

A review of National Rice Development Strategies and experimental evidence for upgrading rice value chains in Africa

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Reversing urban bias in African rice markets: A review of 19 National Rice Development Strategies
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Upgrading rice value chains: Experimental evidence from 11 African markets
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ABSTRACT
 This paper reviews 19 national rice development strategies (NRS) in Africa to assess their impact on rice value chains. The NRS are categorized into three groups: (i) those that focus on increasing rice production, (ii) those that focus on increasing rice processing and distribution, and (iii) those that focus on increasing rice marketing. The NRS are evaluated based on their impact on rice production, processing, distribution, and marketing. The NRS are found to have a positive impact on rice production, processing, distribution, and marketing. The NRS are found to have a positive impact on rice production, processing, distribution, and marketing.

1. Introduction
 In the last decade, Africa has made significant progress in increasing rice production. However, the continent remains heavily dependent on rice imports. This paper reviews 19 national rice development strategies (NRS) in Africa to assess their impact on rice value chains. The NRS are categorized into three groups: (i) those that focus on increasing rice production, (ii) those that focus on increasing rice processing and distribution, and (iii) those that focus on increasing rice marketing. The NRS are evaluated based on their impact on rice production, processing, distribution, and marketing. The NRS are found to have a positive impact on rice production, processing, distribution, and marketing.

The screenshot shows the website for the Coalition for African Rice Development (CARD). At the top, the CARD logo is displayed with the tagline "COALITION for African Rice Development". Below the logo is a navigation menu with links for Home, About Us, CARD Countries, Partners, and NRDS. A mouse cursor is pointing at the NRDS link. To the right of the menu, a list of 23 NRDS (National Rice Development Strategy) countries is shown, categorized into Group 1 and Group 2. A bracket on the right side of the list indicates that there are 23 NRDS in total. Below the menu is a large image of a scarecrow in a rice field with the text "Rice is key in food". To the right of the main content, there is a "News" section with several articles dated 2014. At the bottom of the page, there are logos for IRRI (International Rice Research Institute) and CGIAR (Global Rice Science Partnership), along with text about the Fourth International Rice Congress in Bangkok, Thailand, from October 27 to November 1, 2014.

The map of Africa is color-coded to show three groups of countries. Group 1 (red) includes Senegal, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, and Nigeria. Group 2 (green) includes Gambia, Guinea, Sierra Leone, Kenya, Tanzania, Mozambique, and Madagascar. Group 3 (yellow) includes CAR, DR Congo, Mali, Burkina Faso, Ethiopia, Rwanda, Uganda, and Zambia. The text boxes provide descriptions for each group: Group 1 is coastal and strongly exposed to rice imports; Group 2 is coastal but not strongly affected by imports or has a comparative advantage in demand; Group 3 is landlocked.

Group 1 = coastal countries strongly exposed to rice imports (Senegal, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon)

Group 2 = coastal countries not yet strongly affected by rice imports or with comparative advantage in demand (Gambia, Guinea, Sierra Leone, Kenya, Tanzania, Mozambique, Madagascar)

Group 3 = landlocked countries (CAR, DR Congo, Mali, Burkina Faso, Ethiopia, Rwanda, Uganda, Zambia)

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 CGIAR Global Rice Science Partnership

Table 1. Investment portfolios implemented by 19 African member countries of the CARD that have submitted national rice development strategies (NRDS)

Country	Total investment (10 ⁶ US\$) ^a	Time horizon	Supply-shifting investments			Value-adding investments			Demand-lifting investments		Other ^d
			Area expansion, irrigation & infrastructure	R&D, extension, innovation, capacity building	Intensification, access to land, seed, credit, inputs, mechanization	Processing (milling, parboiling) & storage capacity	Quality upgrading, capacity building, governance	Branding, labeling, identity creation, certification	Value chain upgrading, MIS ^b , market infrastructure, linkages	Promotion, advertising, communication, awareness creation	
<i>Group 1: Coastal countries characterized by dominant consumer preferences for imported rice</i>											
Benin	x	2008-18	x	x	x	x	-	-	x	-	x
Cote d'Ivoire	934	2012-16	16%	5%	67%	17%	-	-	2%	1%	x
Ghana	x	2008-18	x	x	x	x	x	x	x	x	x
Nigeria	x	2008-18	x	x	x	x	x	x	x	x	x
Senegal	348	2009-11	79%	1%	20%	-	-	-	-	-	x
Togo	x	2008-18	x	x	x	x	x	-	-	-	x
<i>Group 2: Coastal countries characterized by dominant consumer preferences for local rice</i>											
Ghana	1,360	2008-18	41%	1%	39%	x	x	x	-	-	20%
Kenya	x	2008-18	x	x	x	-	-	-	-	-	x
Madagascar	x	2008-18	x	x	x	-	-	-	-	-	x
Mozambique	337	2008-11	x	x	x	x	x	x	x	x	x
Sierra Leone	57	2009-18	73%	14%	x	x	-	-	10%	-	4%
Tanzania	x	2008-18	x	x	x	x	x	-	-	-	x
<i>Group 3: Landlocked countries</i>											
Burkina Faso	517	2008-18	34%	8%	20%	17%	-	-	-	-	3%
Ethiopia	x	2009-19	x	x	x	x	x	-	-	-	x
Mali	1,600	2008-18	49%	3%	48%	x	-	-	-	-	x
Rwanda	137	2011-18	39%	9%	13%	8%	1%	-	28%	-	1%
Uganda	x	2008-18	x	x	x	x	x	x	x	x	x
Zambia	x	2011-15	x	x	x	x	x	x	x	x	x

Notes: The symbol "x" indicates that the investment is planned, but no detailed budget has been provided in the NRDS document. A dash indicates that the investment is missing or not convincingly elaborated in the NRDS document. In some cases, the investment shares may not add up to 100% due to rounding.
Source: NRDS documents published on the CARD (2012) web portal.
^a In order to convert FCFA into US\$, we used an exchange rate of US\$1 = 500 FCFA recorded in September 2012 (OANDA, 2012).
^b Market information system.
^c Other investments include implementation, governance, operation, monitoring and evaluation of the NRDS and are subsumed in all NRDS documents, although they are not always explicitly budgeted.





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<i>Group 1: Coastal countries characterized by dominant consumer preferences for imported rice</i>											
Benin	x	2008-18	x	x	x	x	-	-	x	-	x
Cote d'Ivoire	934	2012-16	16%	5%	67%	17%	-	-	2%	1%	x
Ghana	x	2008-18	x	x	x	x	x	x	x	x	x
Nigeria	x	2008-18	x	x	x	x	x	x	x	x	x
Senegal	348	2009-11	79%	1%	20%	-	-	-	-	-	x
Togo	x	2008-18	x	x	x	x	x	-	-	-	x
<i>Group 2: Coastal countries characterized by dominant consumer preferences for local rice</i>											
Ghana	1,360	2008-18	41%	1%	39%	x	x	x	-	-	20%
Kenya	x	2008-18	x	x	x	-	-	-	-	-	x
Madagascar	x	2008-18	x	x	x	-	-	-	-	-	x
Mozambique	337	2008-11	x	x	x	x	x	x	x	x	x
Sierra Leone	57	2009-18	73%	14%	x	x	-	-	10%	-	4%
Tanzania	x	2008-18	x	x	x	x	x	-	-	-	x
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Burkina Faso	517	2008-18	34%	8%	20%	17%	-	-	-	-	3%
Ethiopia	x	2009-19	x	x	x	x	x	-	-	-	x
Mali	1,600	2008-18	49%	3%	48%	x	-	-	-	-	x
Rwanda	137	2011-18	39%	9%	13%	8%	1%	-	28%	-	1%
Uganda	x	2008-18	x	x	x	x	x	x	x	x	x
Zambia	x	2011-15	x	x	x	x	x	x	x	x	x

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Observation

- In many coastal countries endowed with a port, urban consumers have become used to the superior quality of imported Asian rice and developed preferences for it
- Domestic rice persistently fails to compete quality-wise and is clearly *differentiated* from imported rice
 - Intrinsic quality (purity, homogeneity, whiteness)
 - Extrinsic quality (packaging, branding, reputation)
 - Word-of-mouth
 - Status considerations (foreign associated with high status)



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Which ones are domestic rice?



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Research hypothesis

- Domestic rice now not only has to compete *cost-wise*, but also *quality-wise*, but how?
- In the absence of strong consumer attachment to domestic rice, best short- and medium-term option = *dedifferentiating* quality of domestic rice from imported rice
 - Intrinsic quality (purity, homogeneity, whiteness)
 - Extrinsic quality (packaging, branding, reputation)

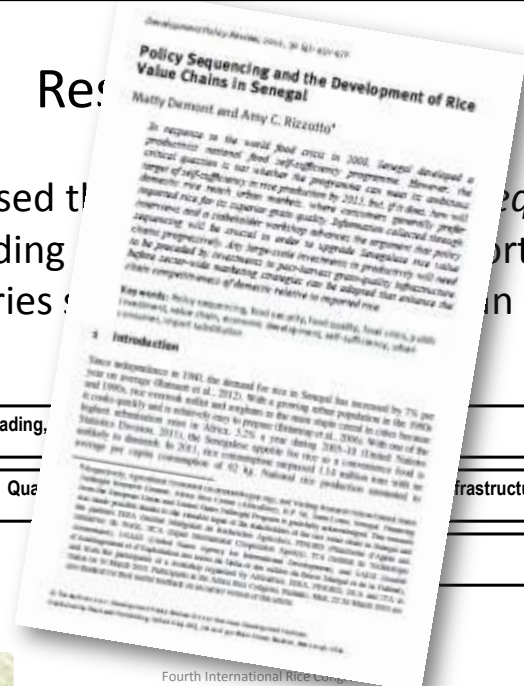


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Research

- Proposed to upgrade quality of domestic rice in countries like Senegal



- Sequence for short-biased in bias:



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How can we test this hypothesis?

- Experimental auctions enable assessing consumers' response to upgrading of
 1. Intrinsic quality attributes:
 - Post-harvest quality upgrading
 - Varietal improvement
 2. Extrinsic quality attributes:
 - Labeling and branding
 - Information (radio, video, word-of-mouth)

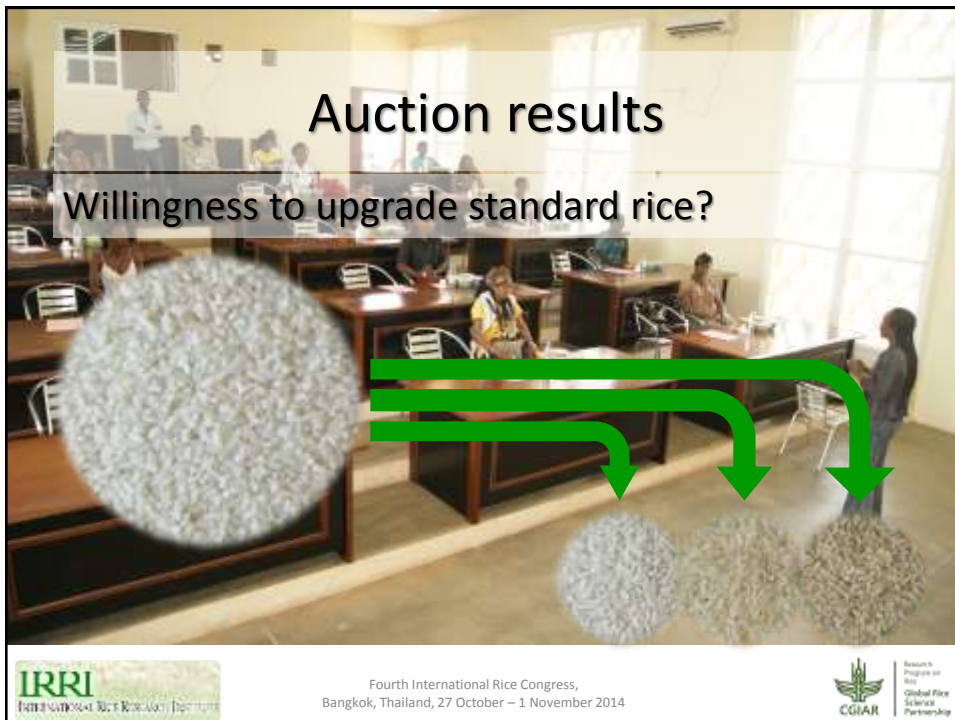


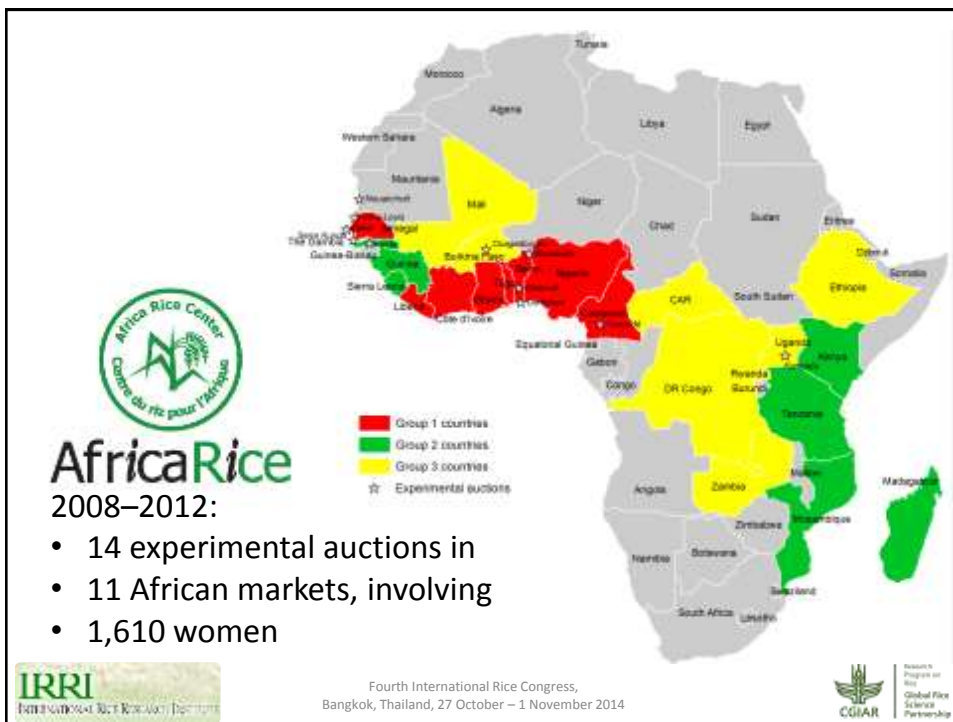
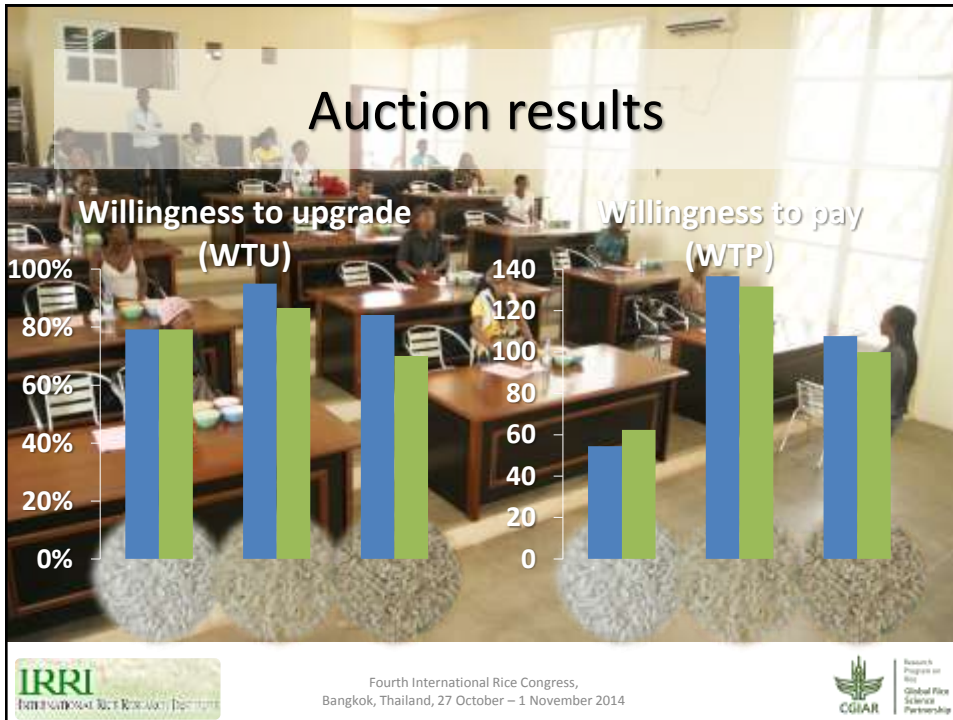
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What did we learn?

Meta-analysis of 14 experimental auctions in 11 African markets involving 1,610 women:

Table 1

Consumers' willingness to upgrade (WU) standard rice to rice with superior intrinsic and extrinsic quality attributes and relative price premiums (WTP) they are willing to pay for these attributes in 11 African cities.

Country	City	Year	Methodology	Sample size	Standard rice		Willingness to upgrade (WU)				Willingness to pay (WTP)				Source
					Origin	Type	Intrinsic	Extrinsic	Label	Info	Intrinsic	Extrinsic	Label	Info	
Benin	Cotonou	2009	Vickrey	100	Local	Perished	25–30%	–	–	–	14–20%	–	–	–	1
	Cotonou	2011	Vickrey	132	Local	Perished	33%	–	–	–	13%	–	–	–	1
	Mahavida	2011	Vickrey	133	Local	Perished	37%	–	–	–	13%	–	–	–	1
Cameroon	Yaounde	2012	Vickrey	120	Local	Mixed	75–89%	–	–	–	17–19%	–	–	–	1
	Nouakchott	2009	Vickrey	50	Local	Mixed	22–34%	–	–	–	14–16%	–	–	–	1
Mali	Nouakchott	2009	Vickrey	50	Import	100%B	62–81%	–	–	–	22–26%	–	–	–	1
	Nouakchott	2009	Vickrey	50	Local	Mixed	47–73%	–	–	–	41–47%	–	–	–	1
Senegal	Saint Louis	2008	Vickrey	99	Local	Mixed	–	–	–	–	–	–	–	–	1
	Saint Louis	2012	BDM	121	Local	F100%B	–	–	–	–	–	–	–	–	1
	Dakar	2009	Vickrey	100	Local	Mixed	–	–	–	–	–	–	–	–	1
	Dakar	2011	Vickrey	120	Import	100%B	18–43%	27–73%	3%	–	16–44%	12–40%	4%	–	1
The Gambia	Kotika	2012	Vickrey	120	Import	F100%B	–	–	–	–	22–23%	–	–	–	1
	Serre Kunda	2010	Vickrey	100	Import	100%B	14–47%	–	–	–	11–17%	–	–	–	1
Burkina Faso	Ouahgouagou	2012	Vickrey	120	Import	3%B	–	–	–	–	–	–	–	–	1
Zambia	Kananga	2011	Vickrey	120	Local	Mixed	87–100%	–	–	–	20%	3–11%	–	–	1

Note: WTP price premiums are averaged over auction rounds and expressed relative to the price of standard rice. B = broken; F = fragrant; BDM = Becker-DeGroot-Marschak.

Source: ¹ Darnot et al. (2012); ² Zossen et al. (2015); ³ Unpublished dataset; ⁴ Darnot et al. (2013c); ⁵ Costello et al. (2013); ⁶ Darnot et al. (2013b; 2015c); ⁷ Darnot et al. (2015a); ⁸ Ouedraogo et al. (2013).



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What did we learn?

1. Large segment willing to upgrade to rice with improved intrinsic quality attributes (68%, usually younger, wealthier & more educated)
2. Intrinsic quality attributes add 26–31% value
3. Extrinsic quality attributes further strengthen market share (5%) and add value (8%)
4. Word-of-mouth amplifies comparative advantage in demand



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Conclusion

- Segmented policy strategy for NRDS
- Some NRDS will need to be allocate more resources to value chain upgrading to:
 - Increase quality-based competitiveness of domestic rice relative to imported rice
 - Better integrate domestic rice markets into global markets with more elastic demand
 - Better shield rice farmers from ‘immiserizing growth’
 - Increase smallholder rice farmers’ participation in broader markets and improve their livelihoods

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Thank you!

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