

Energy and the Millennium Development Goals

The Impact of Rural Energy Services on Development

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The number of people impoverished by a lack of modern energy services is staggering. Today, almost 1.6 billion people in developing countries live without electricity in their homes, while nearly 2 billion people depend on inefficient and polluting fuels like dung, firewood, and agricultural residues for cooking and heating. The lack of modern energy services in the developing world has the potential for becoming one of the most important issues emerging out of the upcoming September 2005 UN summit on the progress towards the Millennium Development Goals (MDGs).

Amidst increasing concern that inaccessibility to modern energy may be a serious bottleneck to achieving the MDGs are a number of emerging examples of how the availability of modern energy can catalyze significant improvements in the lives of poor people. The multifunctional platform project in Mali is one such example. The following insert is an illustrative case study of how the multifunctional platform project has successfully utilized energy as a means of underpinning efforts to achieve the MDGs.

The following case study is based on the findings of research conducted by United Nations Development Programme (UNDP).

E N E R G Y

and the Millennium Development Goals

In September of 2000, at the United Nations Millennium Summit, world leaders agreed to a set of time-bound and measurable goals and targets for combating poverty, hunger, illiteracy, gender inequality, disease, and environmental degradation. The eight goals that were eventually agreed upon are what the development community now refers to as the Millennium Development Goals (MDGs).

Access to modern energy services is critical to each of the economic, social and environmental dimensions of the MDGs. It can help facilitate economic development by underpinning industrial growth, enhancing productivity, and providing access to global markets and trade. It can contribute to social development by helping to fulfill the basic human needs of nutrition, warmth, and lighting—all prerequisites for improvements in areas such as education and public health. Modern energy can also protect the local and global environment by helping to curb deforestation due to the commercial exploitation of natural resources and by reducing emissions caused by the burning of low-quality fuels.

Despite not being explicitly included in the MDGs, energy is intrinsically tied to a number of development issues. The challenge moving forward is in recognizing that unless more attention is given to increasing the availability and affordability of modern energy services, many developing countries will not be able to achieve the MDGs.



Energy

Access to energy services facilitates economic development by enabling the establishment of microenterprises and locally owned businesses that create employment, enabling livelihood activities beyond daylight hours, as well as by helping to bridge the “digital divide” by supporting telecommunications. Energy services can also improve access to pumped drinking water and provide fuel for cooking the 95 percent of staple foods that need cooking before they can be eaten.

Energy services reduce the time spent by women and children—especially girls—on basic survival activities such as gathering firewood, hauling water, and cooking so that more time can be devoted to schoolwork. Additionally, lighting permits home study, increases security, and enables the use of diverse educational media in schools, including information and communication technologies.

Energy is a key component of a functioning health system, contributing to lighting operating theaters, refrigerating vaccines and other medicines, sterilizing equipment, enabling essential communications, and providing transport to health clinics. Access to clean cooking fuels and equipment reduces exposure to indoor air pollution while reducing the drudgery of collecting of fuel wood.

Improved energy efficiency and use of cleaner energy alternatives can help to achieve sustainable use of natural resources, as well as reduce emissions, which protects the local and global environment.

The Millennium Development Goals

1 Eradicate extreme poverty and hunger

- Reduce by half the proportion of people living on less than a dollar a day
- Reduce by half the proportion of people who suffer from hunger

2 Achieve universal primary education

- Ensure that all boys and girls complete a full course of primary schooling

3 Promote gender equality and empower women

- Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015

4 Reduce child mortality

- Reduce by two thirds the mortality rate among children under five

5 Improve maternal health

- Reduce by three quarters the maternal mortality ratio

6 Combat HIV/AIDS, malaria and other diseases

- Halt and begin to reverse the spread of HIV/AIDS
- Halt and begin to reverse the incidence of malaria and other major diseases

7 Ensure environmental sustainability

- Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources
- Reduce by half the proportion of people without sustainable access to safe drinking water
- Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020

8 Develop a Global Partnership for Development

The global nature of the energy sector requires effective partnership among governments, public entities, development agencies, civil society and the private sector.

MALI

A Case Study

Facts About Mali

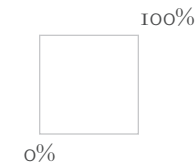
Population	12.0 million
Population Density	9.2 people per square kilometer
Average Annual Growth Rate	2.5%
GDP per capita	US \$720 PPP
Average Annual Growth in GDP (per capita, 1991-2000)	1%
Percent of GDP earned by Agriculture	46%
Life Expectancy at Birth	51 years
Infant Mortality (per 1,000 live births)	120
Adult Literacy Rate	40%

70% of the total population lives in rural areas

Roughly 88% of the poor population lives in rural areas

Between 5% and 10% of the total population has access to electricity

Less than 5% of the rural population has access to modern energy services



Mali in Context

Selected Development Indicators

MDG Mali Developing Regions

1 Eradicate Extreme Poverty and Hunger

Proportion of Population Living < US\$1/day (PPP)



Prevalence of Underweight Children < 5 Years of Age



2 Achieve Universal Primary Education

Net Enrollment Ratio in Primary School



Literacy Rate of 15-24 Year Olds



3 Promote Gender Equality and Empower Women

Ratio of Girls to Boys in Primary School



4 Reduce Child Mortality

Under-Five Mortality Rate (per 1,000 live births)



5 Improve Maternal Health

Proportion of Births Attended by Skilled Health Personnel

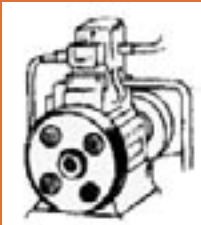


Mali's most important geographic feature is the Niger River, which traverses both the Sahel and the southeastern section of the country, including the capital city of Bamako.

Bamako



THE MULTIFUNCTIONAL PLATFORM (MFP)



A platform's services can save a woman anywhere between 1.0 to 3.3 hours of grinding per day.

Increased Productivity

Energy Services

- Grinding
- Milling
- Pressing
- Sawing
- Welding
- Battery Charging
- Lighting
- Water Pumping



Multifunctional Platform

In 1996, the United Nations Development Programme (UNDP) and the United Nations Industrial Development Organization (UNIDO), in collaboration with the government of Mali initiated the multifunctional platform project as a vehicle to promote women's development and poverty alleviation in rural Mali. The platform project consists of the development of energy service microenterprises, owned and operated by women's associations. The platform itself consists of a small diesel engine mounted on a chassis, to which a variety of end-use equipment can be attached, including grinding mills, battery chargers, vegetable or nut oil presses, welding machines, and carpentry tools. It can also support a mini-grid for lighting and electric pumps for a small water distribution network or irrigation system.

Time Savings

One of the most important benefits that the multifunctional platform has brought to women is time savings. By mechanizing what are traditionally time- and labor-intensive activities—such as milling cereal and de-husking rice—a multifunctional platform's services can dramatically reduce the time women and young girls must devote to daily chores.

- Increased income generating opportunities

- Increased rice production and consumption

- Enhanced health care

- Better educational opportunities for children

MDG 1

Access to modern energy services is essential to supporting economic growth and poverty reduction. By providing women with services that help facilitate productive activities like agricultural enterprises or off-farm employment, multifunctional platforms have helped create a self-sustaining cycle in which women are empowered by both the ability to earn additional income as well as the choice of where to spend it. The platform's services can also help women by increasing their food production capacity.

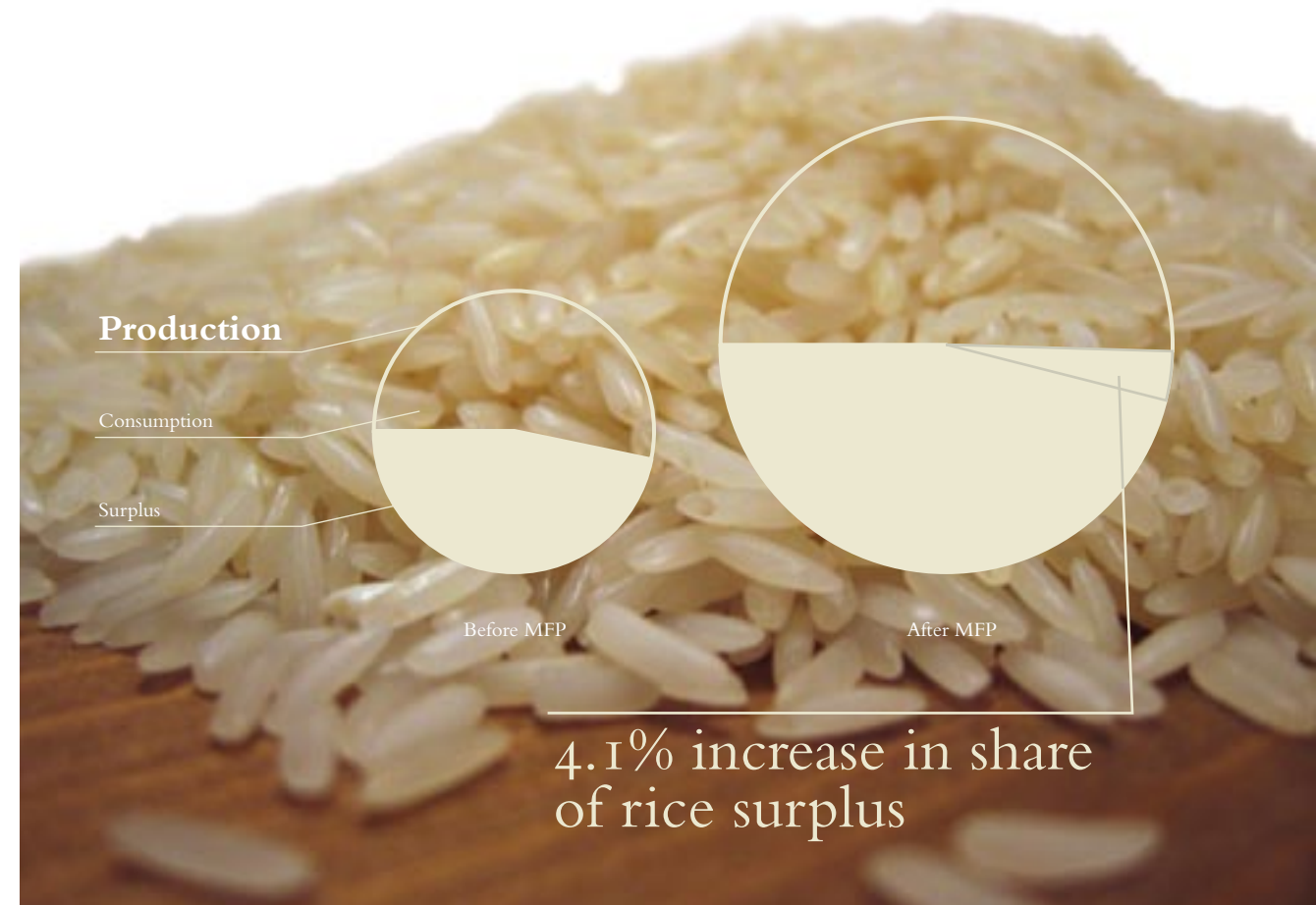
Revenue Generation

A multifunctional platform enables women to increase and diversify their income by helping them re-allocate more of their time to farm production and developing small trade through the sale of agricultural products. The experience gained so far with the Multifunctional Platform Project suggests that women earn an average of 66 FCFA per day (US\$ 0.32 PPP) or US\$ 44 per year in additional income from having access to a platform's services. An increase in income of this magnitude constitutes a significant contribution to poverty reduction given Mali's poverty gap ratio is estimated at US\$ 0.37 PPP.



Rice Production and Consumption

To the extent that the availability of farmland and rainfall permits it, the time savings women gain by having access to mechanical power allows a larger number of women to engage in rice farming and boosts existing rice production among those who already have individual farms. As rice production has increased so has consumption and the relative share of rice surplus available for sale.



4.1% increase in share of rice surplus

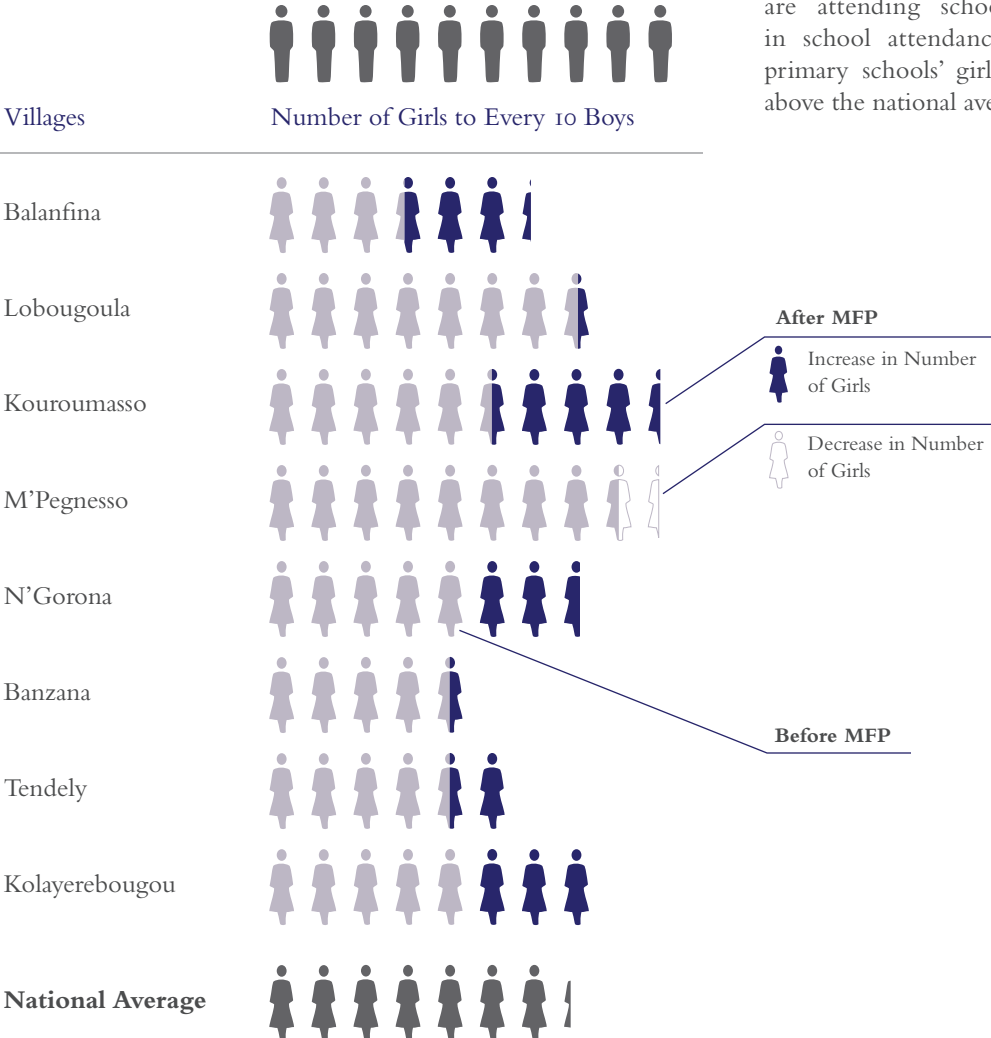
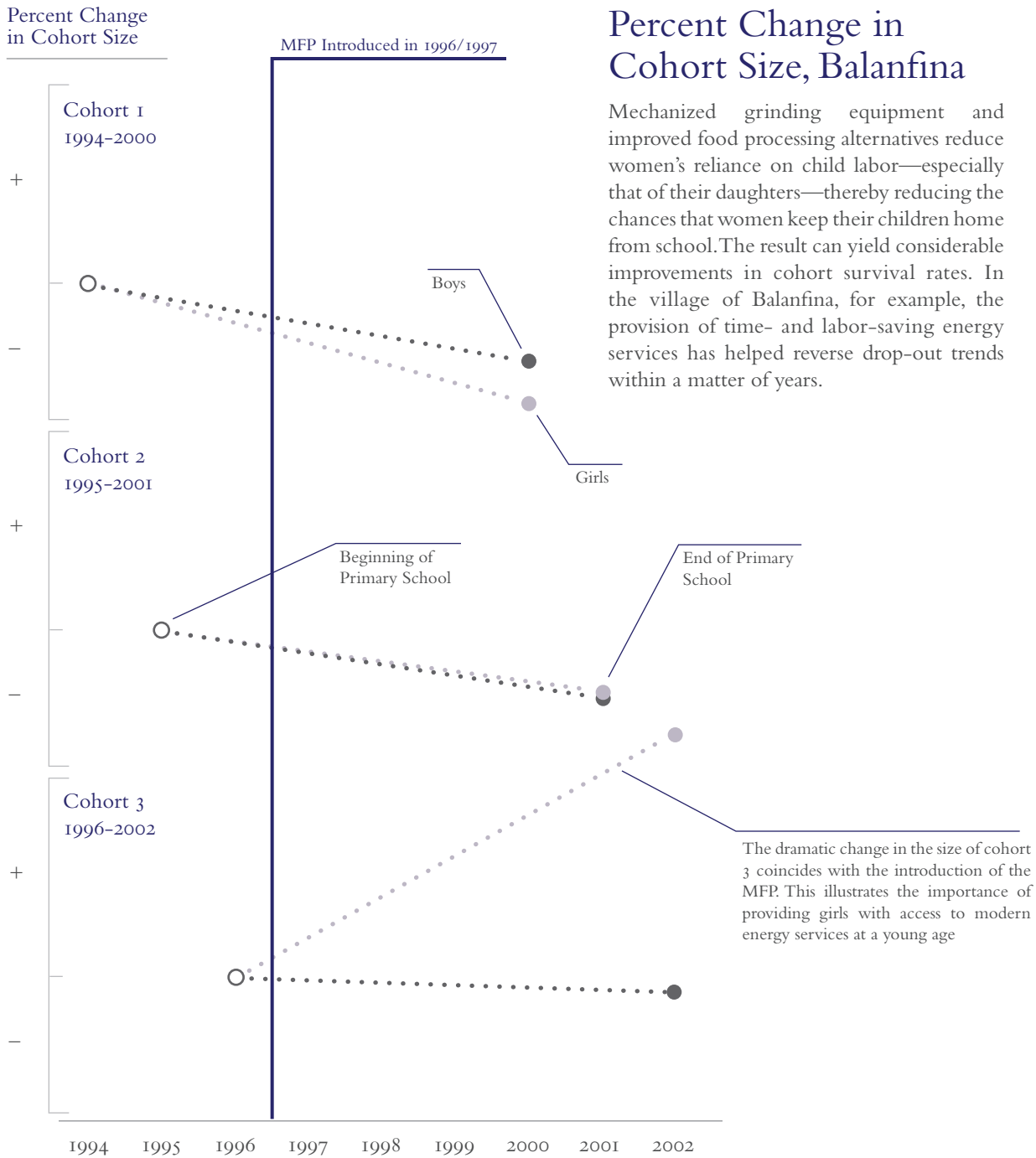
MDGs
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In rural Mali, the responsibility of children—primarily girls—to assist their mothers with domestic chores often prevents them from regularly attending school. When targeted to women, energy services can increase women’s productivity while simultaneously increasing children’s opportunities for education. Evidence from Mali suggests that the multifunctional platform project has done precisely this. Since its introduction in 1997, the multifunctional platform has helped numerous villages reverse decade-long trends in low girl-to-boy ratios in primary school, high drop-out rates and low proportions of young girls entering secondary school.



Girl to Boy Ratio in Primary School

As a result of not having to spend a lot of time and effort helping their mothers at home, an increasing number of girls are attending school. Improvements in school attendance now put some primary schools’ girl-to-boy ratio well above the national average of 0.71.

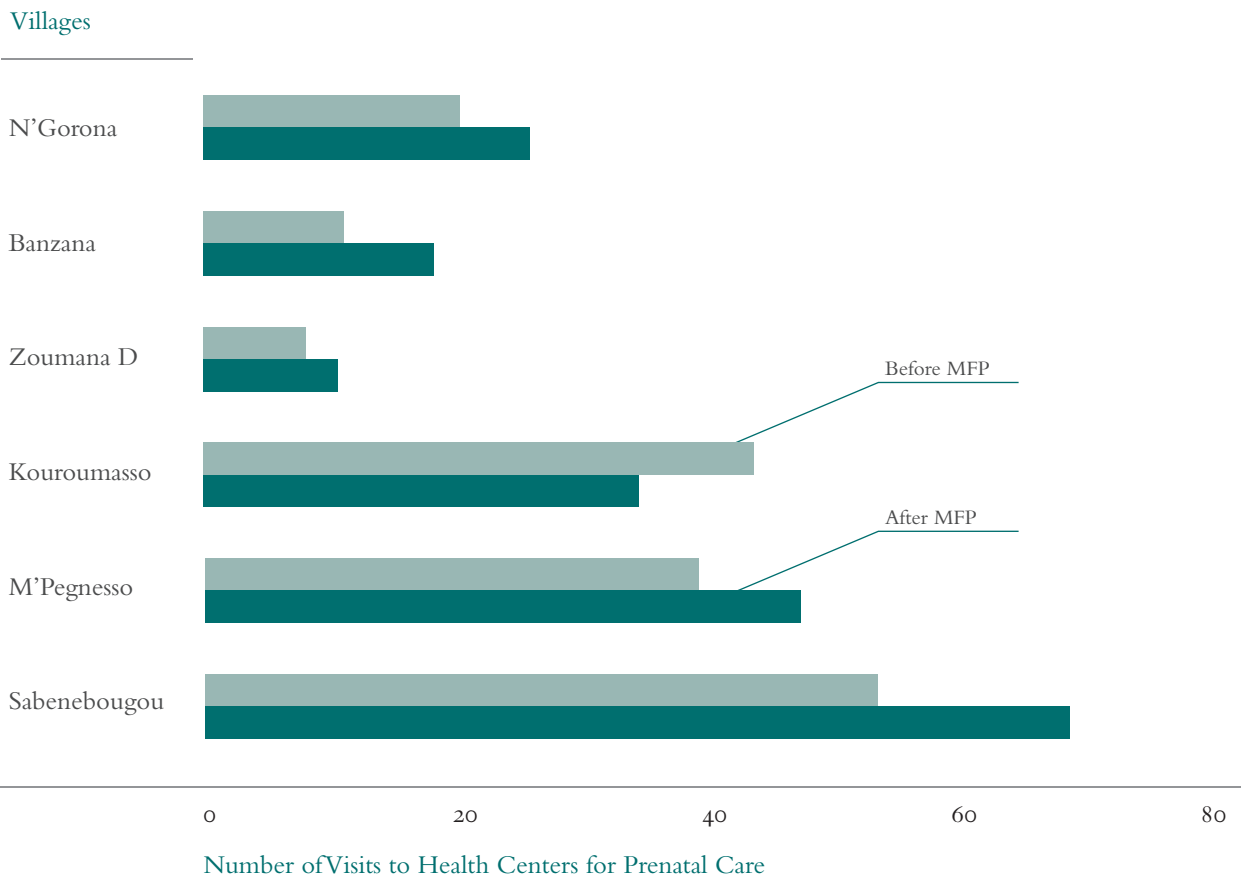


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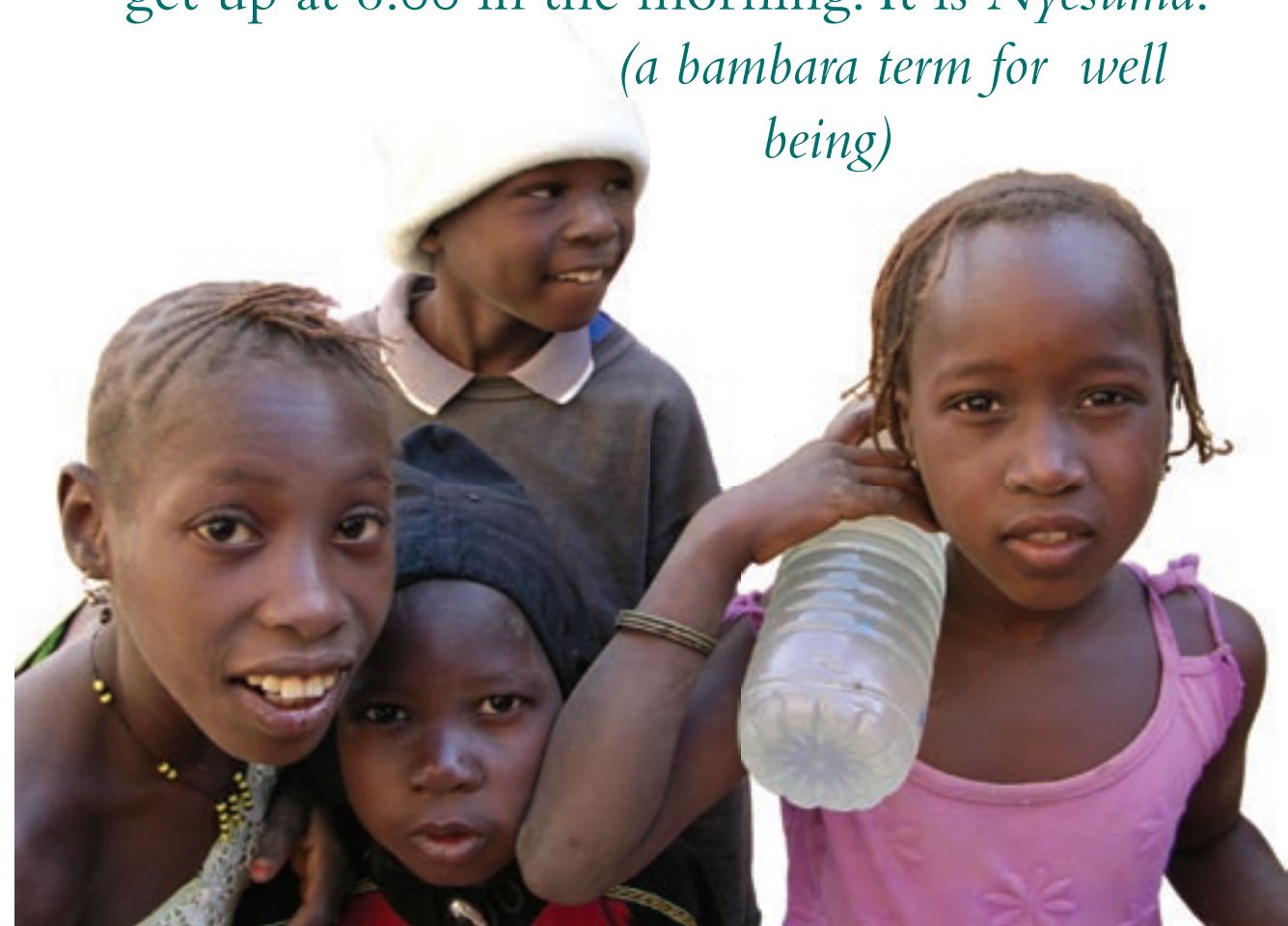
By diminishing household drudgery for rural women, the multifunctional platform creates new discretionary time that could be utilized for income-generating activities and rest—both of which provide women greater access to health care services. By reducing the constraints of a heavy workload, the multifunctional platform also allows women to pay more attention to their children’s health needs, thus reducing the risk of infant and child malnutrition. Other health benefits include fewer gastro-intestinal diseases and overall improvements in nutrition.

Prenatal Health Care

One indication that multifunctional platforms are enhancing women’s health and overall welfare is the growing number of women visiting health clinics for prenatal health care. Women’s access to health care services is generally constrained by a lack of time and monetary resources. After the introduction of the multifunctional platform project women have had more discretionary time and income to spend on prenatal health care.



“Before the platform we used to have to be up sometimes at 3:30 in the morning to fetch and carry water. Now with the water pump and the water points inside the village, we can get up at 6:00 in the morning. It is *Nyesuma!*”
(a bambara term for well being)



C O N C L U S I O N

To assist countries in achieving the MDGs, key development issues—economic productivity, education, health, and gender equality—need to be addressed simultaneously. Energy is an essential component to all of these areas, bringing about multiple and synergistic development impacts across a wide spectrum of development issues. In order to prevent a lack of modern energy services from becoming an impediment to development, however, policies aimed at improving the quantity and quality of energy services need to be mainstreamed with broader development policies. This would incentivize investments in energy as well as the services that promote growth and productive employment.

The multifunctional platform concept provides one of many possible mechanisms for scaling up energy investments. As seen throughout this case study, what makes the concept a particularly effective means of promoting poverty reduction is its ability to empower women through the productive application of energy. This particular aspect of the concept has helped expand the project from its original pilot stage to the roughly 500 platforms that now operate throughout Mali. If expanded to the rest of the country, as some government officials are interested in doing, the multifunctional platform could be an invaluable catalyst for change. The impact of this relatively simple intervention demonstrates the vital role that energy plays in improving human welfare, and the importance of considering the enabling factors that support development.



ACKNOWLEDGEMENTS

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Source of Mali country statistics: World Resources Institute