



Prof Gawsia Wahidunnessa Chowdhury

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‘Science has to be for the masses’

Prof Gawsia Wahidunnessa Chowdhury has been on a lifelong journey of embracing scientific research focused on conservation education, plastic pollution, biomonitoring, and wetland ecology in Bangladesh. She is one of two Bangladeshis who were recently named among the top 100 Asian scientists. In an interview with **Abida Rahman Chowdhury** of *The Daily Star*, she talks about her current projects, the scope of Bangladesh’s policies and why they do not work, and how to encourage more women to take up STEM.

How did you end up in the field of science?

For as long as I remember, I wanted to be of benefit to people and the planet. So, when the time came to pick a career, I thought medical science would be the best fit. But as luck would have it, I did not get accepted into any good programmes. Then some of my best friends told me to apply at Dhaka University back in 1997. I got accepted into the zoology programme and I realised I could focus on people and the planet by working for the environment. At the end of our four-year honours, we had to pick a field we were interested in specialising. For me, it was an easy pick – fisheries, something so deeply connected to Bangladesh’s roots, which is how I ended up here.

Tell us a little about your first research project.

During my final years at DU, all students in my department were asked to conduct one research project each. My project was on the haematological aspects of *Labeo rohita* – a very small research looking at the components of the blood of Rui fish. I even published an article in the daily *Janakantha* on it. It was not much, but it did set me on a lifelong trail of scientific research.

What are some current research projects you are involved in? We know you have been working on plastic pollution, especially in the fishing communities in Bangladesh. Could you elaborate more on that?

Back in 2019, I received an email from my then examiner at Cambridge University, Dr Heather J Koldewey. She reached out to ask whether I would be interested in a research project funded by National Geographic. I obviously said yes, and hence began a new journey of learning. The National Geographic Society’s “Sea to Source: Ganges” river expedition used rapid assessment methods to provide the first empirical baseline data on the source, quantities, and flow of plastic pollution along the length of the Ganges River system – from the Himalayas to the Bay of Bengal. I was the Bangladesh lead of a very talented international female-led team of scientists, researchers and storytellers who embarked on this river expedition through India and Bangladesh. Between May and December in 2019, we travelled 2,575 kilometres (1,600 miles) of the transboundary Ganges before and after the monsoon season. We wanted to fill in critical knowledge gaps, and found that discarded fishing gear such as fishing nets are a significant source of plastics in the Ganges.

We also identified research gaps in Bangladesh that we are trying to address now. One of them is research on the trophic transfer of microplastics in the Sundarbans, which is being financially supported by the Grants for Advanced Research in Education of the Bangladesh Bureau of Educational Information and Statistics (BANBEIS) and the Ministry of Education. The research looks at how organisms in the Sundarbans are contaminated by microplastics. As part of the work with National Geographic, I also made a pledge to ensure we beat the threat of plastic pollution. As such, my work now is largely focused on combating plastic pollution. I am also working with the fisherfolk – especially women in Bhola’s Char Fasson upazila and fishing communities in Cox’s Bazar – where we are encouraging women in the fishing communities to get involved in the reuse and upscale of discarded fishing gear to transform them into marketable products, and we are also working towards establishing a supply chain for such products. Through this project, we are also closely collaborating with the World Bank towards implementing a Plastic Action Plan, which will act as a guideline providing tangible steps that the government can take in the future. I am also involved in promoting citizen science and active learning-based conservation education, which I believe

will go a long way in changing how we perceive and interact with nature, especially among the younger generations.

How bad exactly is our plastic pollution problem, and what changes are needed on the policy level?

Bangladesh ranks 10th globally in terms of the levels of mismanaged plastic waste. Yet, plastic pollution studies in the country are very limited and skewed towards just providing an overall observation or snapshot. In Bangladesh, waste generation is extremely

on their own, they are also connected to one another. To address these issues, the country must focus on investing in more scientific research, make science understandable and accessible to all relevant stakeholders, incorporate active learning-based conservation education programmes into the school curricula, and, most importantly, engage and broaden our horizons by initiating more collaborative research. In a resource-starved nation like ours, it is not easy to ensure that all the resources are available to us at all



Prof Gawsia Wahidunnessa Chowdhury studies samples during a research expedition.

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mismanaged, with plastics travelling through the extensive river systems and entering the Bay of Bengal.

When it comes to policies, it is important to note that Bangladesh is the only country in the world to ban single-use plastic bags way back in 2002, yet do you see any change in reality? The issue here is not that the policy is flawed, but its implementation is. When we formulate a law or a policy, we need to consider how it will affect its stakeholders. If you do not provide a cheaper, easier and more accessible alternative to single-use plastic bags, how can everyone get on board? More often than not, policies formulated in the comforts of a boardroom affect the poor disproportionately. Take, for example, the fishing ban – when it was implemented, no one really took into consideration how it would affect the fishers. Lobbying and repeated conversations with stakeholders has helped change some of the narrative around fishers’ plights during the bans. But more needs to be done in the coming years.

When you make a policy targeting fishers, you need to involve representatives from the fishing community. When you make a policy targeting plastic ban, you need to include relevant stakeholders before rolling out a policy or legal framework. This top-down approach just won’t work otherwise. You see, science has to be for the masses; if it is not understandable or accessible to the public and relevant stakeholders, we cannot make informed decisions, nor can we steer policies or conversations in the right direction.

What should Bangladesh be worried about in the next 20 years in terms of climate change?

As someone working closely on environmental issues, the three major threats for Bangladesh in the coming years are climate change, plastic pollution, and biodiversity loss. Monumental

times. So, say Dhaka University does not have a certain equipment needed for my research, I should be able to immediately connect to a colleague/student/resource person in a different university or research organisation who might have the equipment and get the job done. But unfortunately, in our country, that culture hasn’t quite caught up yet. We must promote more public-public, public-private and private-private collaborative research in the coming days.

Will you share the challenges you faced as a woman in science? How do you think we can address gender disparity in STEM?

The truth is, for a woman, especially in our South Asian/Indian subcontinent context, there are many, many barriers to being in science. Access to education itself is very skewed. I was privileged that my father, late freedom fighter Shahadath Chowdhury, and my mother, Shirajunnessa Chowdhury, were my biggest champions. And I was also blessed with my husband AM Saifur Rahman’s ultimate support in raising our child Abha. The reason I am mentioning this is because a woman faces many hurdles in the outside world as it is, but if she does not have a supportive family structure in place, the path to realising her dreams is that much harder. One of my students had to drop out of her PhD, even though she was extremely motivated and talented, because her husband was not supportive of her field work, which was a requirement towards the PhD. This is the story of so many women in our country. But I cannot let myself get disheartened, because the fight to ensure a level playing field for women in science is an ongoing one. One that I have pledged my allegiance to. As an Elsevier grant awardee, this is my official commitment as well. I always include and encourage more and more women to enter the field of STEM. If we do not go out there, we cannot break the existing systemic barriers.

Why don’t we understand the economic value of education?

Matilal Pal
is an economist who devoted himself, for the past 20 years, to education for the underprivileged in Bangladesh, as a former official of the Volunteers Association for Bangladesh (VAB).

MATILAL PAL

As a passionate worker in the sphere of high school education in rural Bangladesh, I have always closely monitored the government expenditure in the education sector. When the budget proposal for the 2023-24 fiscal year was announced, I was alarmed to read the observations of one of our greatest educationists, Dr Manzoor Ahmed. In an article published in *The Daily Star* on June 2, 2023, he wrote, “The record-high national budget of Tk 761,785 crore has in it the record-low allocation of Tk 88,000 crore for education – which amounts to 11.57 percent of the total budget and 1.76 percent of GDP.”

The annual GDP (gross domestic product), in simple terms, is what a country produces in a year within its boundaries. In other words, we can say on education, Bangladesh will spend 1.76 percent of what it earns. By any standard, this is a very small amount spent on such an imperative aspect of society. It is well-known that an increase in government expenditure in education can contribute to economic growth and poverty alleviation, as many studies have proven over the years, such as the study conducted by the International Monetary Fund (IMF) in Tanzania and Zambia.

Why does Bangladesh spend so little on education? Spending only 1.76 percent of GDP for the education sector, the country has ranked at a woeful 184th position (as of 2021) among all nations, according to The World Factbook. The answer to this question cannot be simplified into one factor; there may be many reasons. One important reason, I believe, is that Bangladesh, as a nation, does not even know the economic value of education. We seem to lack the basic knowledge that if a country spends more on education, one would get growth and less poverty. The basis of this hypothesis is reflected in the alarming scarcity of economic studies assessing the importance of education in Bangladesh.

Some people may argue that Bangladesh is capable of achieving a high economic growth rate despite low education expenditures. High growth rates can come about due to a number of factors, and taking that perspective into account, why don’t we ever realise that our country would have witnessed even higher growth rates if we spent more on education?

This pervasive, ignorant position regarding the economic value of education has cost the nation other losses too: Bangladesh has not been successful in transforming a large percentage of the youth population into productive human resources – half of Bangladesh’s demographic dividend period has passed. As one can expect the population to get larger, in the lower-income segment of the population, taking advantage of the dividend will impact this segment more favourably. This also means we are missing out on an opportunity to reduce income inequality as well.

In order to reverse the backsliding and dwindling importance of learning in our society, an economic approach to education must be promoted and prioritised. Specifically, the country

should study what the impact of investing, say, Tk 100 crore in the education sector would reflect on the supply of skilled manpower, productivity of the country through utilisation of skilled manpower, the growth rate, and equity. We don’t need to perform ostentatious econometric studies for that. A relatively simple and easily understandable “cost-benefit analysis” would serve the purpose.

Furthermore, there needs to be more advocacy towards an economic approach to spending in any area of the education field. As an example, in a previous article published in *The Daily Star*, we raised the issue of having English-medium education parallel to the Bangla-medium one.

The allocation of resources within the education sector, such as allocation to mother tongue Bangla and to STEM subjects, relative to English, were brought up in the article. All these issues can be addressed from the economic perspective. Broader issues such as allocation of resources to general education relative to vocational education is a major matter of choice. One can think of concrete issues such as the government establishing another university, engineering college or medical college, etc.

Moving from the national scene to the choices made by individual families, it is interesting to observe that an implicit economic analysis takes place each time decisions are made at the family level on children’s education. For example, one can perform a cost-benefit analysis behind a rural father’s decision to sell crop-producing land to afford higher studies for his son. In my view, these individual-level decision-making practices, which have implicit economic analyses behind them, can be refined formalistically to analyse the bigger picture. For example, a strict, economic cost-benefit analysis of a daughter’s higher education should be the same as a son’s. A female doctor’s medical school costs are not different from that of a male doctor. On the other end, a female doctor’s income should be the same as a male doctor. Thus, a formalistic economic analysis of a son or daughter’s higher education would result in an outcome where either the daughter or the son can go to medical school.

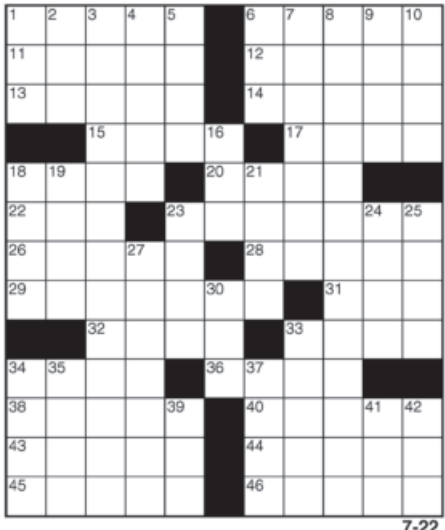
The advantage an economic analysis gives is that there is no room for “extra-economic” factors. To name a few, biases related to distinction between male and female, urban and rural, religious and communal, elite and commoner class, high income and low income – all these involve extra-economic factors. Outcomes freed of extra-economic biases are invariably higher-value, not to speak of higher equity-producing. Importantly, the field of education is fraught with extra-economic factors, particularly in developing and emerging economies, such as socio-economic “fads,” vacuous “prestige” issues, perception of “social class climbing,” English-medium Bangla-medium, domestic foreign degrees, etc.

The education sector in Bangladesh is a vital sector, for individuals as well as for society as a whole. Yet, a rational and analytical approach is sorely missing in Bangladesh. From national spending on education to a rural underprivileged family’s decision on children’s education – decision-making on education is “infested” with perceived, often irrational, factors at all levels. The nation, collectively and individual citizen-wise, is deprived of vital income and growth because of that.

CROSSWORD BY THOMAS JOSEPH

- ACROSS**
1 Trite
6 Newborns
11 Superior to
12 On the ball
13 Board, as a bus
14 Math comparison
15 Take cover
17 Choreo-graphy bit
18 Glided
20 Ship’s trail
22 Sister of sorts
23 Leaves
26 Have a spat
- 28 Boring movie
29 “Snook-ums,” e.g.
31 In shape
32 Gumbo veggie
33 Sound
36 Tadpole’s home
38 Bakery come-on
40 Mariner’s place
43 Speech problems
44 “Republic” writer
45 Playwright
Clifford
46 Rental choice

- DOWN**
1 Chips buy
2 White House nickname
3 Jack Reacher novel
4 Skirt
5 Give for a time
6 Butter unit
7 Sitka native
8 Jack Reacher novel
9 Lake near Buffalo
10 Cease
16 Ram’s mate
18 Small fastener
- 19 Lead on
21 Basilica part
23 Precious
24 Half of a sextet
25 Match parts
27 Scruffy
30 Travel aid
33 Cry of surrender
34 Ring of light
35 Like the Gobi
37 “Clumsy me!”
39 Braying beast
41 – loss
42 Dijon denial



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