



Clean Water
for Life!

CLEAN WATER FOR LIFE

SISTERS OF NOTRE DAME DE NAMUR
OHIO PROVINCE

www.sndohio.org

TEACHER RESOURCE BINDER



SCHOOL PARTICIPATION, BENEFITS & KEY FACTS

SISTERS OF NOTRE DAME DE NAMUR



Clean Water for Life

In our congregation's first century, we were asked to help develop the Catholic educational system in the U.S., and our European leaders sent Sisters and resources to America. Now, in our third century, the world's most pressing needs require us to increase our presence in Africa.

And like our founding Sisters, we go where the need is greatest — to the remote villages of Nigeria and the Democratic Republic of Congo (Congo) where good people are marginalized by poverty and injustice. Our Sisters live, teach and minister in areas where electricity is a scarce commodity and clean water is non-existent. People can live without electricity, but life without clean water is impossible. Water-borne illness and other diseases devastate some populations. The mandatory daily task of collecting, purifying and filtering water for consumption is very labor intensive.



First house in Kimwenza, Congo founded in 1894

School Participation

GOAL

To provide an opportunity to participate in the Clean Water Water for Life Project of the Sisters of Notre Dame de Namur as a way of living the Gospel and exposing the mission of the Sisters to a wider audience.

OBJECTIVES

To educate students and parents about the need for clean water in Africa.

To raise funds for the Clean Water for Life Project, thereby providing the opportunity for students and parents to bring clean water to people in Africa who the Sisters serve.

SCOPE

Partnership with P&G in providing water purification packets for distribution.

Partnership with the Sisters of Notre Dame de Namur in expanding the photovoltaic and borehole programs.



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Benefits

WORLDWIDE MISSION

The Sisters of Notre Dame de Namur participate in a worldwide mission to spread the goodness of God beyond the boundaries of nation, state and tribe. Sisters of Notre Dame de Namur are women with hearts as wide as the world. We place a special emphasis on education, especially of poor women and children, and ministering where others may not choose to go. An important way the Sisters are living this mission is reaching out globally through the Clean Water for Life Project.



The Sisters of Notre Dame de Namur operate a vast network of schools and missions in 17 countries on five continents which allows us to build cross-cultural understanding among school children — between children here in the U.S. and children in developing and impoverished communities across the globe. Encouraging solidarity with those our Sisters serve, fostering compassion, and advancing global connections are hallmarks of schools operated by the Sisters of Notre Dame de Namur.





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OPPORTUNITIES

The Sisters of Notre Dame de Namur offer many exciting challenges and opportunities for your school through participation in the Clean Water for Life Project:

- We offer the opportunity to strengthen the connection with the Sisters of Notre Dame de Namur's heritage and mission.
- We offer the opportunity to incorporate the experience of the Sisters' work into your curriculum studies including:
 - Social Studies
 - Religious Studies
 - Science
 - Service & Campus Ministries
 - Justice & Peace
- We offer the challenge of making a difference and being a shining presence of God's love in the lives of students who the Sisters serve in Africa by providing the resources for clean water.
- We offer the opportunity to receive first-hand information from the Sisters who are actually doing the work.





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Key Facts

- Contaminated drinking water is a major problem...almost one billion people do not have access to safe water.
- Diarrhea caused by drinking contaminated water remains a leading cause of illness and death among infants and children in the developing world...about 1.8 million children die every year due to diarrheal diseases.
- More children die from diarrheal illnesses like cholera and dysentery than from HIV/AIDS or malaria combined.
- There is conclusive evidence that simple, low-cost interventions at the community level can dramatically improve the quality of household stored water and greatly reduce the risk of diarrheal disease and death.
- It is well documented that simply providing safe, clean drinkable water can reduce deadly diarrheal and other devastating diseases by about 50%.
- Providing a safe and efficient supply of clean water means children spend less time tending to survival tasks and more time dedicated to studies and brighter futures.





PHOTOVOLTAIC SYSTEMS, BOREHOLES & P&G WATER PURIFICATION PACKET FACTSHEETS



SISTERS OF NOTRE DAME DE NAMUR



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Countries in Africa Where our Sisters Serve



-  Countries using SNDdeN photovoltaic systems, boreholes and/or P&G water purification packets
-  Countries with a SNDdeN mission



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■ *Current Photovoltaic Site*

★ *Capital*





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DEMOCRATIC REPUBLIC OF CONGO

SNDdeN mission established in 1894



- *Current Photovoltaic Site*
- ★ *Capital*



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Note: Sisters of Notre Dame de Namur in Kenya use P&G water purification packets in times of disease outbreak (like cholera).



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FACT SHEET

African Photovoltaic Systems

In 2003, the Sisters of Notre Dame de Namur initiated a photovoltaic program in Africa. Without electricity, clean water and any viable means for communication, life can be not only difficult but at times impossible. Our research led to experts in the field of harnessing solar energy.

Harnessing the power of the sun with solar energy panels and storing the energy in batteries has proven to be an effective means for producing electricity and providing a permanent educational and health care environment in which our Sisters can live and minister. The photovoltaic systems provide a continuous, sustainable and reliable supply of utility-grade electrical power and are standalone systems, using diesel generators as auxiliary support.

All the related infrastructures, such as water pumping/purification, refrigeration, communications and lighting, rely on electricity generated by the photovoltaic system. The water systems typically supply bulk quantities of water, typically in excess of 6,000 liters (1585 gallons) per day and support a core population that typically





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consists of Sisters, students, patients and staff at schools and medical facilities. The villages may also have populations of several thousand people that need clean water to survive.

The project began by bringing electricity and pure water to three sites — Fugar and Enugu in Nigeria, and Ngidinga in Congo. New photovoltaic systems and water collection, pumping, purification and containment systems were recently installed at the Congolese Sisters' compounds at Nselo and Mpese.

Using the power of the sun saves lives. The photovoltaic project has the potential to reach innumerable undereducated, undernourished, underprivileged people each day and to extend life possibilities and expectancy into the future for countless people. Our Sisters' approach focuses on the long-term impact of educating and caring for a population. This in turn may ultimately encourage a population toward eventual independence from aid.

Cost of Components

One photovoltaic system contains multiple components. Here is a sampling of costs for one system, which will help bring electricity and clean water to a school and health clinic in Africa for 25 years:

- \$300,000 - an entire system
- \$68,000 - an array of 43 panels
- \$20,000 - DC/AC conversion unit
- \$15,000 - water purification unit
- \$12,000 - storage battery
- \$10,000 - cables and connectors
- \$2,500 - local construction hires
- \$1,600 - one photovoltaic panel



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What is a Photovoltaic System?



STEP 1

Solar panels are installed on a steel support structure.



STEP 2

Direct current collected by the panels passes through wire conduit to an inverter that changes the power to alternating current, a typical source of residential/commercial electrical energy.



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What is a Photovoltaic System?

continued



STEP 3

The power is stored in batteries.



STEP 4

Wires are run from the batteries to the site electrical distribution panel, then to electrical outlets to power equipment, appliances and computers like the incubator shown in photo at left.



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STEP 5

A water purification system runs on solar energy to provide large amounts of clean drinking water.



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A Village Transformed

The presence of the Sisters in the small village of **Ngidinga** began with a one-room school house. Neither the Sisters, children or medical clinic had access to clean water or electricity. Students spent significant time collecting and boiling dirty water from a stream located a mile down a steep ravine. Surgical gloves in the clinic were washed by hand and reused. Emergency operations and deliveries were performed at night with the aid of a lantern.

In February 2008, the Sisters installed a Photovoltaic System — to provide a sustainable energy source and clean water.

Today the clinic has expanded into a small hospital. It's equipped with a sterilizer, incubators, lighting, refrigeration and clean water. The one-room school house has expanded to include an elementary and a secondary school. Electricity allows internet access for medical consultation, classroom learning and communication with people around the world.

With access to clean water, electricity and internet, the small village of Ngidinga has become a bustling town.



Photovoltaic panels create electricity



Medical facility has clean water



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Satellite and internet access



Thriving infants



Improved medical treatment



Thriving students



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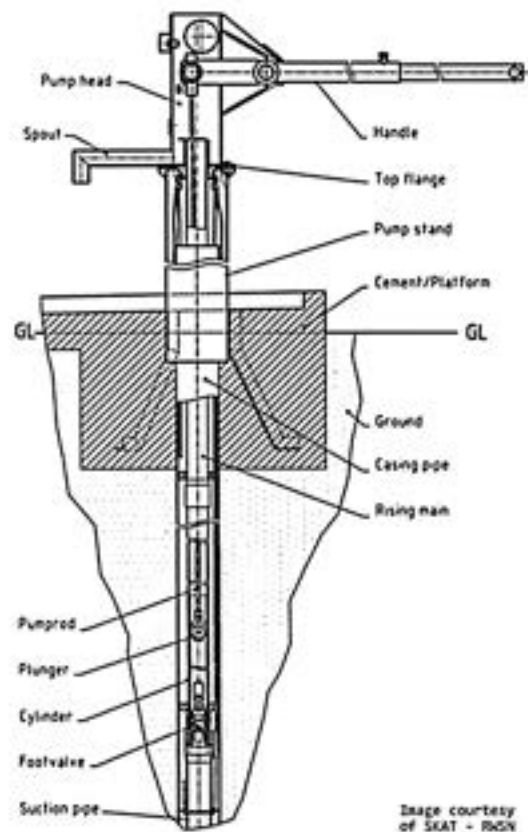
FACT SHEET

Boreholes

In Africa, the Sisters of Notre Dame de Namur have been called to provide clean water in places where there is no reliable water source. The water table is often located deep in the earth, sometimes hundreds of feet down into the soil and often under rock. The Sisters are helping villagers install bore holes with hand pumps to provide clean water to the people. In addition to the myriad health benefits of clean water, the local reliable water source allows for a reallocation of time toward more productive activities, such as attending school.

Key Facts

- Bore holes are drilled deep into the ground (300+ feet) using motorized equipment, in the location that hydrogeological surveying indicated was likely to contain an underground water supply.
- Pipes are then installed into the hole to protect the water, a concrete pad is installed over the hole, and a hand pump is installed to allow clean water to be brought to the surface.
- Boreholes can be drilled to greater depths which avoids the challenges facing traditional hand dug open wells, which are at risk of not consistently providing water during the dry months.
- Bore holes do not run dry even in drought conditions.





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- Boreholes can provide a safe and reliable source of water for the whole community.
- Boreholes help avoid the risk of cross contamination of water borne diseases.
- Boreholes are safe for all community members to use; both women and children can gain easy and quick access to water without the risk of accidents and deaths from falling into the water source.



- Boreholes in combination with photovoltaic energy can provide pumped and piped clean water to an entire community including schools and clinics.

How Can You Make a Difference

The cost to provide a safe and reliable clean water source through the use of a bore hole and pumping mechanism includes multiple components. Here is a sampling of the costs for a system in Kenya and Nigeria where our Sisters teach and serve:

KENYA

Hydrogeological survey and permits	\$1,500
Drilling	\$25,000
Concrete pad and hand pump installation	\$17,000
Water tank	<u>\$12,000</u>
Total cost	\$55,000

NIGERIA

The depth of the water table at difference locations dictates the cost of bore holes in Nigeria.

300+ feet bore hole in Abuja	\$11,500
600+ feet bore hole in Fugar	\$23,500



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P&G Purifier of Water Packets

The P&G Purifier of Water packet was developed by Procter & Gamble in collaboration with the U.S. Centers for Disease Control and Prevention. Created to enable people anywhere in the world to purify dirty water in a simpler, more affordable and convenient way, the water purification packet is based on technology similar to municipal water systems in developed countries. The global network of schools and clinics where our Sisters serve are natural distribution points for the water purification packets. This “network in place” promotes systemic change in local communities.

Key Facts

- The P&G water purification packet is a powdered mixture that removes pathogenic microorganisms and suspended matter, making previously contaminated water clean.
- P&G water purification packets have been proven to eliminate disease-causing microorganisms.
- P&G water purification packets result in the removal of more than 99.99999% of intestinal bacteria (including those that cause cholera), 99.99% of intestinal viruses (including those that cause hepatitis A) and 99.9% of protozoa.
- P&G water purification packets have been proven to reduce diarrheal disease incidence in the developing world by up to 90%.



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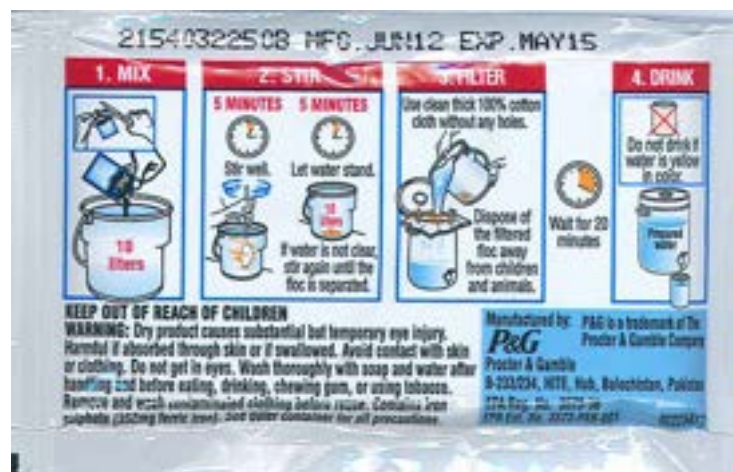


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- P&G water purification packets remove dirt and other pollutants.
- P&G water purification packets can be used to make clean drinking water for the entire family, including infants, and are considered an effective technology by the World Health Organization.
- More than three billion liters of clean drinking water have been provided by global relief organizations using P&G water purification packets.

How little it takes to make a difference

- Just 10¢ can buy a water purification packet for 2 ½ gallons of contaminated water.
- \$1.00 can purchase enough water purification packets for 25 gallons of water for a family, school or health clinic.
- For \$2.80, you can provide clean water for a family of 4 for a week.
- For \$30.00, you can provide clean water for a health clinic for one week.
- For \$37.00, you can provide clean water for a child for one year.





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