Rice is the staple food of more than half the world's population, among them the poorest. Undoubtedly, it has long been the focus of development interventions. The green revolution began in the early 1960s with the development of high yielding rice hybrids. But as the gulf between global "haves" and "have-nots" widened over the next three decades, the food intake of the poor became less diverse and increasingly imbalanced. Afflictions from nutritional deficiencies, such as blindness, arose from the growing dependence on rice for the bulk of daily caloric intake. The genetically engineered rice strain known as "golden rice" followed in 1999. It produces beta-carotene, which the human body can convert to Vitamin A, thereby forestalling the partial or total vision impairment that afflicts millions with substandard diets. The sequencing of the rice genome in 2002 meanwhile has intensified work on further genetic modification. Biotechnology firms worldwide are now investing in rice research—especially evident in the United States, which figures among the top six rice-exporting countries.

These trends are unfolding amid a rising global demand for milled rice. Nowhere is the dependency on imported rice for basic subsistence greater than in West and Central Africa, an area where some of the world's poorest countries are concentrated. Over the past three decades, annual imports of milled rice to the region have increased eight-fold, at a cost of one billion dollars in scarce foreign exchange (ISIS, 2004). While the majority of the region's people live in rural areas and make their livelihood from farming, urban consumers increasingly depend on foreign rice for their daily intake. The pattern holds even in African countries with an ancient rice-farming history, such as The
Gambia, where women are the principal growers. Their inability to gain a market share of the growing urban demand for rice is the concern of this paper.

With independence in 1965, The Gambia embarked upon a program to achieve self-reliance in its dietary staple, rice. But these goals eroded under neo-liberal policy reforms in the mid-1980s. As a consequence, The Gambia now presents a profile similar to other African countries in its escalating dependency on imported rice. The first section of this paper places the growing urban rice demand within the regional African context, emphasizing the policy shift from food security objectives to comparative advantage, put into effect in the 1980s. The second section examines the initial rice policy phase in The Gambia, which emphasized import-substitution through irrigation schemes. These projects repeatedly suffered from the failure of donor organizations to address key factors that would affect projected surpluses, such as milling, marketing, and women's access to irrigated plots. The third section addresses the country's deepening agrarian crisis. Policy reforms have worked against the small-farm sector. Production statistics reveal significant changes in subsistence strategies and a relationship to land use and environmental degradation. The final section of this paper examines the rice variety, *Nerica*, the latest response to the crisis in African domestic rice production. A cross between African and Asian rice, it is intended to improve yields for farmers unable to afford fertilizers.
Rice and Food Availability: Gambia in the West African Context

One consequence of rice policies in The Gambia over the past twenty years is the collapse of the domestic rice sector. Between 1966-1984, international development assistance had promoted irrigation projects on the country's abundant alluvial swamps. The objective was to create surpluses for national demand by growing a second crop by irrigation. Double cropping would strengthen household food reserves while generating surpluses to raise rural incomes. But irrigation, as planners consistently failed to consider, involves more than the implementation of a technical infrastructure. Social factors are also important since irrigated agriculture imposes rigid production schedules and requires shifting seasonal farming systems to year-round cultivation. Gambian irrigation projects sowed widespread discord, as the traditional rice growers, women, lost control of their developed fields to male household heads, who expected their wives to carry out the new labor regime (Dey, 1981). The projects improved subsistence security but failed to deliver anticipated marketable surpluses. While productivity fell far short of planners’ promises, rural households were mired in the process of adjusting female crop rights and family labor for irrigated farming. The problems were never satisfactorily resolved in the few decades that the domestic rice sector received policy support (Carney 2004).

Then came the first of a series of economic reforms that changed Gambian rice production completely. From 1986, the International Monetary Fund oversaw the country's structural adjustment. For rice farmers the policy change completely altered the landscape of production. Government support for irrigated rice farmers came to an end as a single minded focus on comparative advantage replaced import-substitution policies.
The reforms removed the producer support price of domestic rice as well as subsidized inputs, such as fertilizer, whose price climbed steeply by the end of the 1980s (McPherson and Posner, 1991). The parastatal responsible for rice purchases and inputs was dismantled. Foreign-trained agronomists and rice experts who had been posted to rural sites were reassigned to the capital, as government bureaucracies were downsized and cost-saving measures imposed. The removal of protective tariffs for domestic production cheapened the cost of imported rice. Within just a decade, milled imports more than doubled while the domestic rice sector stagnated.

The long-term effect of structural adjustment is a disarticulated economy and the emergence of two Gambias. One is the urban seaboard, home to one-third of the country's population, which is fed with milled imports of Asian varieties. The other is rural Gambia, barely accessible by road, where green revolution Asian varieties (*Oryza sativa*), continuously introduced from the 1960s, replaced the indigenous African rice (*O. glaberrima*) still cultivated during the colonial period. Without fertilizers, as contemporary farmers have learned to their misfortune, the comparative advantage of the Asian rice varieties is lost. In this contemporary policy context, "development" has become a synonym for disillusion.

The demand for rice has been growing throughout West Africa since the 1970s. This represents a shift away from the consumption of millet, sorghum, and maize in response to population growth, urbanization, and consumer preference for milled rice because its preparation is labor saving (Pearson, 1981; WARDA, 2001). The region’s increasing
dependence on the global rice trade for domestic cereal supplies means that imports now supply more than two-thirds of the cereal's demand in West Africa. Many experts view this as a worrisome trend as rice availability and the grain's market price represent primary determinants for gauging the welfare of the urban poor, typically considered the least food secure part of the population (WARDA, 2001).

While urban consumers dominate food policy concerns in the region, less attention is paid to the cereal's role in the rural economies where it is traditionally grown and to the adverse effects of milled imports on domestic producers. This is of particular concern in The Gambia, where rice is traditionally grown and sold by women. It is the preferred subsistence staple in both urban and rural areas and a national symbol of cultural identity.² Yet, the country's farmers, two-thirds of the Gambian population, are unable to take advantage of the growing urban demand for the grain. This is not because their rice is costly to produce. Rather, it is because the transportation, marketing infrastructure, and input deliveries available to growers in Asian rice-exporting countries are not present in rural Gambia or West Africa in general. In dismantling the capacity of the state to provide agricultural services, the economic reforms contributed to disenfranchising domestic rice growers from a ready market for their output. Imported rice, its costs in foreign exchange, and compliance with structural adjustment programs since 1986 have left a rural economy in ruins. A brief history of the country's rice projects reveals their bitter harvest.
From Food Security to Comparative Advantage

Rice grown in Gambia was incorporated early into international markets. At the height of the Atlantic slave trade, European traders along the Gambia River relied on regional rice production for food as did captains of slave ships, who routinely purchased surpluses to provision their captives across the Atlantic Passage (Carney, 2001). In this manner, rice became the first cereal globally traded. Its potential as a commodity certainly was not lost on resident Europeans, who knew that the rice plantations of South Carolina and Georgia figured among the destinations of those they sent into transatlantic slavery. In the 1770s, for instance, the commandant of Senegambia remarked that "rice may be produced here as much as in the Provinces of Carolina and Georgia." Even though the actual expertise for pioneering the cereal’s establishment in the Americas originated with enslaved West Africans already practiced in the cereal’s cultivation (Carney, 2004), the dream of turning Gambia into a "rice bowl" only gained momentum when the territory was made a British colony in 1885.

Gambia forms part of West Africa's indigenous rice region, which extends south along the Atlantic seaboard from Senegal to Côte d'Ivoire and inland for 1500 kilometers to Chad. More than 2,000 years ago, Africans independently domesticated the *glaberrima* rice species in this region (Carney, 2001). However, their achievement was not recognized until the twentieth century, when the scientific community reached consensus that *glaberrima* was indeed a separate species from Asian *sativa* (Carney, 2001). The enthusiasm for transforming West Africa's indigenous rice region into an export economy
offered a path to "legitimate commerce", namely, a shift in the export commodity focus from human beings to crops.

The initial efforts focused on developing varieties of Asian hybrids to increase rice production. British West African colonies experimented with varieties developed at the Rokupr Rice Research Station in Sierra Leone. These were developed for fertile lowland swamps and tidal floodplains. While less tolerant of the environmental extremes (drought, salinity, flooding, micronutrient deficiencies) in which African *glaberrima* developed, Asian rice held a decided advantage in colonial development strategies. It is higher yielding and does not break when mechanically milled. By the time Gambia achieved independence in 1965, Asian rice dominated production.

Rice played an important role in the Gambia colony. Economic policy encouraged a spatial division of agriculture, with the uplands concentrated in cash crop (peanut) cultivation and food production increasingly located in lowland swamps. The effect was to reduce the acreage planted to traditional (millet and sorghum) and introduced (maize) rain-fed cereals in favor of wetland rice. However, the policy placed a greater burden on rural women for subsistence, as rice was a woman's crop. By the 1940s the structural dislocation of the Gambian export economy was evident. Swamp development projects, which disseminated Asian seeds and improved female access to lowland swamps, could not keep pace with the reduction of acreage in coarse grain cereals and the rising food demand from migrant farmers, who were largely responsible for the vast increase in
peanut cultivation (Carney, 2004). Limits had been reached in the amount of land and labor Gambian women could devote to subsistence rice farming (Haswell, 1963).

The contours of the present food crisis thus were evident in the final years of colonial rule. Rice was the dietary staple, but the annual arrival of thousands of migrant laborers was threatened when food was scarce. To forestall this prospect, the colonial government started importing rice in the 1950s, and a large-scale irrigation scheme was begun. While it proved a failure, the approach heralded the rice development strategies that would be financed by foreign donors after the country's independence (Carney, 2004). When colonial rule came to an end, milled imports averaged some ten thousand pounds of rice—at a time when only ten percent of the population lived in the capital.

Just forty years later, the country depends upon imports for about seventy percent of annual consumption. Peanut is no longer a lucrative cash crop, and the migrant farmers no longer come. Most of the imported rice remains in the urban seaboard. This import dependency, however, is not a simple consequence of population growth and urbanization along the Atlantic littoral, where one-third of the country's population currently resides. Market reforms, dictated by international lending institutions, have also contributed. A key feature of the contemporary Gambian economy is the increasing demand for rice by urban consumers and the indifference of policymakers to enabling domestic producers to capture a share of the market.
From 1966 to 1984, the Gambian government received foreign aid to develop irrigated rice projects under the banner of food security. Of the twenty-five thousand hectares traditionally planted by women, four thousand hectares of the most fertile tracts were prioritized for irrigation in an area located along the River's south bank in central Gambia (CRED, 1985; FAO, 1983). Today, just ten percent of this irrigated land remains in production. To understand how policies shaped this outcome, the post-colonial era can be divided into two crucial periods: the first (1966-1984) emphasizing rice import-substitution with irrigation projects; and their replacement from the mid-1980s on by comparative advantage policies favoring milled imports.

Small-scale rice projects sponsored by the Taiwanese government (1966-74), the World Bank (1973-76), and mainland China (1975-79) augured a large-scale scheme developed by the International Fund for Agricultural Development (IFAD 1984-1989). Each project depended upon green revolution rice varieties, fertilizer subsidies, credit, and government assistance with input deliveries and marketing (Akyrod, 2003; Brautigam, 1988). The objective was to promote double cropping: the first harvest met subsistence needs while the second promised another cash crop in addition to peanuts. But in turning over the developed plots to male household heads, each project hastened the removal of fertile rice swamps from female growers, thereby weakening women's claims to a share of the paddy produced by their labor (Dey, 1981). A detailed history is discussed elsewhere (Carney, 2004) but can be briefly summarized.
Rural households found themselves pressed to provide labor for both irrigated rice as well as peanut cultivation during the busy rainy season. Irrigation demanded considerable intensification of labor and strict adherence to a rigid agricultural calendar. In trying to draw men into rice farming, donor agencies agreed to designate the developed fields as household land, assuming that doing so would lead all family members to work jointly in rice cultivation. But men traditionally farmed the uplands with peanuts, sorghum, and millet while women cultivated the lowlands to rice. By designating the irrigated plots household, rather than women's individual land, donor agencies gave senior males control over the surplus that customarily benefited their rice-farming wives. This land use category also presumed new claims on female labor, as women's traditional obligation to provide food for their families extended historically over a single cropping season. The shift to two cropping cycles with irrigation thus demanded the establishment of new conventions within rural households in order to grant women remuneration in paddy for their labor. As each project differed in plot size and organization, these social factors required time and adjustments for male and female family members to develop more equitable farming arrangements and crop benefits within a radically different farming system. But before that process was fully completed, policy directions had changed to favor imported rice over domestic production (Jaiteh, 2003; Carney 2004).

A major failing of these rice schemes was the lack of planning and funding support for milling and marketing. The preparation of rice for subsistence is a time-consuming operation, traditionally performed by women with a hand-held pestle and mortar. If female expertise in rice cultivation rested upon laboring year-round in project fields, did
the donors think enough leisure hours existed to process by hand the anticipated surpluses for market? At no point did the donors funding Gambian rice projects prioritize construction of a mill to mechanically process the marketable paddy.\textsuperscript{4} The only available mill in the region was located on the north bank of the Gambia River, which involved trucking the paddy rice several hours by vehicle to a ferry crossing with irregular service, and then transporting it some distance to the government mill over a dirt road. Transport of the milled rice to the capital required a day's overland journey. Few rice growers could manage milling and transport on their own. The prospect of transporting the milled rice along the Gambia River downstream to the capital was similarly not considered as part of project planning even though milled imports to the port of Banjul arrive over waterways that span immense maritime distances.

While the projects failed to deliver substantial marketable surpluses, they made a contribution toward strengthening rural subsistence security. The mid-1980s culminated a period of optimism for rural Gambians. While people were materially poor, they \textit{were} eating in the region of irrigated rice projects, and industrious households were able to purchase modest consumer goods (eg., radio, watch, bicycle) from local rice sales. This changed dramatically by the end of the decade.

The agricultural season of 2004 revealed a stunning decline in rural conditions. Gone were the hopes of the post-independence period; in their place were despair and a palpable anger over the apathy of government and donor officials to their deepening poverty. The only rice seeds available for planting were the green revolution varieties
distributed in previous decades. However, they scarcely yielded without fertilizers. The price of fertilizer had risen considerably in the late 1980s with the removal of government subsidies; for the few able to afford it, fertilizer was not even available for purchase. At the onset of the rains, valuable wetlands were barely planted. Farm households were emptied of young men, forced to migrate by the worsening economic circumstances.

With the male exodus in full force, the sons and daughters of a previous generation of rice growers faced a future marked by uncertainty and pessimism. In the region’s principal rice research station, there remained no Gambian agricultural experts, whose previous residence there had at least assured farmers of the government's concern for their well being. A small Taiwanese mission conducted rice trials and provided services for those able to pay, but the project reached just a few farmers. Rice growers had been made peripheral to the nation's economy and neo-liberal policies.

**The Emergence of Two Gambias**

Typical of the pattern found in other West African countries, milled rice imports to The Gambia now vastly exceed the amount produced domestically. An analysis of national production data shows that the ratio of domestic production to imports changed dramatically during the 1980s (Figure 1). Before then, in the period from 1966 (just after independence) to the early 1980s, domestic rice production had steadily increased, in part from irrigated rice projects (FAO, 1983). The cultivated area peaked at thirty thousand hectares, while domestic production fulfilled half the national demand for the cereal (GOG, 2004). After 1983 the domestic rice sector began a decline that has not reversed. While milled rice imports soared from 16,200 to 52,800 tons between 1983-1989,
domestic production fell from 33,700 to 29,500 tons. Over the past decade the domestic sector has stagnated at about 20,000 tons of paddy. Dependence on milled imports meanwhile grew considerably, from 45,800 tons in 1990 to 130,600 tons in 2004 (Figure 1).

The decline in self-sufficiency of the national dietary staple is evident in Figure 2. Self-sufficiency refers to the percentage that domestic production represents of total rice consumption in any given year. In 1971, The Gambia met 76 per cent of its demand for rice with domestic production. Self-sufficiency declined to 61 per cent in 1983 but just seven years later in 1990, the domestic share of total demand fell, to 26 per cent. In comparison with other West African countries where the rice crisis (expressed in growing dependency on imports) was evident in the 1970s, in rice-producing Gambia it did not become apparent until a decade later (Pearson 1981). Imports spiked considerably in the late 1980s and never really again subsided (Figure 1). Implementation of the small-scale irrigation projects enabled the country to cover seventy percent of its rice demand in the early 1970s, when the national population was estimated at one-half million (Figure 2). Even by 1983, when the country's population reached three-quarters of a million, domestic production accounted for half the amount of the cereal consumed domestically. But a mere five years later, the domestic rice sector only contributed 15 percent of the rice being consumed. While the ratio somewhat improved in a few isolated years during the 1990s, the pattern did not hold. By 2004, when the country's population had reached 1.2 million, self-sufficiency hovered around eleven percent.
Figures that reveal growing dependency on imported rice typically draw policy attention
to urban consumers, but Gambia remains an agricultural country, with two-thirds of its
populace involved in farming. Since the nineteenth century peanuts remain the country's
principal cash crop. However, production has also stagnated with the decades-long
downward trend in global commodity prices. For this reason, the amount of land planted
to peanuts over the past thirty years has not much changed. In 1974/75 peanuts occupied
about 105,000 hectares; by 2003, only an additional 3,000 hectares were planted (Figure
3). No significant cash crop had emerged in rural areas to diversify the export portfolio.

What then are farmers pursuing as an alternative agricultural strategy? There is a
discernible shift in farming strategies towards subsistence cultivation. While the urban
population grows ever more dependent on imported rice, rural dwellers are implementing
strategies to strengthen household food security. Sixty-one percent of Gambia's
agricultural area is currently planted in cereals, principally coarse grains (millet,
sorghum, and maize), which now occupy fifty-five percent of total arable land (Figure
3). These cereals are being cultivated for subsistence, not the market. In just one generation
the land devoted to coarse grain cultivation in The Gambia increased by nearly a factor of
four, from 41,900 in 1974/75 to 155,600 hectares in 2003 (Figure 4). The stagnation in
rice cultivation is shifting agricultural priorities to rain-fed farming and cereals less
dependent on fertilizer for productivity. Figure 4 shows the shift during the decade of the
1980s, when the domestic rice sector collapsed. Between 1974-75 and 2003 Gambian
farmers increased arable land by fifty percent, from 170,000 to 285,000 hectares, despite
declining precipitation trends (GOG, 2004; Schroeder, 1999). Most of this is in the production of coarse grains on rain-fed land.

Population increase over the period measured by these production statistics cannot alone explain the stagnation of the domestic rice sector and concomitant shift towards rain-fed cereal production in rural Gambia. The next section reveals the significance of policy, drawing attention to the effects of the structural adjustment program mandated by the International Monetary fund from 1986 on rural farmers.

**Comparative Advantage and Rising Rice Imports**

In 1986 The Gambia, like other indebted African countries, was forced into compliance with economic reforms mandated by international lending agencies. Future loans depended on reforming the economy in favor of market liberalism. Comparative advantage replaced food security as the dominant policy. If the Gambia could not provide rice to its urban consumers and compete with Asian and U.S. exporters, its proponents argued, then the country should grow something else instead, such as vegetables, fruits, and flowers for which a market exists. This rationale led to the dismantling of domestic policies in favor of rice import-substitution. A series of economic reforms were put into place that adversely affected Gambian rice farmers. The producer support price that had encouraged domestic growers was eliminated as were tariffs to protect Gambian producers. Structural adjustment moreover forced the withdrawal of the government parastatal, the Gambian Cooperative Union, from the supply of credit for seeds, fertilizers, diesel fuel oil, land leveling, and tractor plowing. The promised emergence of
rural entrepreneurs who would provide such inputs never materialized. But it was the elimination of fertilizer subsidies in 1987 that dealt the harshest blow to the domestic rice sector and to the rural economy.

Gambian irrigation projects relied upon high yielding Asian rice varieties (HYVs) that produced well when dosed with ample amounts of fertilizer, preferably urea. Fertilizers are absolutely critical to giving HYVs their competitive edge over the indigenous *glaberrima* rice. The end of the government's fertilizer subsidy in 1986 was immediately followed by a four-fold increase in the price of this vital agricultural input (McPherson and Posner, 1991). Market liberalization of fertilizer prices spelled disaster for the rural economy. In the year prior to the economic recovery program, fertilizer imports stood at 5,500 tons; between 1987-1990, they dropped to just 600 tons. Some non-governmental organizations and bilateral aid agencies rushed in with subsidized fertilizer donations to cushion the devastating impact of their rising cost on rural production, which contributed to the rise in usage to 2500 tons in 1998. But this was temporary and fertilizer prices did not drop. Farmers are now left to their own devices for purchasing this key input.

Fertilizer imports in recent years average just 800 tons per annum for the entire country, where the total area under cultivation averages about 285,000 hectares (Figure 3). The bulk of the fertilizer imports remain in the coastal peri-urban corridor, where large-scale export vegetable producers purchase it.

In July 2004, the agricultural season was underway in central Gambia, but no fertilizer was available for rice growers to purchase. It could only be found on the other side of the
Gambia River across the Senegalese border at a cost of US $15/bag. One hectare of green revolution rice demands four bags. To put the cost of fertilizer into perspective, the annual per capita income of most rural Gambians averages $284. Cultivating one hectare of HYV rice requires a cash outflow of nearly twenty-percent of a farmer's annual income for the fertilizer input alone. The prohibitive cost of fertilizer and its scarcity in the rice region accelerated yield declines and abandoned fields. In the period when irrigation projects received support, rice yields averaged 1.9 tons per hectare (1982). Farmers planting rice without fertilizers in the IFAD project area in 2003, managed to harvest only 500 kilograms per hectare (Sanneh, pers.com.).

The economic reforms and policy shift favoring milled imports over the domestic rice sector provides context for understanding the pronounced reorganization in agricultural strategies and priorities evident in rural households since the end of the 1980s. As the domestic rice sector declined and peanut prices stagnated, Gambian farmers placed greater emphasis on subsistence security. This is evident in the expansion of arable land in rain-fed cereals that are typically planted without fertilizers as well as in the growing reliance on male migration for remittances. But this survival strategy carries environmental and social costs. It results in the clearance of forested land for cultivation. The shift to extensive, rather than intensive, agriculture contributes to environmental degradation while the loss from the rural economy of productive male labor hastens the destruction of rural culture.
When market reforms were implemented in the mid-1980s, the reliance on imported rice for consumer demand did not appear a potentially calamitous strategy. World market prices for the cereal, expressed in terms of constant 1990 US dollars per ton, fell from $571 in 1980 to $279 in 1995 (Akroyd, 2003). But the price of imported rice is always responsive to the vicissitudes of the international market. This could be seen in 2004 in the rising consumer price for milled imports in The Gambia. In just the eighteen-month period between January 2003 and July 2007, the consumer price for a 50 kilogram bag more than doubled, from 220 to 575 dalasis (US $20), which parallels similar trends worldwide in the grain's market price (USDA 2004: 79-80). To put this cost into perspective, the average Gambian salary is only US $40 per month.

The limitations of relying upon the market for the dietary staple became apparent in late 2004 when President Jammeh tried to drive down the urban retail price with imports from Burma. He financed the purchase of 100,000 tons at 100 dalasis lower than the market rate. By early 2005, the cost of imported rice had again reached its previous high. The final blow to the domestic rice industry came in late 2006 when the country’s mill on the north bank of the Gambia River in central Gambia was closed because of management problems. There is now no mechanical milling facility to process the local rice of rural Gambian farmers and the promised entrepreneurs to provide that service in the private sector are nowhere to be found. Importation of milled rice has as a consequence increased by twenty percent since 2006. With one-third of Gambians living along the Atlantic littoral, and rice still the dietary staple, the moment is at hand for reconsidering the
consequences of a disarticulated economy where the domestic sector is ignored in favor of Asian and American rice producers.

**Development Responses to the Rice Crisis**

In recent years some modest initiatives have been implemented to rehabilitate the country's irrigation perimeters. A few bilateral aid agencies and NGOs have helped to rehabilitate about ten percent of the rice schemes. However, farmers must pay for the inputs and fees to tractor plow their irrigated plots. A persistent problem is the failure to assist growers with milling their rice and marketing it to urban consumers. Women's swamp cultivation still accounts for most of the twenty thousand hectares currently in domestic production. Female growers sometimes plant rice on abandoned irrigation fields, broadcasting the seeds in expectation of the rain. But these locales seldom yield more than 500 kilograms per hectare. In canalizing water for irrigation, development projects long ago removed these riparian wetlands from tidal flow. The loss of annual alluvial deposits over the past two decades has severely reduced their fertility and contributed to land degradation.

A more sustainable development intervention is evident in the IFAD rice scheme, which implemented a tidal irrigation component on a portion of project land and kept the fields under female control. The idea built upon the principles of women's traditional floodplain cultivation system. On just one hundred hectares of the project, tidal irrigation gained precedence over pumps. Minor interventions were effected to improve water flow to allow the deposition of fertile alluvium with tides. Even in this period of fertilizer
scarcity, yields can reach one ton per hectare. The approach has proven sustainable and contributed to the subsistence security of female rice growers and their families.

Meanwhile, the botanical heritage of African *glaberrima* has been rescued in another development project aimed at the domestic rice sector. The international agricultural research organization, the West African Rice Development Association (WARDA), announced in the mid-1990s success in overcoming the genetic barrier that long prevented crosses between Asian and African rice. The hybrid, known as *New rice for Africa* (or *Nerica*), combines the hardiness of *glaberrima* with the higher yields of *sativa*. It yields more than HYVs when grown without fertilizers. In contrast to seeds developed by biotechnology firms, *Nerica* is unpatented. The seeds are designed for small farmers and the low-input rice systems they typically cultivate worldwide. But it is among the few options that prioritize the rural poor in research and development.

In 2002 The Gambia was among the West African countries selected for the dissemination of *Nerica*. The program is now in the implementation and seed reproduction stage (Harsch, 2004; WARDA, 2001). Varieties thus far available, however, are for upland cultivation, which is not the dominant form of rice cultivation in the country. In the 2004 agricultural season, the seeds were not yet in widespread distribution. In neighboring Guinea, the government prioritized dissemination of *Nerica* seed to farmers in 2006, but the following year not enough of it was available for planting (Dugger, 2007). Seed distribution remains a great problem throughout the West African
rice region because the agricultural infrastructure necessary to carry it out was gutted with the market reforms of the past decades.

The development of *Nerica* has occurred at a time when demand for rice in West and Central Africa is growing at the rate of six per cent per annum (WARDA, 2004). It offers the potential to strengthen the subsistence security of rural households while assisting smallholders with recapturing a market share of the urban demand for rice. In focusing policy attention on poor farmers, *Nerica* rice gained the interest and philanthropy of the Bill and Melinda Gates Foundation. Their interest in turn has hopefully encouraged a revived policy focus on the African smallholder farm sector. For the first time since the market reforms of the 1980s, the World Bank’s annual development report for 2008 identifies agriculture and the productivity of small farmers as critical for successful reduction of global poverty and hunger (Byerlee and De Janvry 2007)

**Conclusion**

Policy documents focused on urban consumers fail to reveal the extent of the contemporary agrarian crisis in West African countries such as The Gambia. It is evident in declining yields, the feminization of agriculture, the expansion of land in cultivation and concomitant environmental degradation. Though the crisis is typically portrayed as the outcome of population growth and consumer preferences, the significance of the current policy context, which favors Asian and American exporters over domestic producers, should not be discounted. Imported rice is now selling at a higher price than the producer support price the government offered rural Gambian producers in the mid-
1980s, which structural adjustment policies terminated. Despite the rising import price of rice, there is no policy response to encourage the domestic sector. Rural Gambia remains weakly attached to the remainder of the country because of poor roads, low commodity prices, and the indifference of global policy institutions to the deteriorating circumstances of the peasantry.

The urban and consumption bias of rice policies supports neo-liberal reforms and policy claims that the market will solve food shortages. But its proponents fail to bring attention to the effects of such policies in rural West Africa, where the majority of the population still resides. Coarse grain production is now the dominant land use pattern in The Gambia. Even if coarse grains are not feeding the urban sector, its role in subsistence has expanded in rural Gambia, chiefly due to the decline in fertilizer availability and related price increases. The rural poor should be as much a concern of policymakers as those living in urban areas, especially as they are more numerous and shape the environment around pressing needs. The policy concern with urban consumers provides markets for rice exporting countries but has worked against the domestic rice sector in countries like The Gambia, among the world's poorest nations. One lesson evident from political instability in West Africa is its eruption first in rural areas. Policymakers who seek lasting solutions to Africa's food problems consistently ignore the needs of the rural poor, but they do so to the detriment and suffering of millions and at the risk of political stability.
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[http://www.riceweb.org/g_overwafrica.htm](http://www.riceweb.org/g_overwafrica.htm)
This research is based on national data on agricultural production, ongoing fieldwork in
the country since the mid-1980s and in June-July 2004.

Gambians claim they have not eaten if rice is not part of their meal.

Rhodes House mss., Afr.s 945, Oxford University.

The donors instead assumed women mill surplus rice. Hand milling is laborious work; it
takes about 20 minutes to process a kilogram of paddy.

Data from the Central Statistics Department and Gambia Ports Authority provides a
rough estimate. Factors accounting for data anomalies are the drought years 1987-88,

Horticulture and tourism are favored by market reforms.

70,000-80,000 Gambians work outside the country and contribute remittances,
conservatively estimated at $30 million a year (Saine 2003).

Hassoum Ceesay, pers. comm., 8 Nov., 2007.