

January, 2023 Volume 7 Issue 7

Rotarians Protecting the Air We Need to Live

In January, 2023, ESRAG highlights the huge humanitarian benefits of reducing air pollution. This issue shares news of Rotarians' clean air projects plus resources to equip you to reduce exposure to dangerous pollution both indoors and outdoors. Here's the January lineup:

- Air pollution: Gigantic Global Health Crisis
- Saving Health and Money in Nepal
- Mobilizing Citizen Science to Fight a Silent Killer
- Cleaner Cooking Task Force Ready to Help You
- Inviting You to a Solar Cooking Forum

The articles include links to data and technical resources from the World Health Organization, UN Environment Programme, and US Environmental Protection Agency.

Plus, ESRAG members share great news:

- Malc Rooney, Coordinator of ESRAG's Regional Chapters, shares links to environmental progress across the globe to encourage you as you begin your work for the new year
- St. Thomas East Eco Club has won a Rotary Global Grant for Solar Refrigeration for a community Farmers Market in the US Virgin Island. This will promote energy justice and food security while reducing carbon emissions.

Heartfelt wishes for health, joy, and a fulfilling 2023 to you, your family, and your friends within and beyond Rotary!

Photo: a Nepali villager enjoying her new, smoke-free electric cookstove, thanks to the Rotary Club of Pokhara Fishtail. She's now saving 60% on cooking costs because she's connected to Nepal's clean energy hydroelectric grid, significantly cheaper than fuels villagers were using before the project.





Air Pollution: Giant Global Health Crisis

By Ariel Miller, ESRAG Newsletter Editor



“Air pollution is a major global health crisis and causes one in nine deaths worldwide,” [reports the UN Environment Programme](#) (UNEP). “The deadliest illnesses linked to PM_{2.5} [fine particulates] air pollution are stroke, heart disease, lung disease, lower respiratory diseases (such as pneumonia), and cancer. High levels of fine particles also contribute to other illnesses like diabetes, can hinder cognitive development in children and also cause mental health problems.”

Almost 7 million people die prematurely each year because of air pollution, reports the [World Health Organization](#). Children and women are among the most at risk, particularly from exposure to indoor smoke. Air pollution imposes major losses on people of all ages when they are too sick to attend school or go to work, and incur health care costs on top of lost

wages. These illnesses also burden businesses, taxpayers, governments, health care systems, and donors. The [World Bank graphic](#) copied here summarizes the huge global losses due just to indoor exposure to fine particulates.

Both indoors and out, it's urgent to reduce exposure to fine particulates. “Around four million people died in 2019 from exposure to fine particulate outdoor air pollution, with the highest death rates occurring in East Asia and Central Europe,” reports UNEP in the note cited above. “The fine particles that pollute our air mostly come from human activities such as burning fossil fuels to generate electricity, transportation, waste burning, agriculture — a major source of methane and ammonia -- and the chemical and mining industries... In developing countries, reliance on wood and other solid fuels, like raw coal for cooking, heating and lighting, and the use of kerosene for lighting, increases air pollution in homes.” The UNEP note also provides graphics illustrating the major sources of PM_{2.5} pollution by region.

The new Rotary Foundation [global grant guidelines](#) for the Environment Area of Focus specifically encourage Rotarians to engage in advocacy and to inform their communities about environmental hazards and solutions (see Action Goals 6 & 8, pp. 15-17).

[Read More](#)

by Binod Koirala, Past President, Rotary Club of Pokhara Fishtail, Nepal

Many families in Nepal still cook over fires indoors. Our club has implemented a pilot project on electric cooking stoves in two different poor communities with excellent results: indoor particulate levels fell over 96% and families cut their cooking energy costs by 60%! The cost per household was only \$100, with families contributing a share. Those upgrade costs – averaging NPR. 2000 - are normally paid by the family. The typical cooking energy cost for a household with 4 family members is about NPR. 1500 per month. Once they start using electricity, that cost drops to NPR. 600 per month. So, they recover the sharing cost within few months.



Smoke and soot before, joy after: Nepali villager discovers how fast and clean her new electric cooktop is!

Nepal is rich in clean hydro-electricity, and the government is encouraging people to use electric equipment. This creates a big opportunity to implement our e-cooking project on a larger scale and contribute to saving the environment.

In partnership with the Rotary Clubs of Bristol Breakfast (UK) and Neoteric (HK), we equipped 60 families to replace their dependence on wood or Liquefied Petroleum Gas (LPG) with an electric induction cookstove. We used an air quality monitor to test fine particulate (PM2.5) levels in a house that cooked over a woodfire. The baseline PM2.5 level was 999 μm^3 , and the family reported eye irritation, headache, and respiratory problems. We then sampled the air as the family used their new electric stove. The PM2.5 level was 35 μm^3 . There were no health issues with electric stoves.

Photo: Laxmi Thapa Giri, Past President of RC Pokhara Fishtail, with a villager discovering how fast and clean her new cookstove is.

[Read More](#)

Mobilizing Citizen Science to Fight a Silent Killer

By Ariel Miller

“Addressing air pollution, which is the second highest risk factor for noncommunicable diseases, is key to protecting public health,” warns the [World Health Organization](#) (WHO). “Most sources of outdoor air pollution are well beyond the control of individuals and this demands concerted action by local, national and regional level policy-makers working in sectors like energy, transport, waste management, urban planning and agriculture.” [WHO adds](#) that “99% of people worldwide are exposed to harmful levels of fine particulates.”

Documenting the levels and sources of air pollution fits the Rotary Four-Way Tests of



telling the truth and striving to make situations fair and beneficial to all concerned. Drawing on the insights of three Rotarians with decades of experience, this article offers

an overview of some of the major sources of air pollution, ways Rotarians can promote solutions, and links to websites describing air pollution's health impacts and how to measure and analyze air quality. *Photo: one of the air quality sensors set up by the Rotary Club of Makati, the first organization to record and share real-time air pollution data in the city of Manila, Philippines.*

Environmental experts Rob Altenburg and Chip Carson, MD, PhD (both Rotarians) caution that outdoor air pollution is determined by a host of factors, including regional and continental weather patterns, business decisions, and public policy. "You'll see a whole bunch of stuff out there on individual actions people can take," says Altenburg. "Those aren't a bad idea, but the big three polluters tend to be electric generation, highway vehicles, and industrial emissions. We aren't going to fix the air pollution issues unless we address them."

While the [WHO reports](#) that 6,700 cities in 117 countries are monitoring air quality, there are a lot of gaps. Rotarians can use citizen science to make dangers visible. That requires a well-designed monitoring plan, reliable equipment, sound data analysis, and collaboration with other stakeholders. Dr. Carson recommends that you explore the US Environmental Protection Agency's [Air Sensor Toolbox](#), available in both English and Spanish. More on what it offers below.

[Read More](#)

Clean Cooking Task Force Ready to Help You



Your Club can clear away a misery of smoke, illness, and drudgery by joining cleaner cookstove projects with immediate and lasting benefits for families in the developing world. ESRAG's Clean Cooking Task Force is ready to equip you for success with [online resources](#), presentations to your Club and free technical assistance. Task Force members offer extensive frontline experience working effectively in very diverse cultural and environmental conditions, including Central America, Africa, and the Himalayas.

Cleaner cookstove projects became eligible for Rotary Global Grants for the first time in 2021, and the Task Force is glad to help you develop well-designed proposals you can use to apply for district or Rotary Foundation grants. They also want to connect clubs across the world to design, fund, and implement

successful projects.

A [graphic from the World Health Organization](#) conveys the critical global need. Binod Koirala's article from Nepal in this month's ESRAG newsletter illustrates the impact: substantial financial savings and welcome relief from ill health. A third benefit is greater gender equality, since women disproportionately bear the burden of searching for firewood and suffering from acute and chronic illness because they have been spending long hours indoors exposed to dangerous particulates as they cook.

The right solution is a fascinating puzzle in technology transfer. Task Force members can help you choose a stove design and implementation plan that fits the culture and conditions of a specific community. "As Mike Hatfield of [Stove Team International](#) points out, the first question is: will the woman accept this? If they do, you're half way there," says Task Force Co-Chair David Knoppert (Rotary Club of London-Hyde Park, Ontario, Canada). For example, the Justa stove being used in Central America (pictured here) has a large griddle surface ideal for cooking tortillas as well as pots of beans and rice. The Nepali project builds on the country's growing hydroelectric grid and the fact that the government is encouraging and helping poor people to electrify their homes. By using electric stoves, they are saving 60% on monthly cooking energy costs.

[Read More](#)

Inviting You to a Solar Cooker Forum

By Luther Krueger



The Museum of Solar cooking hosts a weekly online forum to informally knit together the growing population of solar cooking proponents into a more cohesive network. RSVP to Museum@BigBlueSun.net to attend, participate, or present on your solar cooking designs, activities, or promotional efforts. The forum will take place twice weekly for one hour, with the same presentation and news 12 hours apart, so anyone in the world can attend online. It will be recorded for those who can't attend.

When ESRAG's newsletter editor sat in on the January Clean Cooking Task Force meeting, she asked for some criteria on when solar cooking is an appropriate technology, since it hadn't previously been covered in the newsletter. Here's what I replied:

Anywhere, anytime you have sun and you need to cook, solar cookers are the best device to use. The same advantages apply whether you're in developed or developing countries:

- Zero pollution--no respiratory illness or adding to your carbon footprint.
- Free energy--no corporation, government or other mediating force can keep one from cooking for oneself, one's family, or a village.
- Solar cookers can cook, pasteurize water, and dry herbs and vegetables, and also can be used for crafts such as candle - and soap-making.
- Solar thermal cookers stop deforestation altogether--full stop.
- When combined with haybasket/retained heat cookers, cooking during daylight can be extended into the evening, and multiple dishes prepared with the same cooker.

When the sun is not shining, efficient wood- or biomass-burning stoves are the best solution, keeping in mind:

- They slow deforestation but do not stop it.
- Rocket stoves emit a lot fewer particulates and less toxic gases than other stoves--but still pollute and risk one's health.

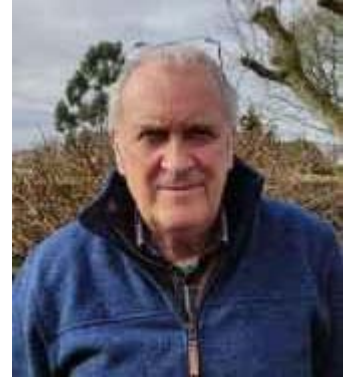
- If you combine these efficient stoves with a retained heat/haybasket, you can reduce bio/wood fuel use even further.

Luther Krueger is Curator of the Big Blue Sun Museum of Solar Cooking, Minneapolis, MN, USA and a member of ESRAG's Clean Cooking Task Force. In this picture by Dee Tvedt, a fan of his solar brunches, he's busy cooking with sunshine.

Own and Promote the Positive

By Malcolm Rooney, Coordinator, ESRAG Regional Chapter Chairs

Over the past year I have become increasingly aware that there is much being done in response to Climate Change and Environmental Sustainability that is positive. I think that Rotary International in general and ESRAG in particular should own and promote the positive. Here are some examples I believe that are worthy of sharing. First, heartening headlines from the UK's *Guardian* "Down to Earth" weekly report, which you can [subscribe to at this link](#).



- [1,000 glorious fin whales back from near extinction](#)
- [How seaweed could transform the way we live](#)
- [Wild bison return to UK for first time in thousands of years](#)
- [Australia and the United States pass landmark climate bills](#)
- [Patagonia owner gives away company to fight climate crisis](#)
- [Europe's persecuted carnivores bounce back](#)
- [Historic deal struck to halt biodiversity loss by 2030](#)
- [US government approves use of world's first vaccine for honeybees](#)

From [The Revelator](#), a newsletter from the Center for Biological Diversity:

- [Huge Opportunities and Huge Threats Loom for U.S. Clean Energy in 2023](#) (Canary Media)
- [Ahead of Major Court Case, EPA Revises Clean-Water Protections](#) (The New York Times)
- [Endangered Bird Poised to Get Hundreds of Thousands of Protected Acres in Hawaii](#) (Honolulu Civil Beat)
- [Amazon Rainforest Defender Marina Silva Named Brazil's New Environment Minister](#) (AP)

And for social media fans, [follow Sam Bentley](#), who for example is highlighting a project to restore the Detroit bee population.

Let's lead the way in promoting the positive.

Malc Rooney (pictured here) is the Coordinator for ESRAG's Regional Chapter Chairs and a member of the Rotary Club of Kirriemuir [D 1010]. He also chairs ESRAG's Great Britain and Ireland Chapter (ESRAG GBI).

Virgin Island Club Wins Global Grant for Solar Refrigeration

By Doug White, Co-Chair, ESRAG Climate Solutions Task Force

The Rotary Club of St. Thomas East ECO received a \$55,000 Rotary International Global Grant for a solar refrigeration system for the Bordeaux Farmers Market. The 15-kilowatt PV array and 15 kW lithium battery backup will keep refrigerated food safe at the Bordeaux Farmers Market



during the island's frequent blackouts, while also ensuring the system will produce net zero greenhouse gas (GHG)

emissions. On Sunday, December 11, 2022, members of Rotary East Eco presented a large facsimile check to We Grow Food Inc. (WGFI) who operate the Farmers Market.

This reliable, clean energy will provide many benefits to the Farmers Market and community:

- Estimated energy cost savings of \$259,570 over 25 years for the farmers, contributing to the island's community economic development.
- Battery back-up power during frequent power outages or storms, providing the WGFI with resilience and disaster preparedness capabilities.
- Reduced food waste: perishable items will now be able to be properly stored for future use or sale rather than be discarded.
- Enhanced local food security.
- Clean energy: CO2 emissions reduced 333 tons over 20 years.
- Reduction to the farmers' high energy burden, which is twice that of mainland US farmers.
- Promotion of locally-grown organic food.
- Encouragement and incentives for the adoption of a Plant-Rich Diet.
- Energy equity and climate justice

Photo left to right: St. Thomas Rotary East Eco members Katherine Shegrud, Rev. Debbi Jackson, Leslie White, Doug White, and Rev. Andrew Jackson present a check to WGFI President Eldridge Thomas. Photo by S. Shegrud.

[Read More](#)

Send us News for ESRAG's 2023 Monthly Themes

By Laurie Zuckerman, ESRAG Communications Chair

Check ESRAG's 2023 Communications Calendar, and send us your news to make it a force for good. This article tells you how to share it with us to reach fellow Rotarians and other committed people through our many channels: webinars, website, social media, and newsletter.

We plan to cover all six ESRAG themes twice each year, including updates on relevant ESRAG initiatives and task forces. The calendar also lists Rotary International monthly themes and some special United Nations

ESRAG 2023 Communications Calendar

JAN Pollution RI: vocation UN: International Day of Education	FEB Biodiversity RI: peace building UN: wetlands, pulses, women in science, social justice	MAR Sustainable Living RI: WASH UN: women, seagrass, wildlife, forests, water	APR Climate RI: environment UN: Earth Day, health, immunization, malaria	MAY Biodiversity RI: youth service UN: biological diversity, plant health, migratory bird, bee, peace, families,	JUN Food Systems RI: Fellowships UN: World Environment Day, food safety, oceans, desertification, drought, tropics
JUL Sustainable Living RI: maternal & child health UN: population	AUG Circular Economy RI: Membership UN: Breast feeding, indigenous people	SEP Pollution RI: basic ed & literacy UN: clean air, ozone, food loss/waste	OCT Food Systems RI: community & economic development UN: World Food Day, habitat, migratory bird, rural women, disaster risk reduction	NOV Climate RI: Foundation UN: COP, preventing exploitation of the environment in war, science & peace, Day of 8 Billion, tolerance,	DEC Circular Economy RI: disease prevention UN: soil, disabilities, human rights, neutrality, solidarity

focus days that relate to the environment. Our February theme is biodiversity.

Through this calendar we'll be working to reach as wide an audience as possible with inspiring and useful information. Please look at the calendar, find out which month is the best fit for your project; then write to us. We want to publicize both projects and educational events.

ESRAG's weekly Project + Seminar operates like an international eClub, and welcomes presentations on relevant research on environmental problems and solutions (including science, economics, and social dynamics). It also showcases club and district projects that other Rotarians can replicate. If you know an expert who can talk about one of the upcoming themes, or would like to present a project, please [email Karin Tome](#).

Use this [Newsletter Submission Form](#) to reach our news and social media team. We work to post quality information that promotes **ESRAG's vision and mission**. All submissions must first be submitted by the 5th of the month preceding publication, which is normally the Saturday closest to the middle of the month. Submission does not guarantee an article will be published.

If you want publicity for an event, use this [Event Form](#). All submissions must first be approved, and we need enough lead time to do a good publicity job for you. ANY form submitted less than ten working days has **no guarantee** that we'll be able to post it to the website and social media.

Thanks in advance, and happy new year! We look forward to working with you to get useful, inspiring news to a world that greatly needs it.

If you fly, fuel climate solutions!

If you are planning a trip by plane, consider using ESRAG's [Flight Carbon Estimator](#) and making a donation to The Rotary Foundation to support Rotary projects that reduce carbon emissions. By doing this, you're increasing your awareness and turning it into action. Goal 4 of Rotary's [environmental global grant guidelines](#) lists an array of eligible carbon reduction projects including solar power, sustainable transportation systems and cleaner cookstoves.

This Raise for Rotary/Carbon Compensation Fund is the brainchild of past ESRAG director Larry Hands (Madison, WI, US) and Northfield, Minnesota Rotarians Bruce Morlan and Jesse Steed. "26,000 Rotarians travel every year to the Rotary International Convention," says Morlan. "At a contribution of even \$100 per attendee, that could raise \$2.6 million to put towards real programs to reduce emissions. Repeat annually!" These donations are fully tax-deductible for US taxpayers.

While the cost of offsetting the harm done by a tonne of CO2 is \$200-\$300, Morlan says, this compensation program is "a way for conscientious Rotarians who are concerned about the environment to contribute to action to reduce carbon emissions."

To use the calculator, all you need to enter is the total duration of your air travel, the number of flight segments (since takeoff and landing add emissions), and the seat class. First class uses more space and accounts for a greater portion of the flight's emissions. The calculator offers two levels of donation: basic (\$10 USD per tonne) and premium (\$30 USD per tonne). "It's easy. It's there. Use it!" says Steed.

The Environmental Sustainability Rotary Action Group

operates in accordance with Rotary International policy, but is not an agency of, or controlled by, Rotary International.
