

Reducing methane emissions in our agriculture



AN OPEN DIALOGUE

Dr Abdullah Shibli
is an economist and works for Change Healthcare, Inc, an information technology company. He also serves as senior research fellow at the US-based International Sustainable Development Institute (ISDI).

ABDULLAH SHIBLI

A few days before COP28, Ajay Banga, president of the World Bank, was featured in a talk show where he declared that the Bank would fund efforts to cut down methane emissions in agriculture by tweaking farming practices in rice-growing countries. He specifically mentioned the widespread method of irrigation flooding and the resultant methane emissions in these countries: “Methane is one rare, clear area where we know there are low-cost remedies, effective and simple solutions that can be replicated and scaled,” Banga said.

Unfortunately, field trials carried out in Bangladesh and other countries—including China, the world’s largest producer of rice—show that economic incentives are a significant hindrance and policy measures need to be calibrated to nudge small-scale farmers to adopt the alternate wetting and drying (AWD) technology that might be available.

It has been known for decades that submerged paddy-growing fields are a major source of methane gas. Since its first trials in 2005, the management practice of AWD emerged, encompassing the ability to flood and drain rice fields in a timely manner, and it has been promoted and evaluated in Bangladesh. However, it is not clear whether the goal to reduce methane emissions to zero by 2030 can be achieved with AWD alone. Also,

the field experiments conducted in Bangladesh show that AWD may not be very popular with farmers. In addition, the implementation of AWD is conditional upon constant monitoring and a tech-savvy group of farmers, which is difficult to find as educated youth are moving away from rural areas.

Nonetheless, Banga’s promise to fund innovative irrigation and drainage projects, made in the context of COP28’s pledge to reduce methane emissions to “near zero” by 2030, has generated renewed interest in AWD irrigation technology.

Bangladesh is the world’s third-largest producer of rice—producing up to three rice crops in a single year—with an output of 38.3 million tonnes in 2022/23. Our methane intensity is lower than that of the two largest producers, China and India. Regardless, we are committed to lowering it further.

Bangladesh’s goal as a signatory to the Paris Agreement, as enunciated in the Nationally Determined Contributions (NDC), is to reduce methane emissions from AFOLU (agriculture, forestry and other land use) significantly.

Incidentally, Bangladesh also has the seventh-highest livestock density in the world. As per a study by the International Maize and Wheat Improvement Center, “...the greenhouse gas output of agriculture in Bangladesh was 76.79 million metric tons of carbon dioxide



AWD only leads to measurable water savings in villages where farmers pay a volumetric price for water and not in villages where water prices are set by the acre.

FILE PHOTO: PALASH KHAN

equivalent (Mt CO₂e) in 2014-15... At the going rate, total agricultural emission from Bangladesh are expected to reach 86.87 Mt CO₂e by 2030, and 100.44 Mt CO₂e by 2050.”

Bangladesh is aiming to take mitigation actions to reduce methane emission by “Upscaling Alternate Wetting and Drying (AWD) in dry season rice field on 50,000 hectares of crop land,” per the NDC.

The best established method of cutting methane from rice farming is to shift away from traditional flooded-field methods. The System of Rice Intensification (SRI), which originated in Madagascar in 1981, does this through the use of shallow and intermittent irrigation or

alternate wetting and drying (AWD). Research has found these techniques can reduce methane emissions from rice growing by 22–64 percent. Initially evaluated as a water-saving practice in the Philippines in 2002, AWD was first tried in Bangladesh in 2005 by the Bangladesh Rice Research Institute (BRRI).

Instead of keeping their fields continuously flooded, farmers should drain rice paddies two to three times during the growing season. This limits the amount of methane that is produced, does not compromise yield, and saves money for farmers as it requires one-third less water.

Globally, flooded rice cultivation is responsible for approximately 22

percent of all agriculturally related methane (CH₄) emissions and 11 percent of anthropogenic CH₄ emissions. Production of CH₄ in rice systems is primarily the result of fermentation of soil organic matter under flooded anaerobic (waterlogged) conditions.

Experiments in China show AWD can be carried out under two different regimes: 1) with the application of the internet of things (IoT), and 2) through manual monitoring and drainage. The assessments also show that the larger economies of scale would make the IoT investment highly profitable. But for smallholder farmers, low-cost manual AWD is a better alternative.

A second problem that rice farmers face is the migration of the more educated and younger generation to urban areas for higher-paying, non-farm jobs. “Alternate wetting and drying (AWD) irrigation schedule management system for rice cultivation,” according to Prof Rahedul Islam of Pabna University of Science and Technology. The studies conducted by Islam reveal several barriers to AWD irrigation systems, including water pricing practices, small farm sizes, and adverse incentives or market failure.

The profitability of AWD technology depends on whether farmers face volumetric (marginal) prices, where irrigation cost will depend on usage. A Tufts University study, with randomised controlled trials in 544 villages of rural Bangladesh, shows that AWD only leads to measurable water savings in villages where farmers pay a volumetric price for water and not in villages where water prices are set by the acre.

The World Bank must bear in mind that project funding must be fine-tuned for local conditions. Experiments suggest that there may be a fundamental market failure that explains why farmers do not value water-saving technology. Plus, farmers are confused about when they should and shouldn’t flood their fields. Finally, in Bangladesh, several studies show that use of smart technology helps. As an example, if you retrofit tubewells to work with debit cards and create infrastructure such that debit cards can be easily recharged, that will be a positive step. Behavioural economics studies across the spectrum show that influencers can nudge to influence and change the decision-making behaviour of small farmers to adopt water-saving and other climate-friendly practices.

‘Girls tend to be strong by default when it comes to playing football’

Interim head coach to the Bangladesh National Women’s Football team, AKM Saiful Bari Titu, speaks about his experience coaching the team, their recent performances, and what can be done to take them further, in this interview with Afia Jahin of The Daily Star.

Having mostly coached men’s football in the past, how different has your experience been of coaching the national women’s team over the past few months?

I have to say that the transition was not smooth because, in terms of communicating with and motivating the men’s team versus the women’s team, there is a marked difference. But for me, the fundamentals of coaching involve influencing and persuading the players, and this applies the same to both female and male players. Before me, the women’s team had established coaches such as Golam Rabbani Choton and Paul Smalley. And these are people the players had accepted as their role models or even as father figures to an extent. So it was certainly not easy for me to step into that role. But I had told the girls that I would show them my work in order to get their trust. Essentially, I knew from the beginning that they wouldn’t be able to have faith in me through my words alone. I had to alter my coaching approach so that the gap between us would narrow. The fact is that the approach to coaching men tends to be a more domineering one. Initially, such an approach understandably came off as rude for the women’s team, so this is something I had to check and fix. So far, especially having now coached both the men’s and women’s senior teams, the latter has certainly been an interesting and enjoyable experience for me.

Given the two losses and one tie, what do you think were the major factors behind the team’s less satisfactory outcome in their first Asian Games in September?

In terms of the Asian Games, it needs to be said that besides Nepal, the other two teams in our group were definitely unsurpassable for us. Especially considering that Japan had won the 2011 FIFA Women’s World Cup and beaten Spain (this year’s champion) 4-0 in the group stage of the 2023 world cup. So there is too much of a difference between our team and a team as strong as Japan. I will say, however, that we conceded too many goals in the match against Vietnam. But even that match served



AKM Saiful Bari Titu. PHOTO: COURTESY

as a good experimental one as the girls are mostly used to playing with a high-pressing team. Still, I wouldn’t really say that our performance in the Asian Games was less satisfactory. There was actually a lot of learnings we received during the tournament, as we played against each of the three teams with a different game plan. Plus, this was the first time that the Bangladesh women’s team participated in the Asian Games. Ultimately, it’s always a learning experience to play against teams that are much stronger than ours. And we only get to play such teams every few years or so because, say, even if we ask to, a team like Japan wouldn’t want to play a friendly against us because of how much weaker we are. In the end, being able to play against these stronger teams helps us to discover how our team performs as a unit and in terms of individual players, and I believe this learning experience bore fruit for us in the recent friendly matches against Singapore.

Speaking of the two consecutive wins in the FIFA Tier-I International Women’s Friendly Matches against Singapore earlier this month, how are you and the team planning to hold on to this momentum and prolong this performance streak in the coming months?

Given that the SAFF championship is supposed to take place in October 2024, the many upcoming FIFA friendly matches will be crucial for us. For the Bangladesh team, it will be a matter of defending the title this time around. So it is essential to hold on to this momentum by playing the upcoming friendly matches, especially because there is little to no possibility of us having the chance to play any competitive tournaments.

Credit must be given to the federation for training the women’s team round the year, as this is a facility that most women’s teams—especially those in Asian countries—do not always get. In terms of holding on to the momentum, analysing our performance against Singapore, for example, is necessary. Although we won these two matches by many goals, we also made mistakes. So we need to retain the positive aspects of our performance and also work on the negative ones. The team and I have already conducted objective analyses, including player feedback, by watching back footage of the Singapore matches.

It should be noted that girls in our country tend to be strong by default when it comes to playing football, because they have to face a lot of challenges in order to be footballers in the first place. There is always discouragement from family members, neighbours, and relatives towards girls playing football. But this works to make the players quite tough mentally, and we need to see to it that they remain motivated. Alongside this, even though the federation has recently increased the women players’ monthly salaries by a lot, it is also important that the girls get to play professional league matches more regularly as these can be a good source of income (and, by extension, a source of motivation) for them.

Given that the girls have proven their calibre time and again—and especially since their SAFF Championship victory in 2022—have you observed a positive shift in terms of the resources and assistance that our women’s football team has been receiving?

In my opinion, by winning the SAFF

Championship, the girls won the hearts of the people of the country. And in any case, at whatever age group they have won tournaments, we have seen the women’s teams being rewarded for it accordingly by the government. Recently, they bagged Dhaka Bank as a sponsor, and even some cricket boards have financed the women’s football team. Such rewards and recognition are much-needed. And as I’ve said before, we are fortunate that the girls get to train all throughout the year. The male footballers, besides playing for the national team, remain in practice by playing for various clubs.

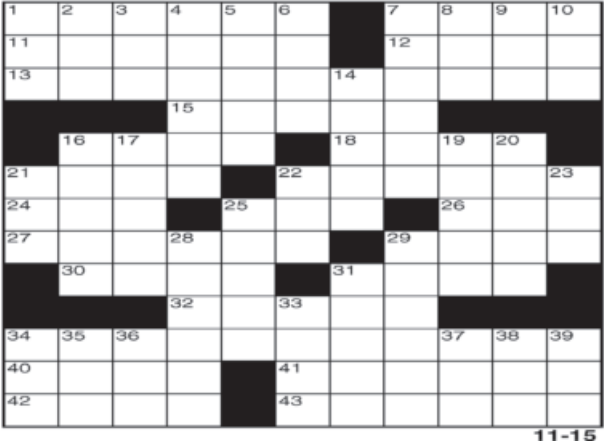
In the absence of such opportunities for women, it is great that the federation has enforced all-year-round training for them as this is what keeps the team practising.

In terms of any development of the team, the players should be the central focus and any other facilities or strategies should be built around them. I would say that the women’s football team has already been recognised quite well. To ensure that the rewards keep coming, the girls have to keep performing. But besides that, I believe that there are many corporate organisations in the country which can step in and help organise league tournaments for the women’s team every year. Ultimately, it is the girls’ performance that can ensure the support they get from people and from organisations.

From what I have seen, our women footballers tend to be very disciplined and determined, in the sense that they are able to achieve anything they set their mind to. This is something they should hold on to. Besides this, they need to keep working on the technical aspects of their performance. At the end of the day, a coach can provide players with certain information, but the hard work on the field has to be done by the team. My advice to the girls would be for them to keep improving themselves. At the optimum level of performance, recognition will come to them from all sides anyway, and success will follow them instead of the other way around.

CROSSWORD BY THOMAS JOSEPH

- ACROSS**
1 President Ford
7 Stage item
11 Aviator
Earhart
12 Went by horse
13 Proponent of reduced taxes
15 Rashness
16 Avocado dip, for short
18 Memo letters
21 Hits with a ray gun
22 Resentful
24 Little rascal
25 Day light
26 Inlet
27 Party group
29 Naked
30 Half of a sextet
31 “Memory” musical
- 32 Carts
34 Autumn drink
40 Poker payment
41 Niche
42 Peas’ places
43 Disordered
DOWN
1 Neon or helium
2 Outback runner
3 Agent, for short
4 Greek vowels
5 pastel shade
6 Year parts
7 Mass leader
8 Scepter
9 Poem of praise
10 For each
14 Laundry problem
16 Full range
- 17 Top
19 Chance to swing
20 Fruit basket items
21 Make a sharp turn
22 Tour carrier
23 Deli bread
25 Mall business
28 Moves like a crab
29 Rudiments phase
33 Cain’s father
34 Travel aid
35 First numero
36 Company abbr.
37 Second numero
38 Cain’s mother
39 Primary color



YESTERDAY’S ANSWERS

H	A	N	G	S		F	L	A	P	S
A	D	U	L	T		R	A	D	I	I
S	O	N	A	R		E	X	A	C	T
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A	L	I	C	E			T	E	A	S
L	I	T	E	R			A	T	B	A

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