

INTERNATIONAL WOMEN'S DAY

WOMEN IN SCIENCE

WHY ARE WE STILL SURPRISED?

NAHELA NOWSHIN

IN 2014, Maryam Mirzakhani became the first woman to win the Fields Medal, considered the 'Nobel Prize of Math', for her contributions to the dynamic and geometry of Riemann surfaces and their moduli spaces.

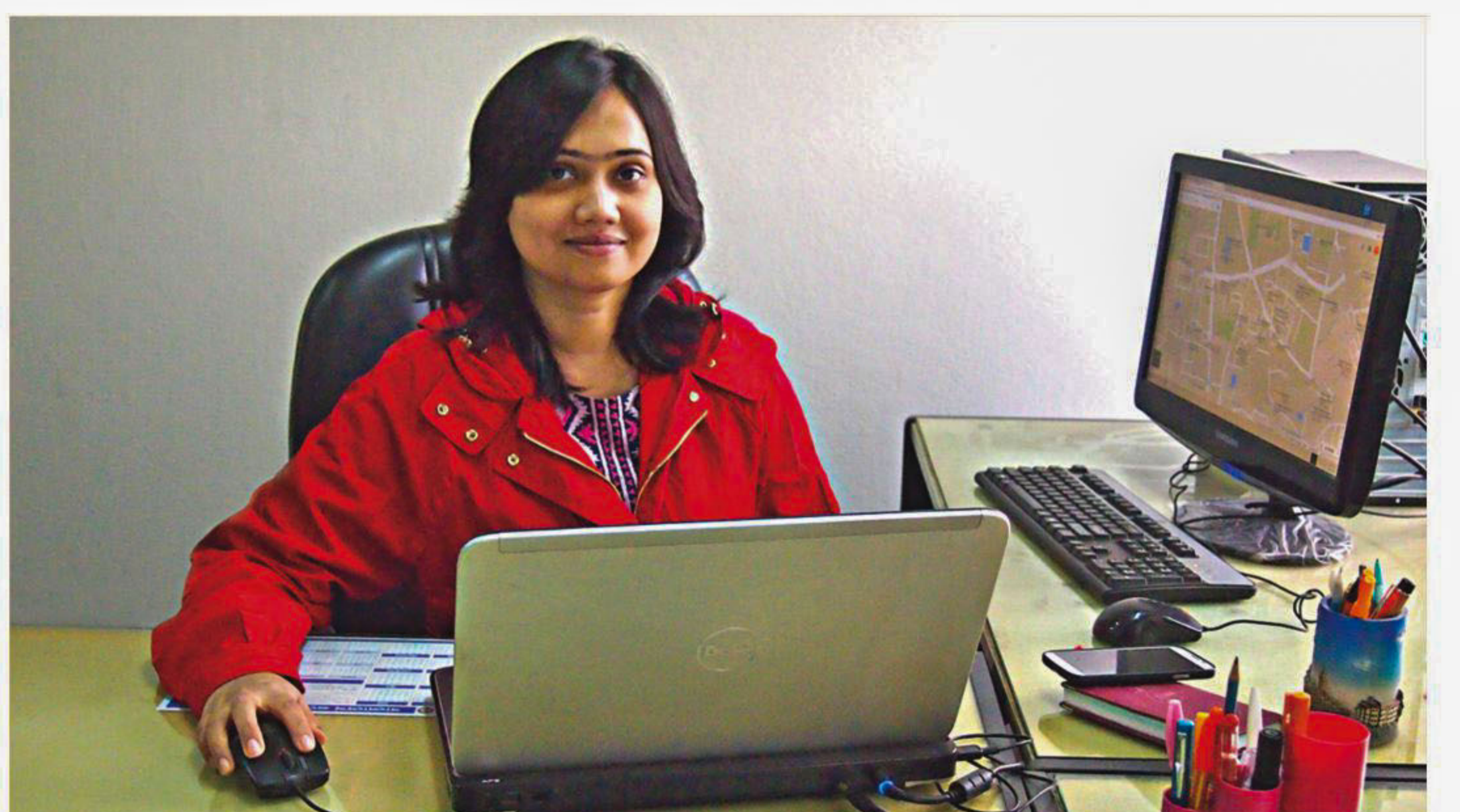
Mirzakhani's incredible accomplishment garnered worldwide attention largely due to her being the 'first woman' to win the most coveted prize in mathematics – a field we rarely associate women with. But the truth is, much like this Iranian mathematical genius, women around the world are achieving many such 'firsts' in the fields of science, technology, engineering and mathematics (STEM). More and more women are not only challenging stereotypes of STEM strictly being men's domain but are also increasingly being recognised for their work in areas where women remain severely underrepresented.

Dr. Tanzima Hashem, Associate Professor at the Department of Computer Science and Engineering (CSE) of Bangladesh University of Engineering and Technology (BUET), did just that when she became the first Bangladeshi to win the 2017 OWSD-Elsevier Foundation Awards for Early-Career Women Scientists in the Developing World. Along with four other women, Dr Tanzima received the award in Boston last month for her work in developing computational approaches to protect the privacy of people accessing location-based services.

While the terms 'computational' and 'location-based services' may throw one off at first glance, it isn't that hard to comprehend, once Dr Tanzima explains the focus of her research and why this is an important area of study in an era where smartphones and apps have become an integral part of our daily life.

"A commuter may want to know the nearest bus stop from his or her current location using a GPS-enabled smartphone, or a group of friends (located in different places) using location-based social networking sites such as Foursquare may want to find a restaurant that minimises their travel distance. Location-based applications optimise the utilisation of transport resources, reduce fuel consumption, and allow people to plan their daily activities with convenience," she says.

As we already know, the internet is a dou-



Dr Tanzima Hashem of BUET was one of five researchers to win the 2017 OWSD-Elsevier Foundation Awards for her work in developing computational approaches to protect the privacy of people accessing location-based services.

ble-edged sword that has not only revolutionised communication and technology but also presented novel threats such as cyber crimes and invasion of online privacy. Location-based services are no different and pose a similar threat.

Dr Tanzima aspires to find innovative solutions to adequately protect user privacy while ensuring that the growth of location-based services is not hindered. She goes on to explain, "Privacy threat is an important barrier for the proliferation of these services. Frequent access to location-based services enables a service provider to generate a complete user profile that does not only include a complete history of the user's movements but also reveals what type of information has been accessed, where and when. My goal is to allow people to have control over sensitive data

about their health, habits and whereabouts while accessing location-based services."

Introduced to this research area during her PhD at the University of Melbourne, Dr Tanzima hopes to apply her expertise in solving real life problems in Bangladesh, particularly with regard to safety of women in public areas and workers in garment factories and textile industries – two pressing concerns in a country plagued with issues of women's security and labour rights.

She elaborates, "I am working to develop technology based solutions to collect harassment data and workplace feedback in a manner that preserves privacy. My plan is to build an application that will help women to find safe paths to travel from one place to another by using harassment data. On the other hand, workplace feedback can help the government

to monitor the actual scenarios of workplaces."

Women like Dr Tanzima account for a fraction of academics, researchers and professionals at advanced career levels in STEM disciplines globally. In Asia, a higher proportion of women are found in science-oriented fields such as medicine, biology, and pharmacy compared to math-oriented ones such as physics, engineering and computer science, according to a study by UNESCO. Women are the most underrepresented not at the entry into science or math education as children, but in graduate studies, due to the "leaky pipe" of career development so that at every step up the ladder women's presence becomes rarer.

"Balancing family and career is one of the main challenges that women face in our society. I saw many female students of poten-

tial who had dreams of pursuing higher studies in computer science but because of family issues, lack of child care centres, and social restrictions, their dreams never materialised," states Dr Tanzima.

Girls and women in Bangladesh face the additional challenge of overcoming sociocultural barriers and perceptions related to education – women don't make good engineers and scientists; the end goal of higher education for girls is brighter marriage prospects; and a myriad of other such preconceptions about what women should study and why.

Dr Tanzima faced a similar situation when she was selected for admission in both Dhaka Medical College and BUET. "My relatives and friends suggested that I go to medical school as in our country there is a social belief that a woman does well as a doctor instead of as an engineer. Fortunately, my parents were very supportive and because I was so passionate about mathematics and problem solving, I decided to study CSE," she confesses.

The world today faces a multitude of complex challenges – from climate change to global health epidemics to rising inequality – whose solutions are even more complex. The role of STEM education has never been more instrumental in a technology-driven world where some of the fastest-growing, lucrative occupations are in STEM fields.

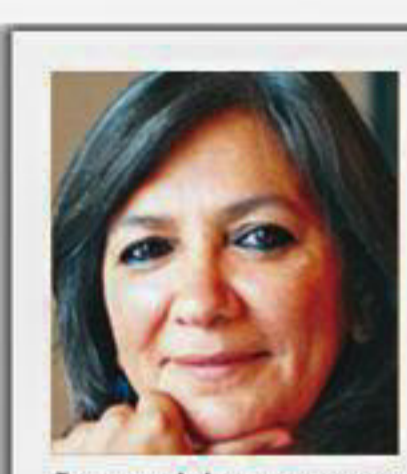
According to Dr Tanzima, the future of women and STEM goes hand in hand. "Participation of women in STEM is essential because diversity is a key factor for innovation and development. It is not possible to make scientific advancement by leaving half the population behind," she puts it simply.

The silver lining in all of this is that, like Dr Tanzima Hashem, more and more women in STEM fields in developing countries are not only defying all odds of global and national statistics, but also excelling at what they do. In redefining the course of technological and scientific progress, and even history itself, where women's contributions have been little recorded in books and archives, women in STEM are working towards a future in which their presence becomes the norm and their profession is no longer followed by the prefix of their gender.

The writer is a member of the editorial team at *The Daily Star*.



More women leaders can be the answer



JYOTI MALHOTRA

Are we breaking new ground? You must admit, dear reader, that few women are really interested in the answer to that question even if they're the ones asking it.

The point is, we've already moved on. Ever since Sheryl Sandberg reiterated the age-old call for "women of the world to unite" by asking us to "lean in", we know we have nothing to lose but our chains. That's why we can't pass up the opportunity to speak up.

Some of that feeling must ignite the minds of women who want to keep pushing the envelope wherever they work – at home or outside. The bottom line that moves us all is the question, "How relevant is what I'm doing to the world around me?" And, "What else can I do so I can influence my context?" Most of all, "How can I make a difference?"

So on this Women's Day, let's take a look at figures for women on top in the workforce, globally. Needless to add, they're abysmal. Out of 190 countries, only 9 have women as heads of state or government – Bangladesh is one of them – and not more than 13 percent parliamentarians are female. The corporate sector hardly fares better, with the number being a mere 15-16 percent. Even the non-profit world only has 20 percent women as bosses.

Of course, some of these figures don't tell the full story. For example in South Asia, which had some of the first female heads of state/government in the world – Indira Gandhi in India, Sirimavo Bandaranaike in

Sri Lanka, Benazir Bhutto in Pakistan and Sheikh Hasina in Bangladesh.

In India, the federal nature of the polity makes the issue more complex – and interesting. The head of most major political parties, save the ruling BJP, is female. Sonia Gandhi of the Congress, Mamata Banerjee of the Trinamool Congress, Mayawati of the Bahujan Samaj Party, formerly Jayalalithaa (and Sasikala) of the AIADMK... Only the DMK in Tamil Nadu and the Janata Dal (United) in Bihar are headed by men.

But despite all these women on top, which presumably means they have the power to influence and change the socio-economic conditions of their provinces – the fact remains that commensurate changes in maternal or infant mortality or health and education indicators are totally absent.

The recently concluded elections in India are a case in point. For example in Uttar Pradesh, India's largest state, certainly half the 220 million electorate is female. And yet, not one issue that directly affects this population became an election issue.

So we will discuss the Muslim population (18 percent), the Dalit population (20.5 percent), the number of Yadavs and other backward castes and those on other parts of the totem pole... We will look at "development" and whether it has come to the Prime Minister's Lok Sabha constituency in Varanasi. We will ask whether Dimple "bhabhi", wife of outgoing chief minister Akhilesh Yadav is a good "bahu" or not....

Dimple, of course, plays the shy daughter-in-law role to perfection, addressing rallies and asking voters for "munh-dikhai" for votes – a particular form of retrogressive behaviour, when the daughter-in-law first "shows" her face to the in-law community after she's married and gets rewarded in return (for what, I've always wondered).

Lalita Panicker, who heads the Opinion pages

of the *Hindustan Times* in India, puts it succinctly. "Unlike a caste vote or a Hindu/Muslim vote, there's no such thing as a woman's vote, because women will vote according to caste or region or religion. They don't have a collective voice and don't come together on one platform. Because they are fragmented, they don't have collective might," she said.

Part of the problem why women politicians aren't as determined to change things is because several are daughters and wives of their powerful male relatives – certainly, Sonia Gandhi and Benazir and Chandrika Kumaratunga (daughter of Sirimavo Bandaranaike, who in turn was the wife of her husband-prime minister) belong to that set. But for all those who aren't, like Mamata Banerjee and Mayawati, why don't they put their powerful stamp on socio-economic indicators, whether maternal mortality or access to schools and primary health centres?

Perhaps part of the answer is that the hurly-burly of politics is so tough that when women rise to the top, they reach there despite the toughest odds. If they cannot maintain that winning spree, they will be out in a trice. It's all very well to talk of gender equality in politics, but not if there are very few women in a man's world.

India has an answer to that conundrum, but at the lower *panchayat* level, where women have 50 percent reservation. Already, things are changing there in unforeseen ways. But higher up, at the provincial or parliamentary levels, male politicians cutting across party lines continue to gang up together to prevent reservation for women.

So what can we do to change this state of affairs, this International Women's Day? Name and shame, for a start. Let's call out these men, one by one. Let us ask for quid pro quos. Let us start, today.

The writer is an independent journalist based in New Delhi, India.

AMBASSADORS FOR CHANGE

The economic impact of gender based violence

NO country can afford gender-based violence. In Bangladesh, the costs of gender-based violence are estimated at 2.1 percent of the country's GDP. Each day, violence stops a girl from going to school and prevents a woman from taking a job, compromising their future and the economic and social development of their communities. Survivors are left to deal with physical injuries and emotional scars, while social and legal services struggle to respond. Can Bangladesh continue its much-heralded progress toward middle-income status if its economy is robbed of the invaluable resource of half its population?

Achieving gender equality is a top priority for Prime Minister Sheikh Hasina. Bangladesh has made remarkable progress in improving the lives of women and girls. Primary and secondary schools enrol as many girls as boys. Maternal and infant mortality have declined dramatically, and women form the backbone of the country's economic development. The readymade garment industry, Bangladesh's largest export sector, employs four million Bangladeshis, the majority of whom are women. The percentage of females in the sector is waning, however, and as this industry undertakes structural transformations, the role and place of women in the Bangladesh economy must become a priority for policies and programmes. The creation and expansion of microfinance that prioritises women entrepreneurs has increased female participation in economic activities and is among Bangladesh's most significant contributions to increased global prosperity.

Gender-based violence undermines this progress. More than 80 percent of currently-married Bangladeshi women are abused at least once during their lifetime, either by suffering physical, sexual, emotional or financial abuse, or controlling behaviour. Approximately two-thirds of married women report having experienced violence by a spouse within the past year. Bangladesh's high rate of child, early, and forced marriage puts millions of girls at increased risk for physical and sexual violence. Few victims report these incidents because they do not know their rights under Bangladeshi law or fear reprisal, stigma, or an unhelpful response from law enforcement. Fear of violence in the workplace or the street restricts women's mobility and limits their opportunities to earn an income. Working women who experience violence at home lose income due to days off and may face costs to access services. Eliminating gender based violence promotes Bangladesh's economic progress.

Ending this is a simple matter of right and wrong; ensuring girls and women can live without fear of violence is a fundamental step in the pursuit of non-violence, not only for girls and women, but for boys and men as well. Stopping the cycle of violence requires raising awareness and engagement at all levels of society. Change can start with local initiatives.

One example is the SHOKHI project – financed by the Netherlands Embassy and implemented by a consortium of Bangladesh Legal Aid and Services Trust (BLAST), Bangladesh Women's Health Coalition, Marie Stopes Bangladesh, and WE CAN Bangladesh – that trains women living in 15 Dhaka slums on ways to earn money for their families, linking them to potential employers through job fairs and referrals. Australia and the United Kingdom are supporting the World Food Programme to develop livelihoods for vulnerable women in Cox's Bazar district, where women's self-help groups are starting bank accounts with savings contributed by each participant and individual women can buy start-up assets and receive entrepreneurial training.

Changing the mindset and putting in place the economic fundamentals and necessary institutions to accelerate growth and reduce poverty, leaving no one behind, will be a key part of the formula to achieve middle income status. Improving the social status and rights of women and girls is a crucial part of this transformation. Each of us can take simple steps to accelerate this transformation by refusing to tolerate or excuse gender-based violence and by offering help to those experiencing abuse. We, the Ambassadors for Change, representing the governments of Australia, Brazil, Canada, Malaysia, the Netherlands, Norway, Sri Lanka, Sweden, the United Kingdom and the United States, as well as UN Women, the United Nations Population Fund, the United States Agency for International Development and the World Food Program, call upon each of you to stand with us, our Bangladeshi sisters and male allies to end gender-based violence once and for all!

The writers are High Commissioner of Australia to Bangladesh; Ambassador of Brazil to Bangladesh; High Commissioner of Brunei Darussalam to Bangladesh; High Commissioner of Canada to Bangladesh; Ambassador of France to Bangladesh; High Commissioner of Malaysia to Bangladesh; Ambassador of the Kingdom of the Netherlands to Bangladesh; Ambassador of Norway to Bangladesh; High Commissioner of Sri Lanka to Bangladesh; Ambassador of Sweden to Bangladesh; High Commissioner of the United Kingdom to Bangladesh; Ambassador of the United States to Bangladesh; USAID Bangladesh Mission Director; Country Representative, UN Women; Acting Country Representative, United Nations Population Fund (UNFPA); and Country Director, World Food Program (WFP).