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FORUM

Interview with
Fazle Hasan Abed,
Founder and Chairman of BRAC

VOLUME 1 | 2009

ISSN 1933-8910 (PRINT) • ISSN 1933-8813 (ONLINE)

Strengthening Ties with the African Union

IFPRI has signed an agreement with the African Union (AU) Commission to develop a strategic partnership aimed at consolidating the capacity of African countries to enhance and sustain their food security. The Memorandum of Understanding (MoU)—signed on December 10 by Jean Ping, chairperson of the African Union Commission, and Joachim von Braun, director general of IFPRI, at the headquarters of the African Union in Addis Ababa, Ethiopia—seeks to strengthen the capacity of AU member states in the areas of policy research and analysis, policy communication, and policy dialogue and implementation.

At the signing event, von Braun noted, "Evidence-based research, led by the facts, is what you can count on from us at IFPRI. On any day, you can expect that somewhere in Africa IFPRI researchers are talking to farmers in a structured way. Out of that comes a wealth of information."

In his statement on the MoU, Ping said, "Although the African Union has been

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Squeezing the Most out of Scarce Water Resources

In his latest appearance on the big screen, James Bond, the fictitious British spy created by Ian Fleming in the 1950s, discovers that the world's most coveted resource is not gold or oil, but water. No longer just an issue for scientists and policymakers, water scarcity is making its way into mainstream culture.

In the past decade, the international community has been confronted by an unsettling prospect—the world's water supply is dwindling. River basins across the globe are drying up. From the Colorado River to the Danube to the Nile, signs abound that the world is

heading toward a water crisis. According to the United Nations Food and Agriculture Organization (FAO), by 2025 two-thirds of the world could be threatened by water shortages, which would in turn have a large impact on food security. IFPRI research

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Renewed Policy Action in South Asia

Despite rapid regional income growth in the past decade, almost half a billion people still live in poverty in South Asia and suffer from hunger and poor nutrition. This persistent deprivation was the focus of a workshop held in New Delhi on December 2 entitled “Renewed Policy Action for the Poorest and Hungry in South Asia.”

The one-day workshop—sponsored by the Asian Development Bank and the International Fund for Agricultural Development—brought together development specialists from India, Bangladesh, and Sri Lanka to explore how the poor in South Asia can benefit from income growth and investments in health and education. Speakers included representatives from the Asian Development Bank, the World Food Programme, the U.K. Department for International Development, and regional organizations.

Participants discussed the strengths and weaknesses of various public nutrition programs, the positive impact of stipends and food or cash transfer programs on school enrollment, and how the region’s poorest people can benefit from remittances. Several speakers presented case studies of particular programs in India, Bangladesh, and Sri Lanka.

The workshop was organized by IFPRI’s 2020 Vision Initiative and the Food Consumption and Nutrition Division as part of the Initiative’s ongoing “Taking Action for the World’s Poor and Hungry People” project, which analyzes why certain groups are left behind by economic development and identifies policy responses.

Last year’s “Taking Action for the World’s Poor and Hungry People” conference in Beijing identified inclusive income growth and enhanced human capabilities for the world’s poorest people as policy goals. The New Delhi meeting picked up where the earlier conference left off by articulating the Beijing conclusions at a regional level. ■

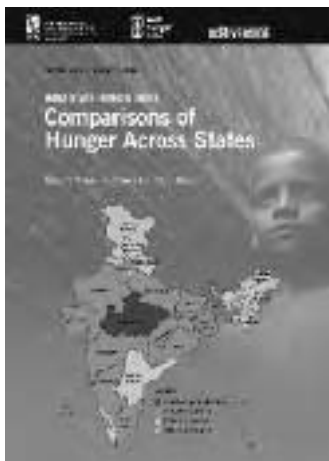
India State Hunger Index: Alarming Results

With more than 200 million food-insecure people, India is home to the largest number of hungry people in the world. In fact, the situation in many states has reached alarming proportions, according to the India State Hunger Index (ISHI), which was released in October 2008 by IFPRI, Welthungerhilfe, and Concern Worldwide.

As with the Global Hunger Index, the ISHI measures hunger according to three leading indicators (prevalence of child underweight, rates of child mortality, and the proportion of people who are calorie deficient) and combines them into one index. The ISHI is scored on a 100-point scale, with 0 being the best score (no hunger) and 100 being the worst. Values between 10 and 19.9 indicate a serious problem, values between 20 and 29.9 are alarming, and values exceeding 30 are extremely alarming.

According to the 2008 ISHI, 12 of the 17 Indian states analyzed fall in the “alarming” category, and one state—Madhya Pradesh—falls in the “extremely alarming” category. Four states—Punjab, Kerala, Haryana, and Assam—fall in the “serious” category. For almost all states, child underweight accounts for the greatest contribution to the ISHI, followed by calorie deficiency and child mortality.

Tackling these problems and improving states’ ISHI scores will require direct investments in improving food availability and access for poor households, and direct targeted nutrition and health interventions to improve the nutrition and mortality outcomes for young children. “India needs to use existing programs and systems to ensure that all women and children receive evidence-based interventions during the window of opportunity—the first two years of life for children and before, during, and immediately after pregnancy for women,” said Purnima Menon, IFPRI research fellow and lead author of the India State Hunger Index. “This would lead to much progress in reducing child undernutrition.” ■



Millions Fed: Proven Successes in Agricultural Development

In the past 50 years, the world has achieved remarkable success in growing more food, processing better-quality food and delivering it to consumers, and ensuring that people can get access to the food they need to live healthy and productive lives. A wide range of policies, investments, and programs operating at local, regional, and global levels have contributed to this success.

But progress in feeding the world's millions of poor has slowed, while the challenge of feeding its future millions remains enormous and is subject to new uncertainties in the global food and agricultural system. Today's sharply volatile global food prices signal major imbalances in the world food equation, implying greater uncertainty for global food security and poverty reduction efforts. Learning from successes in agricultural development is now more urgent than ever: Past successes have opened pathways out of poverty for small-scale farmers, food-insecure households, and other vulnerable social groups, and building on these successes holds great potential for feeding both current and future millions. Finding new ways to expand these pathways and open up new pathways is vital to improving food security, reducing hunger, and promoting agricultural development.

To learn and share lessons from past successes, IFPRI, with support from the Bill & Melinda Gates Foundation, is leading an initiative to document evidence on "what works" in agriculture—what sorts of policies, programs, and investments in agricultural development have actually reduced hunger and poverty.

The "Millions Fed: Proven Successes in Agricultural Development" project will highlight proven successes that have had a demonstrated and significant impact on food security and hunger in developing countries, identify common factors that have contributed to successes, and motivate global and local discussions on the potential for bringing lessons of the past to bear on today's challenges.

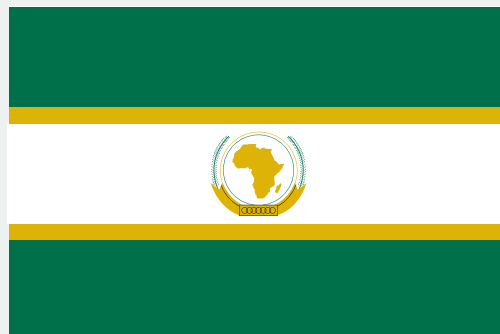
The Millions Fed project aims to reach a diverse global audience—policymakers, development practitioners, donors, scholars, nongovernmental organizations, entrepreneurs, students, and everyday citizens—with new analysis, case studies, and innovative ideas. To do so, the project is developing a range of research products and communications tools to convey the fundamental elements of success in agricultural development to this global audience, including analytical studies on success factors, a compendium of case studies, an interactive website, audiovisual tools, and instructional materials.

The project will offer its first publicly accessible outputs—case studies of proven successes and an analysis of factors contributing to success—by August 2009. This milestone will mark the launch of a global communications initiative to facilitate far-reaching dialogues on global hunger and the policy and investment decisions that can end it. For more information, go to www.ifpri.org/millionsfed. ■

Strengthening Ties with the African Union

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working very closely with IFPRI for some time now, the relationship that we shall begin with the signing of this Memorandum of Understanding will signify an even stronger bond in our working relations." He emphasized the Commission's commitment to engaging in permanent consultations with IFPRI to ensure the effective implementation of the objectives of the MoU. ■



"We felt that we may have something to offer from our combined experiences in Bangladesh and Afghanistan to further energize and accelerate poverty-alleviation efforts in other countries of the South. It is this spirit of South-South camaraderie that drives and underpins our overseas work."



Fazle Hasan Abed Founder and Chairman of BRAC (formerly Bangladesh Rural Advancement Committee)

IFPRI Forum talks with Fazle Hasan Abed about BRAC's activities to benefit the poor in Bangladesh, Afghanistan, and Africa.

FORUM: BRAC, which is one of the largest nongovernmental development organizations in the world, has strong programs that target the poorest. How have these clients been affected by the food price crisis and the current financial turmoil?

Abed: In Bangladesh, nearly 40 percent of the population is poor and 20 percent is extremely poor. The poor spend 70 percent of their income on food, and nearly 40 percent on rice, the dominant staple food. During 2007-08, the price of rice increased by 60 percent and the price of edible oil almost doubled. Since the level of consumption of rice must be maintained to meet energy needs, the increase in rice prices forced the poor to spend more on rice and cut back on other food items, both in terms of quantity and quality. This has resulted in adverse nutritional outcomes, especially for children. It has also had a negative effect on children's school participation.

A BRAC study on the impact of rising food prices found that between 2006 and 2008, there was a 9 percentage-point increase in wasting among children under 5 and a 10 percentage-point increase in the proportion of underweight children. This has caused about 650,000 more children under the age of 5 to become malnourished in the short term. Given the already high and obstinate levels of child malnourishment in Bangladesh, this trend is very worrying.

BRAC now reaches almost 7 million mostly poor households with programs on health, education, and microfinance. One specific program on eliminating extreme poverty targets the bottom 10 percent of households—households that remain outside the purview of most anti-poverty programs. Its main aim is to develop capacity for income generation by providing a minimum amount of assets, along with intensive training and supervision on the effective use of those assets, for two years. It is expected that after the two-year period, those households will be able to sustain the gains achieved through participation in labor and tenancy markets and in microfinance programs, and can emerge out of the poverty trap. A “quick and dirty” monitoring of the coping mechanism for the escalation in food prices found that beneficiaries who have been with this program for a longer period did better in coping with the crisis.

FORUM: The current financial and economic crisis poses serious challenges to countries, rich and poor, across the globe. BRAC is very active in banking with and for the poor. How has BRAC itself been affected and how will BRAC's priorities or approach change in response to the crisis?

Abed: The current financial and economic crisis will increase the cost of loan funds for microfinance. This will reduce the small amount of surplus that we generate from the microfinance program, which is reinvested for social-sector services such as education and health, for which we cannot charge our beneficiaries. Nearly 20 percent of our budget of

about US\$450 million is financed with grants from development partners. We have not yet faced any problem in mobilizing this support, but we remain concerned about the decline of grants in the future if the global financial crisis continues.

Finding ways to increase our efficiency through management restructuring and greater use of technology will be key to the new business model of pro-poor microfinance. The right type of regulatory arrangement that will enable microfinance institutions to mobilize voluntary savings and take advantage of emerging technological opportunities is also an important ingredient for the new business model for microfinance.

FORUM: BRAC has recently expanded to several countries in Africa. In what ways do lessons from your experiences in Bangladesh apply and not apply in the African context?

Abed: The key elements of BRAC's approach to comprehensive rural development and poverty alleviation are piloting in response to an emerging challenge; learning, adapting and innovating from the experience; and scaling up to achieve national-level impact. BRAC believes in flexibility in operations, attention to detail, learning from mistakes, necessity for change, continuous training for capacity enhancement of staff, and sensitivity to local cultural values and customs. These principles and values have been helpful guides in BRAC operations outside Bangladesh.

The ground realities within which BRAC's approach evolved are widespread poverty, governance failure, the uncertainties and frustrations of post-conflict political environments, deep inequities, weak and missing markets that fail to serve the poor, and unnecessary and preventable deaths. Despite complex differences across countries and cultures, we felt our experiences of working with the poor in these realities and the relatively lower cost of using experienced Bangladeshi staff for training locals at the initial stage of replication gave us an edge over many organizations working in international development.

Before we started work in Africa, we went to Afghanistan in 2002. By 2005, we were inspired by our ability to adapt the BRAC approach to Afghan ground realities, by the positive response from local leaders and people, and by the rapid expansion of operations within a short span of time. We felt that we may have something to offer from our combined experiences in Bangladesh and Afghanistan to further energize and accelerate poverty-alleviation efforts in other countries of the South. It is this

spirit of South-South camaraderie that drives and underpins our overseas work.

The African context itself is widely varied. We work in relatively stable and growing economies such as Uganda and Tanzania. We also work in post-conflict countries with their own diverse complexities, such as Southern Sudan, and recently in Liberia and Sierra Leone. Our entry point is the microfinance program, which allows us to build the outreach and the community-level social infrastructure on which we build other activities in healthcare services and agriculture. Making an impact at the national level is one of the core objectives driving our work in Africa.

With the strong track record of our work in Bangladesh and Afghanistan, our willingness and ability to adapt and deliver, and the strong support of many top leaders in African countries as well as of donor agencies, civil-society leaders, and think tanks in developed countries, we feel that we can create effective pro-poor development and an alliance with a southern core.

FORUM: BRAC has participated in partnerships with the private sector. What kinds of innovations do you see emerging from the private sector? How can the private sector be more engaged in reaching the poor in ways that benefit both business and the poor?

Abed: BRAC has never shied away from entering into the private-sector domain as a pro-poor actor, to create more secure and rewarding links between the market and the livelihoods of the poor. This has led BRAC to venture into many frontier-market developments that create backward and forward linkages to the enterprises of the poor. BRAC experiments in high-risk ventures have sometimes shown the private sector ways to invest in a new area.

For instance, when BRAC started introducing high-yielding poultry as an enterprise for poor women borrowers, it soon became apparent that a timely supply of quality day-old chicks was a major constraint, which led BRAC to set up hatcheries that are run commercially. Another constraint was high-quality poultry feed; that led BRAC to engage in marketing imported hybrid maize seeds, and setting up feed mills. A whole system of logistics management had to be woven around these enterprises to connect to the poultry business of the poor. This is why at BRAC we like to refer to our commercial enterprises as 'program-support enterprises.'

Such an approach to building viable private-sector enterprises as a pro-poor actor with the explicit aim of poverty

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alleviation requires an innovative structure of ownership and governance. The private sector's partnership with NGOs is driven mainly by two factors: commercial and regulatory compliance. The most important issue that stands in the way of a meaningful and sustainable partnership is the fact that markets do not attach any premium to "socially responsible" behavior by corporations. This results in traditional private-sector actors concentrating mostly on financial parameters and compliance, which is rewarded by the market.

The real potential of a meaningful and sustainable partnership will perhaps emerge from NGOs pioneering sustainable businesses that fulfill a social need and the private sector partnering to bring in core competencies in terms of innovations in products, processes, and financial discipline. This will create efficiencies that will ensure longer-term sustainability. BRAC's investment in BRAC Bank Limited (BBL), which focuses on creating access to finance for small and medium enterprises, can be seen as an example. BBL started as a closely held company, with BRAC, Shorecap (a U.S.-based investment company), and the IFC as sponsors. Shorecap, which has experience in this sector, and BRAC, which has a strong background in financing microenterprises, leveraged their synergies to the benefit of BBL. Today, BBL is a public limited company that is considered a pioneer and a role model in the field of small- and medium-enterprise financing. ■

IFPRI Wins COM+ Communication Award

In recognition of its response to the food price crisis, in which it produced timely research, raised public awareness, informed policymakers, and provided an action plan ahead of others, IFPRI received the 2008 COM+ Communication Award. COM+ is a partnership of international organizations and communications professionals from diverse sectors committed to using communications to advance sustainable development.

COM+ called IFPRI the "go to source" on the crisis, and commended the Institute for undertaking both targeted and broad outreach (via website, special publications, high-level briefings, policy seminars, and media outreach) that targeted a range of audiences: policymakers, policy advisors, socially concerned citizens, and the general public.

"IFPRI demonstrated a unique capability of combining research, advocacy, and public awareness on such a critical issue for the developing world," said Sergio Jellinek, chair of the COM+ Alliance Steering Committee. ■

Sergio Jellinek (left), Chair of the Steering Committee of the COM+ Alliance shakes the hand of Klaus von Grebmer (right), head of IFPRI's Communications Division.



Strengthening Women's Assets

Agnes Quisumbing and Ruth Meinzen-Dick

A growing body of evidence has shown that women's empowerment is a key contributor to food security and poverty reduction. One key element of empowerment is women's control over assets. These assets include human capital (education, information, health, and nutritional status), natural capital (property rights to land, water, and other natural resources), financial capital (savings, credit, and insurance), physical capital (buildings, tools, equipment), social capital (group memberships and social networks), and political capital (influence in governance processes).

Past and ongoing IFPRI research shows that increasing assets controlled by women increases their bargaining power within the household and results in better education and health for their children. In-depth research conducted in Bangladesh, Ethiopia, Indonesia, and South Africa shows that, although women bring far fewer assets to marriage, these assets play a significant role in household decisionmaking, particularly regarding the allocation of household expenditures to food, education, health, and children's clothing. In all these countries, assets in the hands of women increased the share that the household spent on education. Even in patriarchal societies such as Bangladesh where husbands control most of the resources, the effects of husbands' and wives' assets on the allocation of resources within the household differs. IFPRI research indicates that women's assets have a positive effect on children's clothing and educational expenditures, and also reduced the rate of illness of girls.

New evidence indicates that women who have greater bargaining power within the household—owing to more assets brought to marriage—are better able to invest in social capital and to join groups and networks, which allows them to learn about new agricultural techniques, obtain credit, and develop social support systems. Investment in social capital (such as joining

microfinance groups) also creates a virtuous cycle of women's empowerment. Studies from Bangladesh, for example, find that participation in credit programs leads to women taking a greater role in household decisionmaking, having greater access to financial and economic resources, having greater social networks, having greater bargaining power vis-à-vis their husbands, and having greater freedom of mobility. Female credit also tended to increase spousal communication in general about family planning and parenting concerns. And there is extensive evidence that closing the gap in productive resources like land, water, and equipment held by men and women has the potential to increase agricultural productivity by 10 to 20 percent.

But there is insufficient knowledge regarding women's ownership and control of productive assets in agriculture. We know more about key measures of human capital, such as schooling attainment and nutritional status, because these are routinely measured for individuals, making male–female comparisons possible. We know, for example, that female primary and secondary enrollment rates and average years of female schooling have generally risen over time, even if the gender gap in schooling still persists in South Asia, Sub-Saharan Africa, and some countries in the Middle East and North Africa. But we know relatively little in terms of women's ownership and control of natural and physical capital. Part of this knowledge gap can be attributed to statistical systems that do not collect gender-disaggregated data. Most information on gender differences in asset ownership comes from specialized household surveys; while these are rich in information, they are not necessarily nationally representative nor do they have a wide geographic coverage. The indicative evidence that exists, from retrospective marriage histories, suggests that while the gap in schooling has been closing over time,

the gap in other assets has, in fact, been widening. In order to recommend the appropriate policies and interventions to close this gap, we must know more about the nature and extent of it.

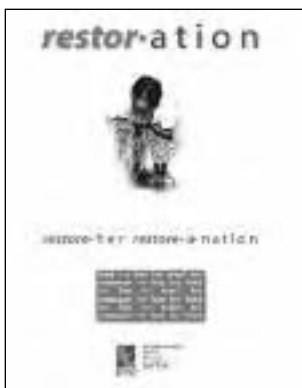
Therefore, IFPRI is launching a new research program on Strengthening Women's Assets for Better Development Outcomes (henceforth Women's Assets program). This research program encompasses both “tangible” assets, such as natural, physical, and financial capital, as well as “intangible” assets, such as human, social, and political capital. The program also focuses on women's access to assets at the individual, household, and community levels and on the interaction of these types of assets.

The Women's Assets program meets a demand expressed by policymakers, practitioners, and researchers for better information about the links between gender and assets. In order to get better gender-disaggregated data on asset ownership and control, the research program has to first identify or develop appropriate methods for gathering information on tangible and intangible assets and on women's empowerment, and for evaluating program impacts on women's control of assets. But the research program goes beyond methods and measuring the asset gap, to examine how this shapes gender relations and welfare outcomes within the household. For example, in the context of crises such as the food price crisis, there are indications that women's assets may be the first to be sold to maintain family consumption levels; women may also disinvest in their own human capital by skipping meals more than do their husbands and children. However, more needs to be done to understand what long-run implications such gender-specific physical and human asset disposal

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FIRST PLACE
Laura Kanopsis



SECOND PLACE
Jerri Marie Cole



THIRD PLACE
Erin Bratton

More IFPRI News

A Winning Proposition: IFPRI's 2008 Student Poster Competition

During the Fall 2008 semester, students in two graphic design classes at Arkansas Tech University received an unusual assignment: to design a poster for IFPRI's 2008 Student Poster Competition.

This was not an easy task, since the students had to become familiar not only with IFPRI's mission to find sustainable solutions to end hunger and poverty, but also with its many areas of research. In the end, more than 50 students submitted posters. "This was a great opportunity for Arkansas Tech students to use their creative abilities to promote international issues," said Art Professor Edwin Cuenco. "Their response has been awesome."

Evelyn Banda of IFPRI's Communications Division said, "It was clear to us from the appropriateness of the entries that the students had done their homework in order to become familiar with IFPRI's message." She said it was challenging to choose from among the many entries, but it was rewarding to see how seriously the art students responded to their assignment.

The three winning posters were selected by IFPRI staff around the globe as well as external judges from Task Digital (New Delhi, India) and JKS Design (Woodbridge, VA, USA). "The student designers were all freshman, which says a lot about the quality of students at Arkansas Tech," said Banda. The winners, who have donated their posters to IFPRI, are listed at left.

Jerri Mari Cole said her poster is about restoring basic human rights, restoring dignity. "As an artist, my passion is loving the very least," she said. "In many areas of the world, women are considered second-class citizens. Female children are thought of even less. By restoring 'her' basic needs, we not only empower her, we empower nations. As the young girl drinks of the water, her vitality is restored. She is transforming from black and white, to color. The design is simple and clean so that the message of hope comes through loud and clear... 'Feed her, free her, teach her, empower her, love her.'" ■

Strengthening Women's Assets

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has for women's health, assets, and status, as well as for family welfare.

The research program will also work directly with government and NGO programs to evaluate the impact of interventions designed to increase women's control of assets. Increasingly, encouraged by the successes of programs such as the Grameen Bank in Bangladesh and conditional cash transfers such as PROGRESA in Mexico, governments and NGOs have been implementing programs to increase human and capital assets controlled by women. However, aside from these large-scale success stories, many of the smaller-scale interventions go unnoticed—partly because of lack of rigorous evaluation. Without a culture of evaluation and learning, and without adequate attention to design mechanism and potential for scaling up, many promising approaches remain untapped. Information about the outcomes of different program strategies, and how they interact with women's own efforts to build their assets will help development practitioners and policymakers design and implement more effective programs.

Work is being initiated, and resources are being sought to expand the program to cover more countries and resources so that collectively, this research program can contribute not only to a more accurate picture of the role, potential, and constraints of women in agriculture, but also to more effective programs to increase agricultural production, food security, and household welfare. ■

Agnes Quisumbing is a senior research fellow in IFPRI's Food Consumption and Nutrition Division, and Ruth Meinzen-Dick is a senior research fellow in IFPRI's Environment and Production Technology Division.

shows that if current trends continue, water scarcity will likely cause annual global losses of 350 million metric tons of food production by 2025, leading to an inevitable rise in food prices.

Many parts of the world already feel the effects of too little water. More than 1 billion people live in areas with insufficient water to meet their needs. According to Colin Chartres, director general of the International Water Management Institute (IWMI), "The critical thing at the moment is getting people to realize that there is a water crisis. With the recent fuel crisis, financial crisis, and food crisis, people do not really want to know about another crisis. But we have to say that this is happening." Water use for agriculture is closely intertwined with energy prices, because energy is needed to pump groundwater for irrigation. Mark Rosegrant, director of IFPRI's Environment and Production

Technology Division, notes that rising energy prices will change the effectiveness of different types of irrigation and water-allocation policies. "The increasing cost of water and energy subsidies worldwide will lead to significant pressure and increased incentives for long-needed reform of water management to improve water-use efficiency," he says.

Chartres, who attributes much of the world's current food crisis to the lack of water, points out that there are two types of water scarcity: physical water scarcity, which primarily affects arid or semi-arid regions; and economic water scarcity, which affects countries that cannot afford to make use of water resources, such as in much of Sub-Saharan Africa. Both types of scarcity pose unique challenges and contribute to what Margaret Catley-Carlson, a water policy expert on IWMI's Board of Directors, says is going to be one of the great management issues of the 21st century. "If water resources are managed poorly," she says, "it will be the cause of profound humanitarian distress."

The Roots of the Problem

Although the great majority of the earth's surface is covered with water, only 3 percent is available for use as freshwater, and that 3 percent must meet the needs of households, industry, irrigation for food production, and the environment. Changes in population, diet patterns, demographics, and climate, as well as detrimental policy choices, have put the supply under stress.



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The earth's population has increased by 3 billion people in the past 30 years and is expected to grow by 3 billion more by 2050. All these people will need water not only for drinking, but also for household use and food production. Since it takes about one liter of water to produce one calorie of food—and thus about 2,500 to 3,000 liters of water to feed each person per day—an extra 3 billion people will significantly increase water demand.

Changes in food consumption patterns are also putting pressure on water supplies. As people in emerging market economies (such as India and China) become wealthier, their diets evolve to include more meat and dairy products, which require significantly more water to produce. IFPRI projects that by 2050, average annual meat consumption in East Asia, for example, will almost double from 40 kilograms (kg) to 78 kg per person. Since between 5,000 and 15,000 liters of water are required to produce one kilogram of meat, future use of water in food production will increase dramatically.

Urbanization is often identified as another contributor to water scarcity. By 2050, nearly all additional population growth will be in cities, according to the United Nations Human Settlements Programme (UN-HABITAT). This urban growth will concentrate water needs in particular geographic areas that may or may not have easy access to water. Roberto Lenton, Technical Chair of the Global Water Partnership, points out that although urban centers are often more efficient than rural areas in managing resources,

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certain cities will be severely affected. He says, "You have situations like Mexico City and Chennai, India, where there is really a serious problem of availability of water to serve growing urban needs." Increased concentration also increases competition between urban and agricultural water needs.

Another major factor is climate change, which affects water availability in two ways: first, as temperatures increase, crops consume more water; and, second, changes in precipitation patterns in many areas will lead to a net decline in rainfall. Both of these changes translate into less runoff and thus less water availability over time. In addition, climate variability creates extreme weather patterns that lead to droughts and floods. According to Claudia Ringler, a senior research fellow at IFPRI, climate change is becoming increasingly important for water management. "While population, diet patterns, and urbanization currently have a greater impact on water security, by 2025, climate change will account for more of the threat," she says.

Finally, biofuel production, which was ramped up in response to oil scarcity and higher energy prices, is also aggravating water shortages, since biofuels can compete for scarce land and water resources, depending on feedstock and location.

Who Is Affected?

Water scarcity is a global problem. In the United States, arid parts of Southern California import water from a reluctant North. Wealthy countries like Saudi Arabia are buying land in foreign countries with more water resources and using oil revenues to import water-intensive goods such as wheat. In Australia, seven years of drought have led to increased government buyback of irrigation water-use rights in the Murray-Darling River Basin to preserve the river's flow and health. But poor countries feel the effects of water insecurity to a much greater degree than wealthy countries, and when water scarcity and poverty collide, the negative effects are profound: increased incidence of malnutrition, water-borne illness, and starvation. In addition to relying upon water for basic needs, many of the rural poor, such as farmers, herders, and fishers, depend on water for their incomes. Chartres says the relationship between water scarcity and poverty is clear: "The GDP [gross domestic product] of many Sub-Saharan countries is highly correlated with rainfall. In the years when rainfall is low, GDP declines dramatically."

Political Obstacles to Achieving Water Security

Most experts agree that the world already has the knowledge, information, and technology to avert a water-scarcity crisis. So why does a crisis appear imminent?

Asit Biswas, president of the Third World Institute for Water Management, says the problem is not physical water scarcity but rather poor governance of water resources. "There is a crisis in management," he says. "All over the world, we are managing water badly." The three main problems, he says, are corruption, patronage, and water losses due to leakage and poor management. He says in India and Mexico, for example, many of the people responsible for running water systems are not experts and tend to hold their positions for a very short time before being rotated to another assignment. "The big political problem is that the heads of political parties have used the public utilities as job-creation machines for their supporters," he says, adding that it is convenient for many decisionmakers to maintain the false notion that the world is running out of water in order to justify their inability to provide sufficient water to their populations.

According to the 2006 World Water Development Report, prepared through the collaboration of 24 UN agencies, few low-income countries include water in national budgeting and planning. Even when they do, local authorities rarely have the resources needed to carry out federal mandates. Claudia Ringler says a lack of coordination and integration among government agencies also creates problems. "Countries say 'Yes, we have a water policy,' but at the same time they're issuing many other policies in the trade and agricultural sectors that contradict their water policy because there is no coordination at a higher level," she says.

Rising to the Occasion

In addition to improving the overall water management there are three options for tackling water scarcity: increasing supply, reducing demand, and improving the efficiency and productivity of water use. Pasquale Steduto, chief of FAO's Water, Development and Management Unit, says that although it may be possible to recycle more wastewater or find cheaper ways to desalinate water, increasing supply is not the primary answer. "We have for the most part already exploited the economically viable, environmentally sustainable water resources," he says, adding that more gains are likely to come from improving productivity and reducing demand.

The first step toward improving efficiency is better management of existing water resources. "We have to look at managing agriculture water use differently," says Chartres. "We have to focus very much on increasing productivity without expanding the amount of land or the amount of water available. It comes back to 'More crop per drop.' And that is quite feasible."

Improved efficiency is needed in irrigation, which uses 70 percent of all freshwater. Getting "more crop per drop" means renovating outdated irrigation infrastructure, using just-in-time irrigation techniques, and improving plant varieties. Roberto Lenton points out that these choices need to be examined carefully and in an integrated way as they often involve trade-offs. "More efficient irrigation often means that there is less recharge into the groundwater or back into the river, which then can have adverse effects on other users," he says. Because substantial amounts of water are lost through leakage, better water storage and delivery techniques are also needed, as are more efficient ways of harvesting rainwater. Improving water productivity also requires considering emerging technologies, including genetically modified crops that have the potential to cope with water-related stresses under both rainfed and irrigated farming. "Breeding crop varieties that maintain yields under water-stressed conditions, particularly drought and salinity, is one policy option," says Mark Rosegrant. "Initial experiments suggest that genetic modification will make higher levels of drought tolerance possible."

Better coordination and cooperation are also needed at the local, national, and regional levels, where water crossing state and national borders may create conflicts. Chartres says that for trans-



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boundary basins like the Nile, there needs to be "a comprehensive understanding of how much water is available, how that should be shared, and how it can be shared without conflict."

Another potential option is trading in "virtual water," whereby countries with water-scarcity problems import water-intensive goods such as wheat and rice from countries with greater water resources. Some wealthy water-scarce countries in the Middle East already use this approach, and as water scarcity grows, more water-short countries will likely forgo the production of water-intensive goods in favor of imports.

Given that water is often provided below its real cost, Chartres says another option is to levy small charges on bulk water users like farmers. He cautions that this solution can be achieved only with the involvement and cooperation of farmers. "I'm not suggesting that farmers should pay the full cost of all the infrastructure, but certainly there should be some charge for bulk water users in terms of helping maintain the system so that the system can operate efficiently. That's not happening in many systems at the moment. Maintaining infrastructure and improving farmer knowledge and capacity via formation of participatory water management user groups are two key ways that irrigation systems can improve water productivity," he says.

In addition to helping cost recovery, water pricing can give users an incentive to use water more productively, and thus reduce

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overall demand. According to Rosegrant, appropriate incentive prices for water can have a large impact on water withdrawals and consumption across domestic, industrial, and irrigation uses. Imposing water pricing for agriculture is, however, a politically charged issue. Water pricing systems can reduce farm incomes and decrease water rights stability, and they can be difficult and costly to administer in developing countries. It is possible, however, to design water pricing or market systems that create incentives for efficient water use, recover some of the costs, and protect farm incomes, for example by paying farmers to use less water.

Private Sector Involvement

In the past, most of the private sector's focus on water issues was on service delivery, but it is now shifting to ways in which private companies can reduce water consumption. According to Lenton, "The water-using private sector can play a very positive role, because the more businesses realize that water is essential for them...and the more they figure out ways in which they could be more efficient in dealing with water scarcity, the better off we will be in dealing with issues of water scarcity." He says that some private-sector companies, like Coca-Cola, are trying to improve the way they manage and use water, both to increase their water-use efficiency and for public relation purposes. Coca-Cola developed a new water strategy in Rajasthan, India, after activists and local farmers alleged the company was using disproportionate amounts of water in dry areas. Coca-Cola responded by revamping its water strategy, including subsidizing drip irrigation and setting up rainwater collection systems. The company has also provided financial support to nongovernmental organizations (NGOs) working on water-security issues.

Nestlé Chairman Peter Brabeck-Letmathe has also become an outspoken voice on the seriousness of water shortages. In a November 2008 editorial in *The Economist*, Brabeck-Letmathe pointed out the link between water and food security and argued that water scarcity is more pressing than climate change. His article offered a number of solutions and highlighted the role of his company. "At Nestlé, we have brought down freshwater withdrawals for production from five litres per dollar of sales 10 years ago to less than 1.8 litres. We actively participate in the public-policy dialogue on water; and together with other companies we have initiated the UN Global Compact CEO Water Mandate, aiming at a more efficient water use in industry," Brabeck-Letmathe wrote.

In terms of delivery, Biswas contends that the focus should remain on the public sector because, by his estimates, less than 15 percent of people will receive their water from the private sector by 2030. He says that the role of the private sector will more likely be to perform specific tasks for the public sector such as managing information or reading meters. "The idea of the private sector coming in and running the whole concession in the developing world—something the World Bank and others were so excited about in the mid-1990s and early 2000s—I think those days are gone," he says.

Avoiding a Water Crisis

Undoubtedly, supplying the world with adequate freshwater will be a great challenge in the years to come. Fortunately, more and more people are starting to realize that water can no longer be taken for granted, and this recognition is the first step in changing the course of the planet's water future. The United Nations has designated 2005 to 2015 the Water for Life decade, and in 2007, chief executive officers from major international corporations signed the compact to prioritize water issues mentioned by Brabeck-Letmathe. The topic was also featured prominently at the 2008 World Economic Forum in Davos, Switzerland. But for most people, these steps are just the beginning.

With the right policies, the right technologies, and some ingenuity, a major crisis is avoidable. The solutions, however, are not easy and will take time, political commitment, and money. The world will not run out of water immediately, but fundamental reform of the water sector is needed now. ■

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PUBLISHED BY

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