

## Roger Haines' trips to India and Africa, 2017

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For some time, I have been promoting solar cooking for the two billion people in the world who still cook their food over open fires with wood or charcoal. Lung disease from breathing cooking smoke is a leading cause of death and violent conflicts are increasing as more areas become deforested. Rain forests are being cut down to produce charcoal, and cooking fires produce greenhouse gases that cause global warming. By contrast, solar cooking produces no smoke or emissions. The photo at right shows my "Haines Solar Cooker," made from metalized polyester (MPET) foam material with a polycarbonate insulating cooking sleeve and cover, along with my design team.



To network with other solar cooker manufacturers, in mid-January, 2017, I traveled to India, to attend the Solar Cookers International Conference at the Muni Seva Ashram near the city of Vadodara in the state of Gujarat. See [www.solarcookers.org](http://www.solarcookers.org). The Ashram includes a famous cancer hospital that is air conditioned by an array of twenty-foot diameter parabolic solar concentrators that produce high temperature water that is condensed to cool the hospital and surrounding buildings. See photo at right.

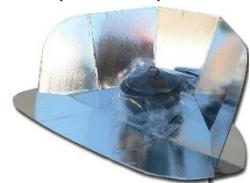


Many different solar cookers were exhibited at the conference, including the Prince 40, made in India, which uses a 4-gallon solar pressure cooker to cook food for institutions. See photo at right.



One of my roommates, Brazilian engineer Elmo Dutra Filho, showed me a wonderful design for a parabolic cooker that folds up like an accordion, based on a similar design by professor William Bradley. Later, when I returned to the U.S., I made such a parabolic cooker using the MPET foam material that I use for my Haines Solar Cooker. See photo at left.

At the conference, I met Godfrey Mawira Kaburu, an engineer with the World Food Program in Nairobi, Kenya. Godfrey had surveyed cooking fuel preferences of families in the Kakuma Refugee Camp in Kenya, and found that the second most preferred method of cooking was with solar energy. Camp residents were aware of solar cooking because cardboard solar "CookKits" had been introduced twenty years earlier, and have been available intermittently. However, CookKits are made of cardboard and they require plastic cooking bags, neither of which is durable, so they can wear out quickly. See photo at right.



Godfrey and I put our heads together with another of my roommates, Ritesh Raithatha, CEO of Simplified Technologies for Life, who has organized “Suryakumbh” solar cooking festivals in India for a total of 119, 000 people, and holds the Guinness Record for the most people solar cooking at the same time—7,460 people. See <https://www.facebook.com/suryakumbh/>. Together, we began planning a Solar Cooking Festival for the Kakuma Refugee Camp to be held on April 29, 2017.

Godfrey enlisted the National Council of Churches of Kenya (NCCCK) to be our “boots on the ground” in Kakuma, to recruit the children, arrange for refugees to make the cookers, and prepare the site. To reduce the cost of the cookers, I collaborated with the designer of the Copenhagen Solar Cooker, Sharon Clausson, to develop an inexpensive “Haines-Copenhagen” cooker that is easy to make and use. Click on “My Movie” to see how easy.



My Movie 1 - Small.mov

My San Diego Rotary Club stepped up to provide half the financial support for the Festival, and Haines Solar Cookers picked up the rest. Godfrey put together a marvelous team in Kenya, including Mwenda Wilkinson and Wilson Kinyua. Our India partners were Ritesh Raithatha and Vivek Kabra of Simplified Technologies for Life. Additional U.S. partners were Solar Household Energy (a Washington-DC-based non-profit organization), Alliance for African Assistance (a San Diego refugee resettlement organization), and the Rotaract Club of the University of California at San Diego (which made 500 water pasteurization indicators, aka “WAPIs,” for the participants in the Festival). See photo at right.



On April 17, 2017, I flew from San Diego to Nairobi, with two other members of the San Diego Rotary Club, Camille Newbern and Walter Lam. Nairobi is a modern city of skyscrapers, luxury hotels, western-style shopping centers, and beautiful gated communities. However, the gap between rich and poor is wider and more evident than in the west. Some parts of the city consist of makeshift shanties, and most busy streets are lined with rough stalls, with vendors selling everything from a few vegetables to evening gowns.



Traffic in Nairobi is a full-contact sport. The roads are jammed with motorcycles, called “boda-bodas” often carrying two well-dressed passengers, who have paid for a terrifying ride to work weaving in and out of traffic. Equally ubiquitous are vans, called “matatus,” jammed with passengers. Then there are large crowded buses. All vehicles desperately elbow their way through every seam in the traffic, as if trying to outrun Death. Some people say Nairobi should replace its “roundabouts” with stoplights at intersections. But the bigger problem is a shortage of adequate roads and freeways. Freeways are being built, and the Chinese get a lot of credit for investing heavily in infrastructure in Africa. Everyone



seems impressed with the quality of the roads and bridges built by Chinese contractors in recent years. So there is hope, and I can see definite progress since my first visit to Nairobi four years ago.

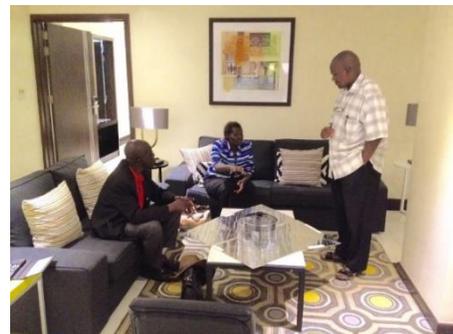
On our first day in Nairobi, we met with an Somali charity that had emailed me earlier wanting to buy solar cookers because the women in their area were being sexually assaulted when they went out to collect firewood. I gave them a Haines-Copenhagen and made arrangements for them to pick up MPET and polycarbonate materials to make cookers from a supply that I maintain in Nairobi. We also met with the administrator of a well-regarded private school in the Somali district of Nairobi known as “Little Mogadishu.” He was very enthusiastic about raising money to educate Somali children who might otherwise lose hope and become radicalized. I mentioned that the book City of Thorns describes how Somali refugees sometimes flee to Nairobi to escape the poor conditions in the Dadaab Refugee Camp. Without conceding that any of his students are refugees, he said that the police regularly visit his school to inquire about the status of various students. The government of Kenya has announced its intention to close Dadaab. Cynics say this is an effort to get Europeans to pay for the camp in order to keep the refugees out of Europe. Regardless, the 100,000 refugees in the camp cannot return to Somalia because the civil war rages on—indeed Kenyan troops are still fighting in Somalia.

That evening we met with our Kakuma Festival partners, including my friend, Faustine “Mama Solar” Odaba, who I met on my first trip to Kenya four years earlier. The planning for the festival was impressive, and I was grateful for everyone’s hard work to make the festival a success.



The next day, we three Rotarians flew to Kisumu, Kenya to attend the Rotary District Conference. Walter Lam had made reservations for him and me to stay in a room with two beds, but they only had a room with a single king bed. Walter said he did not like me “that much” and charmed them into giving us the Presidential Suite for the same price. The Suite had been built especially for President Obama’s visit to Kisumu where Obama’s grandmother is from. It was bigger than my house, with a full kitchen, living room, four bathrooms, two bedrooms, a boardroom and a huge balcony. As it turned out, Obama never stayed there.

I had made arrangements to meet for dinner with three solar cooker entrepreneurs, Camily Wedende, Dinah Chienjo and John Amayo. So we ordered room service and had dinner with them in the Obama boardroom. Here is a photo of Camily, Dinah and John in the Presidential living room discussing the Haines-Copenhagen cooker.



The Rotary conference gave us an opportunity to network with 200 Rotarians from Kenya, Uganda, South Sudan, and Ethiopia. Like Rotarians in the US, Africans join Rotary to network—but get hooked on service. They provide for kids with special needs, fight domestic violence, provide clean water, promote entrepreneurship, deal with AIDS and public health threats, equip schools and hospitals, and improve farming methods. Every African Rotarian seems to have roots in a village or a slum, and they are passionately involved in the communities where their projects are located. Of course, the District Conference



presented an ideal audience for solar cookers. On the first day, Camily set up a Haines solar cooker outside the conference center, cooked some food, and at the end of the day, sold his cooker. The second day, I set up a Haines-Copenhagen cooker to boil water, and generated considerable interest. However, the cookers I brought had all been promised to others.

On Sunday morning after the conference, we Rotarians parted company. Camille went on safari to the Masai Mara to see the elephants, giraffes, lions, rhinos and wild things. Walter had tea with Obama's grandmother (he had met her on an earlier trip) before returning to Nairobi to prepare to open a Kenya office of the Alliance. Me, I hired a driver to drive to Uganda, and persuaded three Rotarians from South Sudan and Ethiopia to join me for company. In the border town of Busia, Uganda, I had arranged to meet a pastor from Tororo, Uganda, connected with a San Diego NGO that is interested in introducing solar cookers into Tororo. We met at a garden hotel, and I set up a Haines-Copenhagen during our lunch, which attracted a crowd, and allowed me to explain the wonders of solar cooking. I left a cooker with the pastor, and put him in touch with Camily Wedende in Eldoret, Kenya, just over the border from Tororo.



From Busia, we drove toward the capital of Uganda, Kampala, passing through a pine forest that looked just like Northern California. In Jinja, we crossed the Nile river at its source as it leaves Lake Victoria flowing 4,258 miles to the Mediterranean Sea. In Entebbe, we met briefly with Edward Semajjwe, Director of Disabled Technicians of Uganda, who I had met at the India Solar Cooker conference, before driving into Kampala for the night.

On Monday, April 24, we drove five hours north from Kampala to Gulu, in Northern Uganda, on a very good paved road. Kampala is a beautiful cosmopolitan city with extensive suburbs. The suburbs eventually give way to farming country with relatively few towns. Everywhere are traditional round mudbrick houses with thatched roofs surrounded by small farms. Trees are few, and large white sacks of charcoal are for sale every few miles. See photo at right. Every village has a primary school, and at noon and after school, hundreds of kids in their school uniforms walk beside the highway. Every few miles a "bump" in the road slows traffic to make it easy for pedestrians to cross the highway. They call the bumps "sleeping policemen." Real policemen stand at police roadblocks every 30 miles or so, checking for vehicle violations.



As we drove, we talked about the ethnic violence in South Sudan. The government considers anyone who takes refuge in an IDP (Internally Displaced Persons) camp in the country to be an enemy. Recently, some young boys left one of the camps to pick up mangoes that had fallen from a nearby tree. They were shot dead by the army. Protests were filed, but nothing was ever done.

In Gulu, I checked into the Bomah Hotel which was filled with aid personnel dealing with South Sudanese refugees fleeing into northern Uganda. Then we drove to the office of the Alliance for African Assistance in Gulu. I am on the Board of the Uganda Alliance's sister organization—the San Diego Alliance for African Assistance—which was founded 20 years ago by my good friend (and Kenya traveling companion) Walter Lam. The San Diego Alliance has grown into a \$5 million organization that resettles refugees from all over the world, and provides them with a variety of services from translators to entrepreneurship training. Walter is himself a refugee from Uganda who still does not feel safe enough to return. However, through the Alliance, we are trying to improve conditions in Uganda so that there will be fewer refugees in the future.

To that end, the Uganda Alliance teamed up with Rotary Clubs in Gulu and San Diego to distribute 500 Haines Solar Cookers in Gulu and Atiak last year, and I traveled there to meet with the recipients. This year, the Alliance joined several Rotary Clubs and Solar Household Energy to begin making and selling Haines-Copenhagen solar cookers in Gulu. At the Alliance office, Director Geoffrey Okello and his solar cooker team discussed with me the best ways to make and market the cookers. See photo at right. Geoffrey mentioned that the Solar Connect Association had just opened a solar cooker store in Gulu, which I was happy to hear because I had been trying unsuccessfully to reach SCA in Kampala. So after our meeting, we all went to visit SCA's Gulu store. The manager was away, but an employee showed us a large stock of red cardboard "CookKit" solar cookers, and a box cooker, along with a supply of cooking pots and plastic cooking bags. The store had just opened, and we agreed that our two organizations should cooperate as much as possible.



The next day, Geoffrey arranged for me to visit two school children in Gulu for whom my wife, Beverly, and I have been paying school fees, which was a treat. Then we drove 40 miles north to the town of Atiak, which is just 20 miles south of the border with South Sudan. In Atiak, we visited the Alliance's Community Center and Guest House that were under construction when I visited last year. They are now complete, though not yet occupied. Now the Alliance is building a \$1.8 million hospital in Atiak that will provide services ranging from surgery and anesthesiology to maternity and child health for a population of 100,000. The eventual goal is to become a Grade V District Referral Hospital, serving 500,000 people. Geoffrey and I visited the construction site, and watched scores of workers digging footings, building brick foundations, and making concrete slabs. All the concrete was mixed by hand on



the ground and hand-carried in cut-off “jerry cans” just as fast as if it had been delivered by a cement mixer truck. There were no electrical tools, just 107 workers operating like a well-oiled machine.

Uganda has one of the highest rates of maternal and neonatal deaths in Sub-Sahara Africa. Infant mortality is 57.6/1000, compared to Europe at 4/1000. The rate of maternal death is also very high (1/47 compared to 1/5800 in Europe). Mortality for children under five is also high due to pneumonia, malaria, diarrhea, measles, whooping cough, tuberculosis, hepatitis and HIV/AIDS. The area has also been affected by Ebola, and tropical diseases including sleeping sickness. The hospital will provide an important source of jobs for the community, and because of its location near the border with South Sudan, the hospital is also expected to serve a substantial number of the 600,000 refugees that have fled the current civil war in that country.

The land for the hospital was donated by the local community, and the hospital’s Board Chairman, Richard Apire, is the Chief of Atiak, as well as Chairman of the Uganda Electrical Regulatory Agency. He is a wonderful man whom I have visited in his home in Kampala. The hospital’s Medical Director is Enrico Frontini, an Italian pediatrician married to a Ugandan, with strong ties to northern Uganda. My Rotary Club is currently raising money for equipment for the new hospital, and we are looking for donations wherever we can find them.

Back in Gulu, I finally made telephone contact with Kawesa Mukasa, the Director of the Solar Connect Association in Kampala. So the next day, April 25, my driver and I drove back to Kampala, to Kawesa’s solar cooker store in the Nansana neighborhood of Kampala. I had met Kawesa at the India Solar Cooker conference, and was very excited to see his store, which sells red cardboard CookKits, box ovens, and parabolic cookers, plus cooking pans and plastic bags. The store is next door to a restaurant, and on sunny days his employee, Olivia, cooks in front of the store. She said that people are attracted by the \$150 Chinese parabolic (see photo), but often decide to buy the \$25 CookKit. Nevertheless, Kawesa says that his organization has sold over 100 parabolics. Olivia also spends time on outreach programs, demonstrating solar cooking in schools and civic events. Kawesa says he intends to stop making CookKits, and instead switch to selling Haines-Copenhagen cookers. He has arranged to pick up materials from my supply in Nairobi to make the cookers.



After visiting Kawesa’s store, we drove to my hotel near the Entebbe airport. My wife Beverly and I had recently rented a movie, *Queen of Katwe*, about a Ugandan slum girl who became a chess master. I recognized the area where the movie was made as we drove on the highway to Entebbe. Shortly thereafter, traffic came to a complete standstill, and everyone turned off their engines. The driver said it was common to sit for an hour in this place, and that is what we did. The government talks about improving the road, but progress is obviously slow, even though this road is the only way to get to the airport.

The next morning , I flew to Nairobi to catch up with my Rotary friends, Walter and Camille, and to meet our India partners, Ritesh Raithatha and Vivek Kabra from Simplified Technologies for Life. We had another meeting with Godfrey Mawira, to finalize plans for the Solar Cooker Festival.

On Friday, April 28, we got up early and went to Nairobi's Wilson Airport to meet the rest of our 15-person Solar Festival team. We were three Rotarians, two Indians, four on Godfrey's team, Faustine "Mama Solar" Odaba, and a three-person news crew from Nairobi's leading television station, NTV. We flew to Lodwar in northern Kenya (my seatmate was an earnest young staffer for Lodwar's representative in parliament, who agreed that solar cookers are needed in Kenya). In Lodwar, we jumped into two vehicles accompanied by an armed escort vehicle for the three-hour drive to Kakuma over the Road to Hell. The broken pavement meant that we lurched half-on and half-off the road, almost tipping over as the driver careened left and right to avoid potholes at breakneck speed. It was very hot, with little vegetation, and our air conditioning did not work. So as our driver put it, we were doubly blessed to have an "African massage" accompanied by an "African sauna."

Having enjoyed our prayer time (in heaven, taxi drivers get more credit than preachers, for getting people to pray), we arrived in Kakuma, where we met briefly with the UN head, Honorine Sommet-Lange, and the corresponding head of the Kenya government office. We stayed in the UN compound, and ate buffet style at the NCKK canteen. After dinner, Godfrey, Mwenda, Ritesh and I went to the local radio station for an hour-long call-in radio show promoting the solar cooking Festival. Our host was radio personality "Moses Junia," who seemed quite knowledgeable about solar cooking and came to our festival the next day.

On Festival Day, Saturday, April 29, we drove to Hope Primary School in Kakuma Camp 4. Ritesh and Vivek added more lines to mark the places for each participant. I noticed that the protective film was still on the "cooking sleeves," so an NCKK crew quickly set to work removing the film from both sides of 500 sleeves. Faustine "Mama



Solar" Odaba set up fifteen Haines-Copenhagen solar cookers with fifteen different kinds of food, and quickly became the focus of attention for our film crew and others, as she animatedly described the joys of solar cooking and the use of heat-retaining baskets.

The kids began arriving in school buses from schools in each of the camps. Before the Festival, they and their trainers had some initial training and got acquainted with the cookers. As they arrived, they were directed to classrooms. However a large number of parents and kids from the area around the school also showed up and some local children became mixed up with the participants. With the help of our paid security personnel, we eventually sorted things out. Then we provided breakfast for the participants and gave each one a "Haines Solar Cookers" baseball cap to identify them.

The kids were directed by their trainers to sit in their designated areas, and the trainers gave each one a solar cooker, four clothespins, a black cooking pot, a polycarbonate “cooking sleeve,” a bottle of water, a package of flavored noodles, a cup, spoon, napkin and a hot pad. Ritesh stood on a desk with a microphone in front of the group, and with Godfrey as interpreter, directed the children to assemble the cookers using the four clothespins, roll the cooking sleeve into a cylinder (to insulate and elevate the cooking pot), put in the noodles and water, and turn the cooker to face the sun. As the food cooked, the trainers circulated among the children to insure that the cookers were properly set up. An MC played loud music and generated enthusiasm, while the dignitaries and partners in the festival were introduced, and the kids posed for pictures and for the television cameras. The small packages of noodles cooked quickly despite the intermittent clouds, and as far as I could tell, every participant succeeded in cooking the noodles.



After everyone had eaten their food, the children folded up their cookers and carried their pots and other materials onto the buses to return to their camps. The rest of us stayed for speeches by the dignitaries and partners congratulating everyone on the successful event, and taking group pictures. Mama Solar showed off the food she had cooked: ugali, cake, rice, beans, shredded cabbage, yams, eggs, and other foods. As she was packing up, she handed some of the food to some children she had promised it to earlier. Seemingly from nowhere, she was mobbed by dozens of children in ragged clothes. I found myself pushing them back and getting upset when they refused to line up and behave. Only later did I learn that there are not enough schools for all the children in Kakuma. So these were kids who never had a chance to get a cooker (or decent clothes) because they don't even have a chance to go to school, and I felt bad for pushing them away. It was a personal reminder that although our Festival helped some children and their families, the need is so much greater.



While we were in Kakuma, Walter, Camille and I visited a group of Ugandans in Camp 1 that Walter had visited in past years. Some of the Ugandans had lived in Kakuma for 25 years, and although they were happy to see us, they spoke eloquently about how hard it is to live in the difficult conditions of the camp year after year without hope. Trump's election hit them hard because they know he thinks refugees are terrorists. There is a saying that if you treat a person badly, he will behave badly. Trump seems determined to get refugees to hate us, and ISIS recruiters must be ecstatic.

On Sunday, April 30, it clouded up and we were grateful that the storm waited until our Festival was over. It started to rain by the time we got in our vehicles for the return trip to Lodwar. The Lodwar roadbuilders did not bother with bridges—instead they made concrete “dips” in the road, so that flash floods could simply wash over the road. After driving through a couple of gullies with six inches of rapidly rising water, we were lucky to reach the dry desert before the road became impassible.

On Monday, May 1, I joined Ritesh, Vivek, Mama Solar, Walter, Godfrey, Mwenda, Wilson, and others for a drive to Chuka, Kenya, on a highway that looked like Iowa, with rolling hills of cornfields dotted with white farmhouses. Godfrey had just rented an office near the entrance to Chuka University, where his team will be selling solar cookers, along with a number of other things, as can be seen in lower right corner of the photo of the sign outside his office.

In Chuka, we were joined by David Dickson Ntwiga, the Director of the Solidarity Table Banking project supported by our San Diego Rotary Club. Last year, Walter and I visited Dickson in nearby Meru, and he has expressed interest in combining solar cookers with microcredit. As it turned out, he and Godfrey were old friends. Together, we all visited a Renewable Energy Center in Chuka, funded by a German NGO. They build and sell solar voltaic systems for homes, and have quite a large facility, with classrooms. I was pleased to see that they were displaying both a Haines Solar Cooker and a Haines-Copenhagen that Godfrey had given to them. Godfrey then took us to his family’s house for tea, and then back to his rented space outside Chuka University where he and his colleagues presented us with some thoughtful gifts.



On Tuesday, May2, 2017, Ritesh and Vivek had arranged to visit a demonstration biogas operation in Nairobi, and Walter and I came along. The inventor, Dominic, persuasively explained that his above-ground system is cheaper and better than “dome” systems. He appears to be having great commercial success. For lunch, we went to the modern Hub Mall to meet a friend of Walter’s from Somaliland who works for a company that sells fuel to the US and other government agencies in Mali. She had interesting stories about Somaliland and the logistics of supplying fuel for humanitarian operations. In the afternoon, Ritesh and Vivek took us to Machakos, Kenya, to visit the Scarlett Company that makes huge plastic water tanks. Ritesh’s uncle makes the machines that make the tanks, so he knew the owners of the company. He floated the idea that in the future, he might be looking for sponsors for a “Suryakumbh” solar cooking festival in Nairobi.

After a final dinner with the group, Camille and I flew home, while Walter flew to the Alliance office in Rome, and visited a refugee “camp” that consisted of a huge office building for 1500 refugees in the center of Rome. The Alliance office in Rome has partnered with Casa Africa to provide food and in-kind donations for the refugees. Walter also visited the “Dome” refugee processing center in Paris, in an effort to find ways the Alliance can be helpful in the current refugee crisis.

When I returned home, I received this link to a five-minute video that aired on Nairobi television after the festival. <https://www.youtube.com/watch?v=rnrIPdtuDsQ&sns=em>. We plan to stay in contact with the trainers as we to work to establish a solar cooking business in Kakuma, and seek funding for follow-up studies of solar cooking. The Chuka-Meru group will be conducting joint training with a charity in nearby Isiolo, Kenya that has purchased materials to make 200 Haines Solar Cookers. I am supremely grateful to have been a part of the Solar Cooker Festival, and to have worked with everyone who played a role. Likewise, I feel privileged to be part of the Alliance for African Assistance, to be a member of my Rotary Club, and to participate in the broader solar cooking movement.