrastructures. Establishing effective sanitation services is critical to disaster preparedness; the running and maintaining of services needs to be climate-resilient. For instance, regularly emptying pits and septic tanks to reduce the level of contamination triggered by heavy rainfall and flooding.



WaterAid/DRIK/Habibul Haque



WaterAid/DRIK/Habibul Haque

● Anita, 40, lives on the coastal region with her husband and son. They use a climate-resilient toilet which is protected from the threat of rising tides. Trimohoni, Dacope, Khulna, Bangladesh. August 2020.

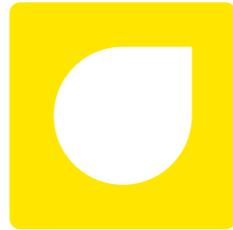


WaterAid/Sam Vox

● Teodora, outside her toilet showing how the flood waters have gone into the water storage tanks and filled up the pit latrines, causing more flooding in Kigamboni, Tanzania. January 2020.

Country focus

Bangladesh



Bangladesh is one of the most vulnerable countries in the world to the impact of climate change. Two-thirds of Bangladesh sits less than five metres above sea level,¹⁹ leaving these areas highly susceptible to river and tidal flooding. Drought, rising sea levels and cyclones also significantly impact access to clean water.

In Dacope, a climate-vulnerable region of Khulna District in coastal Bangladesh, WaterAid has been working with communities to build durable, disaster-resilient WASH facilities. These have been built using heavier construction materials and by raising toilets above ground level to protect them from future flooding. A fund was also created to allow the community to maintain the facilities to keep them operational for many years to come.

In May 2020, the region was hit by Cyclone Amphan, which caused torrential rain, flash flooding and storm surges. Many homes in the Khulna District were damaged and destroyed. Despite this, only a small number of the new WASH facilities were damaged in Dacope, proving that the disaster-resilient structures are more able to withstand the impacts of extreme weather events.

Having a functioning, hygienic and reliable toilet has made a big difference to people's lives in the region.



WaterAid/DRJK/Habibul Haque

Shabana, 25, lives with her son and husband in a village in Dacope. They used to use a pit latrine on the edge of a busy field.

"I did not have any privacy at all. We somehow managed to surround the latrine with four pieces of burlap sack. However, I always felt exposed while using that toilet."

WaterAid helped to build Shabana's family a toilet that is private and raised above the ground to prevent damage from potential floodwaters.

"Now we have a modern latrine. I can use it when I need to. I do not have to wait until it gets dark. It has an overhead roof and a door I can lock. I am not scared anymore while going to the toilet."



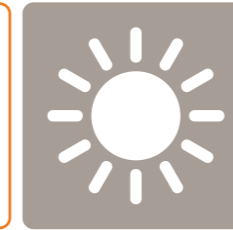
WaterAid/DRJK/Habibul Haque

● Shabana, 25, cleans her climate-resilient toilet. Trimohoni, Dacope, Khulna, Bangladesh. August 2020.

● An open-air hanging toilet. Kalabogi, Dacope, Khulna, Bangladesh. August 2020

Country focus

Madagascar



Madagascar lies off the south eastern coast of Africa and is home to around 25 million people.

Climate change has already brought frequent, extreme weather episodes to this country. A continued rise in sea levels has led to severe floods in recent years – which has had a considerable impact on its sanitation systems and has had an impact on its economic development due to the tourism sector being affected.

In Madagascar, fewer than 11% of households (around 2.5 million people) have access to a decent toilet¹ – among the lowest rates of sanitation in the world.

Maida, 55, lives with her husband in Morondava, a seaside resort on the west of Madagascar that is home to 5,000 people. Only roughly 1% to 2% of the community have a latrine and the rest are forced to use the beach.²⁰

● Maida, 55, Morondava, Madagascar, 2019.



WaterAid/Elena Heatherwick

Maida was determined to build a toilet for her beach-front home when she moved to Morondava: **"It's sad to see so many people having to use the beach. It's sad not only for me, it's sad for the environment."**

But Maida and her husband only had eight months in their new home before disaster struck. One night, there was an extremely high tide and as the sea pounded the beach, the ground beneath the toilet caved in. Days later the latrine collapsed, along with her house. She attributes the destruction of her toilet and her home to climate change: **"Far away from us, icy mountains are melting because of the heat. The ice becomes water, the sea level gets higher and higher. I think this is what happened to us."**

Maida's home is now rubble on the beach. Her and her husband now stay with relatives.

Her dream had been to live in a beautiful house with a working toilet:

"I was very proud because having a house with a toilet is something amazing."

Country focus

Zambia



Zambia is a landlocked country in southern Africa, with a population of just under 18 million people. Today, 74% of the population don't have access to basic sanitation – that is around 13 million people.¹

In the 1970s, as its economy began to decline, Zambia experienced its first cholera outbreak.²¹ The last major epidemic occurred between October 2017 and June 2018 in the Lusaka District, a heavily populated area in the country's south. The outbreak infected thousands and killed 114 people.²²

Zambia's poor sanitation services – which include inadequate faecal disposal – are a significant factor in cholera transmissions. Outbreaks occur in the rainy season and the inadequate drainage systems that frequently flood contribute to the spread of disease.

But extreme weather as a result of climate change has also been linked to increased cholera infections. A rise in temperature before the rainy season can lead to a higher number of people affected by cholera and heavy floods can further spread the disease.

The Zambia Government joined global efforts to eliminate cholera worldwide by 2030 and plans to eliminate the disease nationally by 2025. But increased investment in the country's WASH sector is critical to stamping out cholera.



WaterAid/Chileshe Chanda

Jonathan, 39, lives with his family in the Chipata sub-district in Lusaka. His daughter Mirriam, 9, contracted cholera during the 2017 outbreak:

“Mirriam fell ill at the very start of the outbreak. The people in charge of the water supply also came. At that time, we would get drinking water from a kiosk when we could and relied on shallow wells shared by other people in the community for the rest. They found the water was contaminated. We also shared a pit latrine between four families.”



WaterAid/Chileshe Chanda

● **Cholera survivor, Mirriam, 9, draws clean water with her mother, Monica. Tap water was recently installed near her home in Mazyopa Compound in the Chipata sub-district, Lusaka, Zambia. May 2018.**

Country focus

Nigeria



Nigeria is the seventh most populous country in the world and despite several years of economic growth, the progress towards universal access to adequate sanitation is slow. Between 2000 and 2017, those with at least basic sanitation grew from only 30% to 39%, and in 2017 nearly 38 million people still practised open defecation.¹

This impacts the entire country – it is estimated that Nigeria loses 1.3% of its GDP annually due to poor sanitation.²³ In 2018, the Nigerian Federal Government declared a state of emergency for WASH, and launched a National WASH Action Plan in response to the huge challenges linked to poor sanitation. This was followed the next year by the 'Clean Nigeria' campaign which aims to end open defecation by 2025.

However, the 2019 WaterAid report *Equal to the task: financing for a state of emergency in Nigeria's water, sanitation and hygiene sector*, found that there was a \$20 billion annual funding gap for WASH in Nigeria if they are to achieve universal access to water and sanitation by 2030. It is clear that there will need to be a significant upscaling of resourcing over the next decade if the National WASH Action Plan is going to create real results for the people of Nigeria.

● **Jacinta, 32, stands near her toilet. Guzape, Nigeria. September 2020.**



WaterAid/Nelson Owoicho

● **Rose Isa, 42, is a trader who hopes for a better life for her children where they will have access to water and good toilet facilities. Guzape, Nigeria. September 2020.**

Jacinta, 32, has been living in Guzape village on the outskirts of Abuja for more than 15 years. Jacinta has six children and she is worried about what the future holds for her family.

“Our problem here is lack of good toilet facilities and we are worried. We have contracted diseases here because of the toilet we share with others. The toilet overflows every six months, and we contribute money to fix it. Another toilet will help us a great deal, but we are battling with space.”

Jacinta has to purchase water at a high cost in her village, but the COVID-19 pandemic has affected her income and reduced what she can spend on basic essentials.

“We have to purchase water for drinking, cleaning and general use. Our source of income has been affected by the COVID-19 pandemic. We want those concerned to come to our aid and uplift our living standard.”



WaterAid/Nelson Owoicho

What needs to change?



Urgent action is needed to ensure everyone has access to decent toilets to help prevent the spread of diseases and protect communities from the impacts of climate change. To tackle this issue, we will need to see:

Investment

- Lack of decent toilets contributes to the spread of deadly diseases, placing a strain on fragile healthcare services. Governments must commit more money to the sanitation sector, so everyone has access to decent sanitation services that are safe, reliable and inclusive.

Government action

- Governments need to factor sanitation services into national climate adaptation plans.
- Climate change has led to severe weather events destroying sanitation infrastructure. Governments need to plan and roll out appropriate sanitation infrastructure, to help communities become more resilient to extreme weather events.

People

- Ensuring everyone, everywhere has access to a decent toilet and delivering climate-resilient sanitation infrastructure will require a considerable workforce – including more sanitation workers. Safely managed sanitation must accompany a safe and dignified working environment for sanitation workers. Governments need to ensure decent working conditions through legislation, monitoring and enforcement.
- Planning for sanitation services must include the participation and requirements of women, girls and disabled communities to ensure toilets are inclusive and safe.
- Climate change adaption must be holistic, ensuring that there is sufficient expertise and resource at every level of sanitation services planning.



WaterAid/Basile Ouedraogo

● **Ousseini, 53, a mason involved in latrine building, washes his hands with soap next to his family latrine. Dankoumani, Mali. October 2019.**



WaterAid/DIRIK/Habibul Haque

● **Anita, 40, stands next to her climate-resilient toilet. Trimohoni, Dacope, Khulna, Bangladesh. August 2020.**

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Appendix: Global access to sanitation and climate vulnerability index

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Afghanistan	11	43	57
Albania	91	98	2
Algeria	141	88	12
American Samoa	-	54	45
Andorra	-	>99	<1
Angola	46	50	50
Anguilla	-	97	2
Antigua and Barbuda	56	88	12
Argentina	142	-	-
Armenia	96	94	6
Aruba	-	-	-
Australia	177	>99	<1
Austria	168	>99	<1
Azerbaijan	101	93	7
Bahamas	135	95	5
Bahrain	72	>99	<1
Bangladesh	36	48	52
Barbados	128	97	2
Belarus	158	98	2
Belgium	147	>99	<1
Belize	64	88	11
Benin	17	16	84
Bermuda	-	>99	<1
Bhutan	53	69	31
Bolivia (Plurinational State of)	70	61	39
Bosnia and Herzegovina	140	95	4
Botswana	66	77	23

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Brazil	129	88	11
British Virgin Islands	-	-	-
Brunei Darussalam	109	-	-
Bulgaria	156	86	14
Burkina Faso	20	19	81
Burundi	14	46	54
Cabo Verde	-	74	26
Cambodia	45	59	41
Cameroon	58	39	61
Canada	176	>99	<1
Cayman Islands	-	-	-
Central African Republic	16	-	-
Chad	4	8	92
Channel Islands	-	99	2
Chile	155	>99	<1
China	116	85	15
China, Hong Kong Special Administrative Region	-	96	4
Colombia	119	90	10
Comoros	61	36	64
Congo	44	20	80
Cook Islands	-	98	2
Costa Rica	115	98	1
Côte d'Ivoire	48	32	68
Croatia	122	97	2
Cuba	87	93	7

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Curaçao	-	99	1
Cyprus	148	>99	<1
Czech Republic	170	>99	<1
Democratic People's Republic of Korea	-	83	17
Democratic Republic of the Congo	12	20	80
Denmark	157	>99	<1
Djibouti	52	64	36
Dominica	107	-	-
Dominican Republic	86	84	16
Ecuador	77	88	11
Egypt	89	94	6
El Salvador	76	87	12
Equatorial Guinea	60	66	34
Eritrea	10	-	-
Estonia	136	>99	<1
Eswatini	32	58	42
Ethiopia	23	7	93
Falkland Islands (Malvinas)	-	>99	<1
Faroe Islands	-	-	-
Fiji	75	95	5
Finland	171	>99	<1
France	175	99	1
French Guiana	-	92	8
French Polynesia	-	97	3
Gabon	80	47	53
Gambia	41	39	61
Georgia	98	90	10
Germany	178	>99	<1
Ghana	68	18	82

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Gibraltar	-	>99	<1
Greece	153	99	1
Greenland	-	>99	<1
Grenada	113	91	9
Guadeloupe	-	>99	<1
Guam	-	-	-
Guatemala	73	65	35
Guinea	35	23	77
Guinea-Bissau	6	21	79
Guyana	59	86	14
Haiti	27	35	65
Honduras	69	81	19
Hungary	145	98	2
Iceland	169	99	1
India ^v	51	68	32
Indonesia	78	73	27
Iran	123	88	12
Iraq	83	94	6
Ireland	154	91	9
Isle of Man	-	-	-
Israel	162	>99	<1
Italy	167	99	1
Jamaica	85	87	12
Japan	139	>99	<1
Jordan	134	97	2
Kazakhstan	163	98	2
Kenya	33	29	71
Kiribati	-	48	52
Kuwait	84	>99	<1
Kyrgyzstan	114	97	3
Lao People's Democratic Republic	42	74	26
Latvia	111	92	8
Lebanon	102	98	1

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Lesotho	49	43	57
Liberia	8	17	83
Libya	126	>99	<1
Liechtenstein	-	>99	<1
Lithuania	121	93	7
Luxembourg	179	98	2
Madagascar	13	11	89
Malawi	31	26	74
Malaysia	133	>99	<1
Maldives	24	>99	<1
Mali	9	39	61
Malta	149	>99	<1
Marshall Islands	-	83	16
Martinique	-	>99	<1
Mauritania	22	48	52
Mauritius	82	96	4
Mayotte	-	-	-
Mexico	127	91	8
Micronesia	5	88	12
Monaco	-	>99	<1
Mongolia	103	58	42
Montenegro	120	98	2
Montserrat	-	-	-
Morocco	132	89	11
Mozambique	39	29	71
Myanmar	38	64	36
Namibia	54	35	65
Nauru	-	66	34
Nepal	47	62	38
Netherlands	150	98	2
New Caledonia	-	>99	<1
New Zealand	165	>99	<1
Nicaragua	74	74	26
Niger	2	14	86

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Nigeria	55	39	61
Niue	-	97	3
Northern Mariana Islands	-	79	21
Norway	180	98	2
Oman	94	>99	<1
Pakistan	50	60	40
Palau	-	>99	<1
Panama	104	83	17
Papua New Guinea	19	13	87
Paraguay	124	90	10
Peru	88	74	26
Philippines	71	77	23
Poland	166	99	1
Portugal	151	>99	<1
Puerto Rico	-	97	3
Qatar	138	>99	<1
Republic of Korea	137	>99	<1
Republic of Moldova	93	76	24
Réunion	-	>99	<1
Romania	97	84	15
Russian Federation	164	90	10
Rwanda	28	67	33
Saint Helena	-	>99	<1
Saint Kitts and Nevis	92	-	-
Saint Lucia	112	88	11
Saint Vincent and the Grenadines	131	87	13
Samoa	57	98	2
San Marino	-	>99	<1
Sao Tome and Principe	62	43	57

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Saudi Arabia	118	>99	<1
Senegal	43	51	49
Serbia	99	98	2
Seychelles	65	>99	0
Sierra Leone	26	16	84
Singapore	95	>99	<1
Slovakia	146	98	2
Slovenia	159	>99	<1
Solomon Islands	3	34	66
Somalia	1	38	62
South Africa	108	76	24
South Sudan	-	11	89
Spain	172	>99	0
Sri Lanka	67	96	3
Sudan	7	37	63
Suriname	106	84	16
Sweden	173	>99	<1
Switzerland	181	>99	<1
Syrian Arab Republic	79	91	8
Tajikistan	81	97	2
Thailand	100	99	1
Timor-Leste	25	54	46
Togo	40	16	84
Tokelau	-	97	3
Tonga	18	93	7
Trinidad and Tobago	105	93	6
Tunisia	110	91	9
Turkey	161	97	2
Turkmenistan	90	99	1
Turks and Caicos Islands	-	88	12
Tuvalu	-	84	16
Uganda	15	18	82

Country	Climate vulnerability ranking (out of 181 countries) ¹⁴	% of population with at least basic sanitation ¹	% of population without at least basic sanitation ¹
Ukraine	143	96	4
United Arab Emirates	130	99	<1
United Kingdom	174	>99	<1
United Republic of Tanzania	30	30	70
United States of America	160	>99	<1
Uruguay	125	97	2
Uzbekistan	117	>99	<1
Vanuatu	21	34	65
Venezuela (Bolivarian Republic of)	152	94	6
Vietnam	63	84	16
Wallis and Futuna Islands	-	>99	0
West Bank and Gaza Strip	-	97	3
Western Sahara	-	-	-
Yemen	29	59	41
Zambia	37	26	74
Zimbabwe	34	36	64

About this briefing

Two billion people around the world currently lack access to decent toilets, making it harder to cope with the growing impact of climate change and to face increasing health threats. In order to withstand future health crises and extreme weather events, strong and reliable sanitation services and disaster-resilient infrastructures are needed to protect vulnerable communities.

Living in a fragile world: The impact of climate change on the sanitation crisis explores the devastating intersection of poor sanitation and the fragility of health services, all impacted by the unpredictable nature of the world's changing climate.

Image of Maida, Morondava, Madagascar on page 15, taken by Elena Heatherwick for the photo gallery, *Toilet Stories* to mark World Toilet Day 2020. This gallery and our work across sub-Saharan Africa is supported by players of the People's Postcode Lottery.

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#WorldToiletDay

WaterAid is an international not-for-profit, determined to make clean water, decent toilets and good hygiene normal for everyone, everywhere within a generation. Only by tackling these three essentials in ways that last can people change their lives for good.

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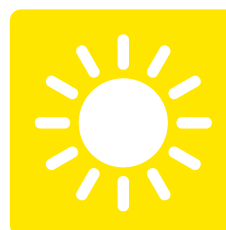
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