



CLIMATE & CLEAN AIR COALITION
TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS



RESEARCH PROGRAM ON
Climate Change, Agriculture and Food Security



GOBESHONA
Making Research on Climate Change in Bangladesh More Effective



Workshop on Large Scale Implementation of the Alternate Wetting and Drying (AWD) Technology Workshop Proceedings

4th May 2019 | BRAC Centre Inn, Dhaka



Workshop on Large Scale Implementation of the Alternate Wetting and Drying (AWD) Technology

4th May 2019 | BRAC Centre Inn, Dhaka

Edited by: Rukhsar Sultana, Farah Anzum and Tania Ahmed at the
International Centre for Climate Change and Development (ICCCAD)

Abbreviations

AWD	Alternate Wetting and Drying
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BRI	Bangladesh Rice Research Institute
BMDA	Barind Multipurpose Development Authority
DAE	Department of Agriculture Extension
FAN	Focal Area Network
GHG	Greenhouse Gas
IRRI	International Rice Research Institute
NGO	non-government organization
NIDS	North Bengal Institute of Development Studies
RDRS	Rural Development and Research Society
SSD	Soil Science Division

Table of Contents

Welcome address	5
Introduction to CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)	6
Collective approach of AWD technology dissemination through NW Focal Area Network.....	7
Project activities and achievements	8
Video show: Summary of achievements	8
Results sharing by representative of farmers and pump owners	9
Impact study results sharing.....	9
Open discussion.....	10
Challenges,opportunities and future directions.....	11
Closing ceremony	13

Dr. Ahmad Salauddin, Consultant, International Rice Research Institute (IRRI) greeted everyone and introduced the Chairperson of the event, **Dr. Saleemul Huq**, Director of the International Center for Climate Change and Development (ICCCAD), to the participants. He, then, introduced the Special Guests: **Dr. Mohammad Enamul Kabir**, Executive Director of Rangpur Dinajpur Rural Services, **Dr. Md. Shajahan Kabir**, Director General, Bangladesh Rice Research Institute (BRRI), and **Kbd, Mir Nurul Alam**, Director General, Department of Agriculture Extension (DAE). Dr. Salauddin also introduced the Guest of Honor, **Dr. Md. Akram Hossain Chowdhury**, Chairman of Barind Multipurpose Development Authority (BMDA), and Chief Guest, **Dr. Md. Nasiruzzaman**, Secretary of Ministry of Agriculture (MoA).

Dr. Salauddin opened the floor to the other participants to introduce themselves and their organizations. He shared the learning objectives of the workshop entitled, “Large Scale Implementation of the Alternate Wetting and Drying (AWD) Technology:”

- To share experiences in AWD dissemination of FAN members with other research and development organizations, as well as with policy makers;
- To explore opportunities to establish other networks similar to FAN in other regions of Bangladesh that can take on the dissemination of water-saving techniques; and
- To identify future funding options for implementing climate-smart and low-emissions technologies in accordance with national plans.



Welcome Address

Dr. Humnath Bhandari, IRRI Representative to Bangladesh

Dr. Bhandari opened his welcome address by narrating the history of rice production in Bangladesh. During the 1970s, the country was considered a mere bottomless basket. Since then, rice production increased by 3.5 times, transforming the country into a role model on agriculture and development. However, rice farming still faces many challenges, including rice scarcity. Water management is becoming an important issue as well. With these challenges, no “one-size-fits-all” solution can be made. Bangladesh needs location-specific ones.

IRRI’s innovative technologies are part of the solution. Their AWD technique demonstrates a 30% reduction in water use and no yield loss, presenting an increase in profit. However, adoption of this technique has been slow. Dr. Bhandari hoped that this workshop would promote large-scale AWD implementation.



Introduction to the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

Dr. Ole Sander, IRRI Representative to Vietnam

Dr. Sander talked about IRRI and its programs. Many activities of IRRI fall under the climate change umbrella, including market analysis for sustainable rice production. These activities are all part of CCAFS. They are designed to contribute to the outcomes of the four CCAFS flagship programs. IRRI’s AWD work falls under the low emissions development flagship. Specifically, IRRI focuses on the implementation of transformative technologies that mitigate greenhouse gas (GHG) emission, with AWD being one such technology. When applied in the right region, the benefits from AWD are significant. Currently, IRRI promotes AWD to reduce emissions from paddy rice in Northwest Bangladesh as part of the Climate and Clean Air Coalition of the United Nations Environment Program. IRRI is trying to account and measure the emission reduction from AWD for better policy planning.



Collective approach of AWD technology dissemination through the North West Focal Area Network

Dr. Ahmad Salahuddin, Consultant, IRRI

Dr. Salahuddin briefed on the work IRRI is doing with the North West Focal Area Network (NW-FAN). IRRI has worked with the Network to develop a platform where relevant organizations can gather and collaborate with them. Since 2015, the Institute is working with all the organizations under NW FAN and had introduced them to AWD. They initially started with 70 tube wells in this region and are now focusing on AWD due to the depletion of groundwater.

Several advantages of using AWD include:

- reduces water demand for irrigation;
- reduces GHG emissions by 50%;
- and presents a low-cost implementation.

Dr. Salahuddin added that the primary approach of the project was to work with NW-FAN. Initially, the implementors chose the pump owners they would want to work with. Afterwards, they talked to the chosen pump owners and gave them orientation and training. The trained farmers then disseminated the technology to their fellow farmers. IRRI and the Bangladesh Rice Research Institute (BRRI) helped them in the technology dissemination. With the assistance of Network members, the farmers mapped the types of irrigation being applied and the areas where AWD could be implemented.

Dr. Salahuddin added that there are 1,612,613 tube wells around Bangladesh, among which they have identified 1,400,000 wells that could adopt AWD technology. From the policy perspective, the AWD technique can contribute in at least 5 Sustainable Development Goals (no poverty, zero hunger, good health and well-being, climate actions, and partnership for the goals). At the national level, it is mentioned in the various areas of National Agricultural Policy, Bangladesh Delta Plan 2100, and the Integrated Minor Irrigation Policy. Focusing on

the importance of AWD, Dr. Salahuddin called on the government, non-government organizations (NGOs), and other relevant stakeholders to work for the benefit of the farmers.

Project activities and achievements

Md. Mamunur Rashid, Senior Coordinator, Rural Development and Research Society (RDRS)

Md. Mamunur Rashid presented the major steps that have been taken to implement AWD at the field level. He also shared the contributions of FAN and other organizations in the process. From 2016-2017, through an initial meeting of the partners in Rangpur, 343 farmers and 17 shallow tube well owners participated in the project's pilot phase. In the second year, as part of a project in Vietnam, AWD was implemented through several local NGOs. Project leaders looked for potential shallow tube well owners who could contribute to the project. With the help of DAE, BRRI project leaders discussed the benefits of AWD with tube well owners.

Farmers initially wanted to know whether they were actually reducing water usage or saving electricity or diesel. Whole catchment areas were mapped for potential points of AWD pipe establishment, including the level of land and the area of farm lands. Data were collected and eventually analyzed at the Hazi Danesh Institute.

In the first phase, 17 shallow tube well owners started using AWD. In the second phase, 19 shallow tube well owners in 11 *upazilas* were included, covering 152 acres of land. By the final phase, 50 pump owners in the 11 *upazilas* were providing water to 800 farmers across 337 acres of land. The major goal was to connect all farmer organizations to mobilize and implement the AWD technique. Mr. Rashid added that this network could potentially turn into a union of AWD farmers. It is equally important to mobilize local governments and district irrigation committees as they provide licensing and other services to tube well owners. Encouraging agricultural entrepreneurs to use AWD technologies for agricultural crops other than rice is also essential.



Video show: Summary of achievements

Dr. Salahuddin, Consultant, IRRI

Dr. Salahuddin facilitated the video presentation session. Farmers in the video testified to the benefits of AWD technology, including reduction of water input. IRRI trained farmers on the use of irrigation devices and the technique, but what was especially important for the success of the project was the collaboration between farmers and pump owners.

Results sharing by representative of farmers and pump owners

Dr. Salahuddin, Consultant, IRRI

Dr. Salahuddin opened the floor to farmers and pump owners for them to share their experiences on the benefits of AWD and what they wanted IRRI to know going forward.

Md. Motiar Rahman, a pump owner from Rangpur RDRS, shared that farmers were initially reluctant to use the technique. However, once they saw the benefits, they felt that it was a sustainable farming technique for generations to come.

Md. Shajahan Ali, a farmer from Rangpur RDRS, shared that his yield has doubled since he started using AWD. His tiller has increased, and now he uses less water for irrigation, saving around 300 taka. Since using the magic pipe, he does not need to weed his fields as often as before. Pump owners and other farmers in the nearby villages saw his success with the AWD technique and were encouraged to adopt it.

Kishory Mohan Roy, a pump owner from Rajarhat RDRS, said that 18-20 farmers from his village attended the meeting on AWD. The 18 farmers who decided to use AWD received a total of 16 magic pipes. They were initially confused as to why they had fewer pipes than other farmers, but then learned they had enough based on the landform. They were surprised at the increased tiller and yield while their water dependence decreased. The farmers tracked their progress and frequency of irrigation and compared their results with those who did not adopt the AWD technique. They found that they irrigated 6-7 fewer times and saved on diesel fuel needed to run irrigation pumps. Roy promoted AWD and convinced two more farmers to adopt it.

Md. Kazi Jikrul, a pump owner, shared that farmers were initially hesitant to adopt the technology. When farmers learned that they would save on irrigation costs using AWD, they collaborated with pump owners to map out pump locations and install magic pipes.

Impact study results sharing

Dr. Syed Samsuzzaman, Chairman, North Bengal Institute of Development Studies (NIDS)

Dr. Samsuzzam gave a background on FAN and how it was conceptualized for North Bengal as a platform for organizations to work together. To confront “*monga*,” BIRRI and IRRI took the lead to provide the expertise in the platform. He went on to introduce the work NIDS has been doing in Rangpur, especially in supporting this project.

Dr. Samsuzzam highlighted the key benefits of AWD projects. Rangpur and Dinajpur farmers who have adopted this practice has seen high tillering. In some cases, farmers had experienced a 10-11 percent yield increase. They have reduced their frequency of irrigation, which has lowered the burning of diesel in pumps. AWD then lowers their dependence on water. On scientific terms, tiller has increased the overall rice yield. Moreover, alternate periods of drying had lowered the use of fertilizer as rice plants absorb nutrients better when paddies are not flooded.

He added that AWD worked this time around under IRRI due to FAN collaboration. Knowing the benefits of the technology, he said that they should look for a way forward to sustain its benefits and ensure long-term partnership. One sustainable solution is incentivizing pump owners and the farmers. As stated in the Article 8 of their National Agriculture Policy, AWD was tried and tested already, generating fruitful results. They should ensure its popularization then. To allow more farmers to adopt AWD, Dr. Samsuzzam suggested to cap the amount of irrigation water. He cited the case of Rajshahi, where a prepaid card system is practiced to avoid the overuse of water by the farmers. He advised that they could adopt the system in the north west and license the irrigation system to ensure more stakeholders would join to save water.



Open discussion

Dr. Salahuddin, Consultant, IRRI

Dr. Salahuddin opened the floor for FAN members attending the workshop to share their feedback on AWD and their experiences.

Md. Abdul Wazed, DAE Dinajpur

Underground water levels are decreasing every day. To keep them stable, farmers should reduce at least 30 percent of their water uptake. Farmers who practice AWD need 36 percent less water for irrigation, making it a viable solution. Furthermore, using less water is beneficial because some nutrients become available when the land is dry. Less fertilizer is

required, and more tiller is produced. Overall, using less water is beneficial to produce and maintain underground water levels.

Dr. Mohammad Abu Bakr Siddique Sarker, BIRRI

To make AWD more effective, implementation of the technology should be specific. It is necessary to know the main stakeholders, farmer demands, coping systems, and the location. Clarifying AWD with pump owners is critical to ensure farmers disseminate the technology in a sustainable manner.

Alauddin Ali, Udayankur Seba Sangstha, Nilphamari

When we organized, there were several challenges. First of all, people wanted to use their traditional ways of farming and put too much water, as much as 3000 liters for 1 kilogram of rice. They believed that putting more fertilizer and pesticides would be better for their yields. However, if they keep going in this manner, they will not have drinking water. Farmers also do not want to reduce their water use because they are paying for a certain amount anyway.

Better communication and mobility are now allowing people from one part of the country to know what is happening in another part of the country in terms of water and agricultural problems. The challenge is to change people's behaviors in the villages.

Kamola Rani Pal, Field Worker, Solidarity

To prevent farmers from blaming AWD for pests and crop losses, which occur naturally, it is important to have multiple stakeholders, such as pump owners, supporting the technology.

Shamiran Biswas, Coordinator (Agriculture and Seed Program), Christian Commission for the Development of Bangladesh

The difference between the first time AWD was implemented and the attempt now is our approach. Now, we included more stakeholders. Alongside this, farmers were trained on the technology, generating much better results.

Dr. Saiful Huda, Professor, Hajee Mohammad Danesh Science and Technology University

AWD works well but the implementation and strategy have some issues. There is a law stating that by 2030, 20% of farmers will use the AWD technique, which will increase tiller, reduce irrigation and pests. We need a positive approach and more funding going forward.

Challenges, opportunities and future directions

Abdul Al Mamun, Director, RDA, Bogra

Mr. Mamun strongly believes that social engineering is a crucial method for dissemination of AWD technology. He added that mechanization of farming is essential in saving water. We should be concerned with how much groundwater is being recharged and how much water can be saved. Each district of Bangladesh is different and so are their agricultural needs. We need multiple technologies alongside AWD for a sustainable solution.

Dr. Fazle Rabbi Sadeque Ahmed, Director, Environment and Climate Change, Palli Karma Sahayak Foundation

When we lack data, securing funding for projects that would benefit agriculture is difficult. We need more information on the emission reduction potential of our projects, as well as their capacity to decrease pesticide and fertilizer use, to attract international funders. We need a cost-benefit analysis and coordination among local level stakeholders and the government. A long-term plan needs to be worked out rather than a project-based implementation of AWD.

Md. Tawfiqul Islam, CSO and Head, IWM Division

We must develop a mechanism to encourage farmers and pump owners to adopt AWD. Groundwater is a national asset; use should be rationed. Industry uses significant amounts of groundwater alongside agriculture. However, AWD cannot be used everywhere in an *upazila*.

Dr. Rafiqul Islam, CSO and Head, Social Science Division, BRR

Methane and nitrous oxide are two major GHGs emitted from rice farming. If the AWD technique is used over traditional methods of farming, a 35-40% reduction in global warming is possible.

Mohammad Nure Alam, Consultant, 2030 Water Resources Group

National and international organizations, banks, government institutions, and civil societies are part of the Water Resources Group. They have been working in the Barind tract area under their agricultural working team. The 2030 Water Resource Group also collaborated with the scaling up of AWD technique by conducting campaigns and improving communication. They have developed various training modules for *upazila* committee members.

Md. Assaduzzaman, Distinguished Fellow, BIDS

Third party independent evaluation is crucial to assess the effectiveness of AWD. We need more clarification on the benefits of the technology as economic incentives are the most attractive to farmers. Volumetric pricing over area pricing of water for irrigation is important in preventing overuse.

Dr. Murshedul Alam, Associate Scientist, IRRI

AWD is a proven technology, yet our farmers are not willing to adopt it. A conflict of interest between farmers and pump owners has created a barrier. We have to find a mechanism to sustain AWD. Creating a pump rental system in which farmers pay for the amount of water they use with their own electricity or diesel can be a solution.

Dr. Mannerujaman

Due to conflict of interest, a community-based approach to implement AWD will be more sustainable.

Zharna Begum Member Director (Irrigation), Bangladesh Agricultural Development Corporation (BADC)

A total of 31,200 AWD pumps have been distributed by BADC since 2009-2018. To encourage more farmers and pump owners to collaborate, they held motivational training sessions on AWD techniques. She also highlighted that land use patterns are not similar in all the areas of Bangladesh; therefore, the AWD technique has some limitations. A

monitoring committee that will supervise the proper implementation of AWD technique in the field is necessary.

Shaheen, DASCOH Foundation

Land leveling using a remote sensing system is important to distribute water evenly in the field, preventing accumulation in certain areas.

Dr. Khaled Kamal, Chief Information Officer, AIS

When a project is implemented, people tend to work with AWD, but once it is over, farmers do not continue the practice. Pump owners do not cooperate and farmers do not see the benefit. Community mobilization is then crucial to ensure the benefit of the technology persist even after the project ends.

Dr. Md. Abdul Mueyed, Director Field Service, DAE

Mueyed wanted to know if there was GHG quantification on AWD versus non AWD systems in Bangladesh. He was particularly interested in methane and nitrous oxide emission and carbon sequestration levels. If so, this information should be made accessible to people.

Dr. Ole Sander, IRRI

Dr. Sander addressed the queries of Dr. Mueyed. He said that there have been hundreds of studies on emissions around the world. However, there are only two in Bangladesh. They need more data. Nonetheless, it is clear how much they can save with AWD: roughly 50%.



Closing Ceremony

Chairperson: Dr. Saleemul Huq, Director, ICCCAD

Special Guests: Dr. Mohammad Enamul Kabir, Executive Director of Rangpur Dinajpur Rural Services;

Dr. Md. Shajahan Kabir, Director General, Bangladesh Rice Research Institute (BRRI); and

Kbd, Mir Nurul Alam, Director General, Department of Agriculture Extension.

Guest of Honor: Dr. Md. Akram Hossain Chowdhury, Chairman, Barind Multipurpose Development Authority (BMDA)

Chief Guest: Dr. Md. Nasiruzzaman, Secretary, MoA

Dr. Md. Nasiruzzaman, Secretary, MoA.

Dr. Md. Nasiruzzaman appreciated the statements made by the participants and the experience shared by farmers and pump owners. He added that reducing the amount of water used is important because groundwater levels are decreasing while salinity intrusion and vulnerability to earthquakes are increasing. Those who use groundwater will have to move when it runs low. Farmers still use too much water because they have to pay for a certain amount to pump owners up front; financially, it does not make sense to reduce consumption. If farmers had a prepaid meter system to access water instead, they would have to think more deeply about the amount they would need to farm their land.

Right now, 50,000 farmers are targeted to adopt AWD, but this is not enough. More should be taught. If they learn it once, they can take that knowledge wherever they go. Why farmers do not continue or adopt the AWD technique should be researched and each *Upazila* Committee and pump owner should be trained on AWD and its importance. Lastly, excess use of fertilizer is another issue. Quoting granular and pill urea amounts is important in preventing too much consumption.

Dr. Md. Enamul Kabir, Executive Director, RDRS

Dr. Enamul Kabir started his speech by thanking all the discussants and panel members for all the great inputs and knowledge sharing. He presented his speech from the perspective of water, sanitation and hygiene as he has a long track of working in this sector. He mentioned two things, one of which is the necessity of available data. Even if it is one of the significant resources in decision making, they often lack accessible and quality data.

Dr. Kabir also shared that BMDA has been performing a major role in irrigation as reflected in the 11 million tube wells that were set up in the villages. The United Nations Children's Fund had first pointed out the problem of depleting groundwater supply. Compounding this problem is the high volume of water being wasted.

Aside from this challenge, he discussed about his one research where he studied 16 *upazila* and how many areas in them were suffering from groundwater depletion. He found out that only two *upazilas* were challenged with groundwater recharge problem; others were having automatic recharges. Building from these results, he thought that water recharge problem could have been controlled already if they were consuming water appropriately.

He also acknowledged that Bangladesh would face the severe impacts of climate change. Emitting relatively small amounts of carbon dioxide, the country must then focus its emission reduction efforts on methane. It can be the reason why Bangladesh can be tagged as a methane contributor worldwide. Dr. Kabir reiterated the critical role of water saving technologies to address this problem.

Before ending his speech, Dr. Kabir noted that various challenges and opportunities may still hamper their large-scale implementation efforts. In the next phase, they should work with more stakeholders such as *upazila* committees, unions, and standing committees, among others, to sustain the whole ecosystem and the human lives within it.

Mir Nurul Alam, Director General, DAE

Mir Nurul Alam, an agricultural scientist, mentioned that since implementing AWD, many farmers had already adopted it. Only a few of them had not as of the moment. He called on the other scientist to identify both the enablers and barriers of adoption.

He also discussed the introduction of the AWD technique back in 2008. It was funded initially by a one-billion-dollar support from Bill Gates. Various media outlets such as BBC named the AWD pipes as “Magic Pipe”. Still, the success of AWD can also be attributed to the farmers, local government, and pump owners, among others.

To encourage sustainable water management and effective tiller, it is imperative to develop skills through trainings. He also mentioned the replenishment of groundwater in Mymensingh through aquifers and trainings on Access to Information by the Government of Bangladesh. This case showed that a holistic approach is better suited to scale AWD instead of individual actions.

Md. Akram Hossain Chowdhury, Chairman, Barind Multipurpose Development Authority (BMDA)

Akram Hossain Chowdhury said that the large-scale implementation of AWD poses several challenges. A major challenge they often face was resistance from elderly farmers who still prescribe to traditional mindsets. They find it difficult to accept that using less water will give higher yield. An alternative option for this challenge can be recruiting young farmers who are willing to adopt new technologies in agriculture.

Sharing another challenge, he shared that the problem with pump owners to charge higher prices for water could be attributed to the time of initial establishment of these pumps. Each pump was supposed to be set up with participation fee from all the farmers in an area, which would have ensured everyone’s ownership on it.

Due to lack of coordination with farmers, contractors asked money from rich farmers to rush the establishment, ultimately transforming these farmers into “water lords” who exploited other farmers. They often have tendencies such as “*Amra raja, tomra proja*,” which means that pump owners or water lords are the kings whereas other farmers are the subordinates. He mentioned the necessity of using a “Water Prepaid Card” for farmers to fetch water.

In Panchagarh, Mr. Hossain has seen a successful usage of prepaid cards. It helps in saving water and reducing the costs of farmers. In contrast, this system may not be as successful in Rajshahi due to its water logging issues. Such issues would only become severe if the prepaid card system is profit-driven and not location-specific.

Mr. Hossain also mentioned the exploitation of farmers in their country. For instance, he stated that 4000 liters of water is required to produce 1 kg of rice—a costly situation for the farmers. The lack of enough research and data on various agricultural issues keep the sector from being integrated into the decision making of the government. He added that during the last Government period, with the help of CSIRO, 1000-1400 deep tube wells were settled in the northern part of Bangladesh. However, per the order of Begum Matia

Chowdhury, the former Agriculture Minister, any further establishment of deep tube wells was stopped. Mr. Hossain thought that this was a wrong step and only kept them from utilizing their water supply. He cited the large amounts of water from the Himalayas that are not being used by farmers in Rangpur district. The supply could have helped in increasing the groundwater levels instead of just allowing it to flow to the sea.

Illegal shallow machine connection is another severe problem in different areas. The numerous illegal connections pressure the water underground. It decreases the water supply and affects soil health.

Mr. Hossain also shared an incident of women's deaths due to illegal wiring ("*Phata Tar*") of shallow machines. During his visit to the women, he was informed that only 2 pumps were set legally while 6 pumps around the original shallow machines were illegally connected. In many cases, people cut the connection of legal pumps and close their outlets. As a response, he discussed the situation with the local chairman and asked for the detection of illegal connectors and forbid them. However, this situation may continue if proper steps are not taken.

Mr. Hossain mentioned holistic approaches that integrate soil types in different regions. It is also important to consider soil health improvement practices. Farmers must build this kind of mindset to protect their lands and improve soil quality. To complement this mindset, he shared various low-water hungry crops invented by BIRRI and other organizations, which could be used to reduce the water usage.

Nonetheless, among many problems, groundwater recharge would emerge as a severe issue in the future. Rainwater harvesting techniques will be crucial in supplying water in the farms. There are various rural-based techniques that can also be scaled to recharge groundwater. To supplement these water-saving techniques, carbon and methane emissions from the croplands must be quantified. Finally, he recommended to recruit young farmers to implement the new techniques.

Dr. Saleemul Huq, Director, ICCCAD

Dr. Saleemul Huq thanked all the participants, including the chief guest, special guest and guest of honor, for their valuable inputs. He stated that Bangladesh may be one of the most climate-vulnerable countries in the world, but it does not share the same risks as other countries. "*Medicines are not the same for all diseases,*" Dr. Huq said as he emphasized country-specific initiatives for their agriculture sector. A few initiatives he noted were the development of rice varieties that require less water and technological solutions for a sustainable agriculture.

He brought up GOBESHONA network, which has been generating researches on climate engineering, social science, and climate change adaptation and mitigation, among others, over the last 5 years. Around 2500 articles are currently available at the Network. It also conducts an annual international climate change conference every January, where many researchers in and out the country are provided platforms to present their work. Two major objectives of the Network were to improve the accessibility of technical knowledge to the general public and the sustainability of projects.

Dr. Salahuddin from IRRI would hold a session on AWD technique next January. He proposed to explore climate financing opportunities from global donors and see if they could quantify the methane gas emissions to “sell” in the global market. He also suggested to the Government of Bangladesh to revisit and revise, if necessary, the Bangladesh Climate Change Strategy and Action Plan (BCCSAP).

Dr. Huq said that steps would be taken to include AWD and methane gas emission plans in the revised BCCSAP to accelerate broader implementation. He finally stated that unless we adopt a coordinated plan, it would be hard to reach a goal. It is then crucial to follow a coordinated approach in the climate change sector to obtain sustainability in farming.



Acknowledgment

Bjoern Ole Sander, Representative of International Rice Research Institute (IRRI), Vietnam

Bjoern Ole Sander thanked everyone for their kind participation in making the workshop successful. On behalf of IRRI, Dr. Sander expressed his gratitude to the chief guests, panel members, partners, government organizations and the farmers for their significant contribution in the implementation of the project.