



## Regional: Development and Dissemination of Climate-Resilient Rice Varieties for Water-Short Areas of South Asia and Southeast Asia

Project Name	Development and Dissemination of Climate-Resilient Rice Varieties for Water-Short Areas of South Asia and Southeast Asia	
Project Number	47163-001	
Country	Regional	
Project Status	Active	
Project Type / Modality of Assistance	Technical Assistance	
Source of Funding / Amount	<b>TA 8441-REG: Development and Dissemination of Climate-Resilient Rice Varieties for Water-Short Areas of South and Southeast Asia</b>	
	Climate Change Fund	US\$ 750,000.00
	A.T.F. - Finnida Grant	US\$ 620,000.00
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth Regional integration	
Drivers of Change	Partnerships	
Sector / Subsector	<b>Agriculture, natural resources and rural development</b> - Agricultural production	
Gender Equity and Mainstreaming		
Description	<p>In collaboration with national rice research and extension systems, the regional research and development technical assistance (TA) will cover water shortage countries in South Asia (Bangladesh, India, and Nepal) and Southeast Asia (Cambodia and the Lao People's Democratic Republic) through further adaptation research, trialing, and knowledge transfer of the technologies developed under RETA 6276 Development and Dissemination of Water-Saving Rice Technologies in South Asia. ADB funds shall be used for activities related to large-scale seed multiplication and distribution of climate-adapted varieties, evaluation and dissemination of second generation water-saving rice varieties, and development and initial dissemination of new, third generation aerobic and alternate wetting and drying (AWD) varieties, and impact analysis of the TA.</p> <p>The TA will ensure availability of climate-adapted rice varieties through collaboration with national and provincial seed multiplication agencies, public and private sector institutes, and nongovernment organizations (NGOs) for large-scale seed production and distribution. Varieties developed under the TA shall be available for cultivation to all farmers in beneficiary countries and can be shared with different research institutions in different countries after the signing of the IRRI standard material transfer agreement.</p>	

Project Rationale and Linkage to Country/Regional Strategy

In the Asia and Pacific region, 90% of the total diverted fresh water is used to irrigate agriculture, and more than 50% of this is used to irrigate rice. The growing scarcity of water worldwide has started to influence conventional irrigated rice production. By 2025, physical water scarcity will affect an estimated 15 million hectares. Recent climate change estimates predict the irrigation water deficit and the intensity and frequency of water shortage to deteriorate further. The Intergovernmental Panel on Climate Change estimates that about 1.2 billion people could face freshwater shortages by 2020 and crop yields in some parts of the region could drop by as much as 30% by 2050. This will impact both irrigated and rain-fed agriculture. The interannual rainfall variability, including the concentration of rain in fewer days in a year and in different locations, will further impair surface irrigation systems. Droughts will occur with new and varied intensities.

The increasing water scarcity highlights the need to improve the water productivity of rice and to reduce its susceptibility to water stress to ensure adequate food for future generations. The International Rice Research Institute's (IRRI) research on water-saving technologies developed the alternate wetting and drying (AWD) technology for high-yielding transplanted rice. Testing at IRRI and field experience in Bangladesh and India have shown that the AWD system leads to savings of at least 15% 20% water compared to transplanted flooded rice, without any yield decline. Technologies that require further development include aerobic rice as a prominent water-saving technology for moderate yielding, direct-seeded situations, and new varieties that are more tolerant of water-stress events. Aerobic rice trials using direct seeding have demonstrated 30% 35% water saving. In addition, aerobic rice is a labor-saving technology, and can also be carried more efficiently with tractor-driven seeding implements. The frequency of water-stress events during the rice-growing period are becoming more common, and varieties that suffer less yield loss from these events need to be further developed.

The TA is consistent with climate change impacts on water and food security, knowledge solutions, and inclusive, environmentally sustainable development, as prioritized in the country partnership strategies (CPS) for each cooperating country. It is also consistent with the GMS strategic Framework 2012 -2022 (endorsed during the 5th meeting of the GMS Working Group on Agriculture), which has identified climate change as a key priority for action. With climate change adaptation being a core area of operation, the TA is consistent ADB's Strategy 2020. The TA is also consistent with ADB's Operational Plan for Sustainable Food Security in Asia and the Pacific and the Water Operational Plan 2011 -2020.

The outcome of the TA can be leveraged for inclusion in food security investment projects. Adoption of water-saving rice varieties can serve as a project component of a large investment project on food security, which often requires comprehensive measures in dealing with the issue of food supply amid climate change. It can also be a stand-alone investment catalyzing on the outcome of promising climate-adapted rice varieties through investing on its sustainable distribution, including facilitating market system distribution without compromising affordability among poor farmers. Investment projects that will establish distributional pathways and access to climate-adapted rice varieties especially targeting small farmers can guarantee greater impact as climate-adapted rice varieties meet both the pressing needs of ensuring food security and reducing the environmental footprint of rice. Financing for capacity development and provision of management packages for effective adoption of rice varieties with private sector involvement, and establishing institutional infrastructure to facilitate take up are also potential follow-up investment opportunities to sustain the development and dissemination of climate-adapted rice varieties.

Impact	The impact will be sustainable rice production with climate resilient varieties in South and Southeast Asia.
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**Project Outcome**

Description of Outcome	The outcome is increased rice yield and water efficiency in water-short and drought-prone areas.
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Progress Toward Outcome

**Implementation Progress**

Description of Project Outputs	<ol style="list-style-type: none"> <li>1. High yielding varieties suitable for water shortage climate developed and disseminated</li> <li>2. Site specific crop management packages for aerobic cultivation in water-short areas developed and disseminated</li> </ol>
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Status of Implementation Progress (Outputs, Activities, and Issues)

Geographical Location

**Summary of Environmental and Social Aspects**

Environmental Aspects

Involuntary Resettlement

Indigenous Peoples

**Stakeholder Communication, Participation, and Consultation**

During Project Design	This regional research and development technical assistance (TA) is requested by national rice research institutions following the successful completion of the regional technical assistance (RETA) on Development and Dissemination of Water-Saving Rice Technologies in South Asia (RETA 6276), primarily to implement large-scale dissemination of promising breeding lines developed under RETA 6276 and to continue development of breeding lines tolerant to water stress.
During Project Implementation	The TA will involve both basic research at IRRI and adaptive research in collaborating national agricultural research centers and in farmers' fields. Highly participatory approaches will be used in validating and disseminating suitable technologies. In each participating country, the targeted breeder seed production of the improved varieties will be carried out at the participating institutions. For the production of foundation and certified seed, and distribution of the certified seed to farmers, the TA, through the participating institution in each country, will link with seed-producing public and private sectors agencies and nongovernment organizations working in the region. Knowledge sharing and capacity building are integral parts of the two outputs. IRRI and the participating countries will disseminate the knowledge and techniques via (i) climate adapted varieties and management practices packages to about 10,000 farmers in water short sites in each of the five participating countries; (ii) more extensively through publication of a book on recent advances in water-saving rice technologies; (iii) a manual of practices for water-saving technologies based on the selected AWD and aerobic varieties; and (iv) publication of at least two scientific papers in refereed journals.

## Business Opportunities

Consulting Services	<p>Because of IRRI's long track record and internationally recognized research, training, and knowledge transfer works in developing new rice varieties and rice crop management techniques that help rice farmers improve the yield and quality of their rice in an environmentally sustainable way, ADB will engage IRRI, and its associated research institutions in each of the participating countries, to provide the consulting services using single source selection.</p> <p>IRRI will propose a team comprising of (i) an international senior scientist staff member to act as team leader (1.2 person-months); (ii) an international rice breeder/agronomist (24 person-months) to help manage the breeding and screening program; (iii) two international plant breeders (total 48 person-months) to assist associated country research institutions with seed multiplication, dissemination, varietal evaluation and survey, and impact assessment; and (vi) two international research assistants who are Ph.D. students from the participating countries (total 48 person-months); and (v) five national research technicians (total 120 person-months), located at IRRI, to assist with research work.</p>
Procurement	N/A

## Responsible Staff

Responsible ADB Officer	Jiangfeng Zhang
Responsible ADB Department	Sustainable Development and Climate Change Department
Responsible ADB Division	SDCC-AR
Executing Agencies	<i>Asian Development Bank 6 ADB Avenue, Mandaluyong City 1550, Philippines</i>

## Timetable

Concept Clearance	04 Apr 2013
Fact Finding	19 Jun 2013 to 06 Jul 2013
MRM	-
Approval	05 Sep 2013
Last Review Mission	-
Last PDS Update	26 Jun 2013

## TA 8441-REG

Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
05 Sep 2013	-	05 Sep 2013	31 Dec 2016	-	-

Financing Plan/TA Utilization	Cumulative Disbursements
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ADB	Cofinancing	Counterpart				Total	Date	Amount
		Gov	Beneficiaries	Project Sponsor	Others			
750,000.00	620,000.00	0.00	0.00	0.00	0.00	1,370,000.00	05 Sep 2013	385,143.61

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Project Page <https://www.adb.org/projects/47163-001/main>

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