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Editor's Desk

The October 2019 issue of Thinking Aloud focuses on "The Fourth Industrial Revolution". The first page article titled "The Political Economy of the Fourth Industrial Revolution" stresses that there is a need for concerted and strategic efforts made by governments in developing countries to face the challenges of the fourth industrial revolution. While countries prepare themselves for embracing the fourth industrial revolution through appropriate economic and labour market policies and strategies, the success will also depend on the 'inclusiveness' of these strategic development efforts. The second and third pages of this issue present three articles. The article on "Boosting the Low Productivity in Agriculture Sector in Bangladesh re-states the importance of agriculture sector for Bangladesh and emphasizes on enhancing the productivity of this sector. The article on "Is Automation a Threat for RMG Workers in Bangladesh?" emphasizes that automation may lead to layoffs and job cuts. Since workers will be replaced by technology and robots. On the other hand, automation may also lead to job creation. Machines need supervision, experience wear and tear, therefore, repair work is necessary and maintenance is required. As a result, some new jobs may be created led by automation. The article on "Promoting Growth and Innovation Through R&D Spending in Bangladesh" highlights that the government can take initiatives to declare the next five years as the priority period for the development of overall capacity of the workforce. By introducing intensive skills training measures and initiatives to boost quality education, the government can amplify the stock of human capital in the country. The fourth page covers the events that took place in the month of September.

Inside this issue

The political economy of the fourth industrial revolution

Selim Raihan

There have been four waves of industrial revolutions so far in mankind history. The first industrial revolution (from the mid-seventeenth century to the mid-eighteen century) took place in Europe and the United States. This revolution made a switch from hand-based to machine-based production processes and included the use of steam and water power, chemicals and iron manufacturing, and the development of mechanized factories.

The second industrial revolution (from the late nineteenth century to the early twentieth century) was a phase of rapid industrialisation. The technological revolution in the form of telegraph and rail networks, wider use of public utilities (gas, water and sewage system), and factory electrification featured the second industrial revolution.

The third industrial revolution had begun since the mid-twentieth century with the emergence of nuclear energy, the rise of electronics-based transistor and microprocessor, computer, telecommunication, biotechnology, and high level of automation in the production process.

The fourth industrial revolution, that has been taking shape since the late of the twentieth century, builds upon the third revolution and the digital innovation. Artificial intelligence, genome editing, augmented reality, robotics, Internet of things, and 3-D printing are the features of the fourth industrial revolution.

What makes the fourth industrial revolution different from past three industrial revolutions? The fourth industrial revolution is characterized by merging technology that is argued to obscure the lines between the physical, digital and biological spheres. It is commonly argued that the magnitude and intensity of these changes are leading to the transformation of the entire production, management and governance systems in ways which are unprecedented. It should, however, be mentioned that this is not a very new phenomenon. All industrial revolutions saw many 'unprecedented' inventions compared to their immediate past periods. However, one should be careful while analysing the fourth industrial revolution so that the analysis doesn't end up calling it as a 'mystical' phenomenon – something which can't even be explained properly due to its 'unprecedented' velocity of change. At the core of all industrial revolutions is the political economy of the relationship between technological advancement and economic development. A better understanding of the fourth industrial revolution requires political economy analysis of the relationship between technology and development.

The relationship between technology and economic development has been complex. Under the free market economy, the demand for new technology is driven by the competition among firms in the production process to enjoy internal economies of scale and to become more competitive in terms of price and quality. At the industry level, the demand for new technology can be driven by the compulsion to generate external economies of scale. Also, the demand for new technology emerges from consumers' evolving preferences and choices, and when some firms want to tap the new and emerging markets for goods and services based on the anticipation of the changes in consumer preferences. In contrast, the supply of technology is dependent on a variety of factors, which include the spending on research and development (R&D), both by the government and the private sector (at the firm or industry level), nature of value chain of any goods or services which encourages innovation, level of development of any economy (and it is obvious that major innovations take place in the more advanced countries while the majority of the developing countries remain at the recipient end), strategic vision of the government and the private sector, quality of human capital available in the economy, and the quality of research in the universities and research organizations. The supply of new technology, however, does not go hand-in-hand with the demand for new technology.

Like the past three other industrial revolutions, the fourth industrial revolution also has the promise of enhancing global production level and improving welfare and the quality of lives of the people across countries. The new opportunities include a dramatic reduction in the transaction costs in terms of accessing information, adopting new technology in the production process, availing services, consumption of goods, and trade within and between countries. Social sectors, like health and education, have already started seeing new approaches and potentials of benefits of the fourth industrial revolution. While there are fears of job losses due to automation, there is also scope for the creation of new jobs driven by the emergence of new production and supply processes of goods and services. The net effect on jobs in an economy is dependent on the success of the country in terms of economic diversification and development of the skill levels of the workforce.

However, while analysing the implications of the fourth industrial revolution for the people at the country or global level, it should be kept in mind that there are huge disparities, in terms of the access to the benefits of technological development, among the people within a country and between the countries. There exist multiple 'worlds' of technological advancement within a country and at the global level. While it is highlighted that 'technology' has a major 'public-good' characteristic and, therefore, it's 'nonexcludable' feature should be promoted, the political economy dynamics behind the process of and entitlement to technology in most cases leads to the situation where the 'non-exclusion' principle doesn't hold. Given the nature of the fourth industrial revolution, which has a thrust reliance on artificial intelligence, in future, talent, merit, and intelligence will play a critical role in the distribution of the gains. The high degree of inequality in the access to quality education and health services in most of the developing countries is likely to lead to the situation where 'intelligence' becomes the scarcest factor of production owned by a few in the society. At the global level too, the gap between countries capable of such continuous innovation and the countries at the periphery is likely to intensify.

Therefore, there is a need for concerted and strategic efforts made by governments in developing countries to face the challenges of the fourth industrial revolution. While countries prepare themselves for embracing the fourth industrial revolution through appropriate economic and labour market policies and strategies, the success will also depend on the 'inclusiveness' of these strategic development efforts.

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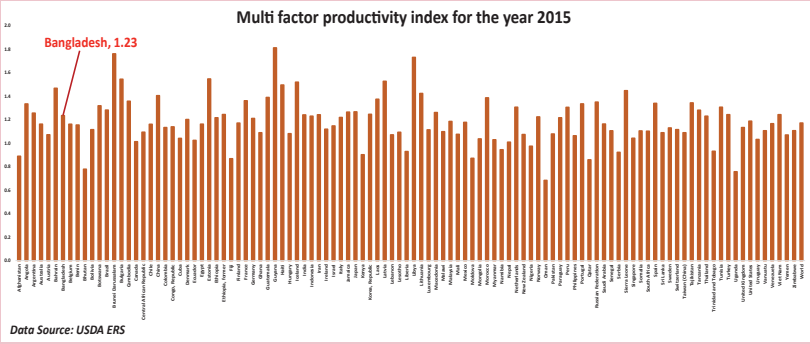
Boosting the low productivity in agriculture sector in Bangladesh

Zubayer Hossen

There is no denying that augmentation of agriculture is imperative for Agriculture is imperative for the sustained development of an economy. Without developing human and productive capacity of the agricultural sector a significant progress in promoting economic growth, reducing poverty and enhancing food security cannot be achieved in most of the developing countries. A strong and vivacious agricultural system forms a primary pillar in the strategy of overall economic growth and development of the country.

Bangladesh, as a developing country, is no exception. The agriculture sector is at the core of the economy of Bangladesh. Although the contribution of agriculture to GDP has declined in recent time, it still accounts 14.2 percent of GDP (BBS, 2017-18). Besides, it remains the largest sector in terms of employment and livelihood, with about 41.0 percent of Bangladesh's workforce engaged in it as the principal occupation (LFS, 2016). Also, contribution to export earnings of Bangladesh and supply of the bulk of basic food to the population proves agriculture a major sector of the economy. Besides, because of the existence of a strong forward and backward linkages within the agriculture sector and with other sectors of the economy, the agriculture sector has been an essential factor in stimulating the growth and generating income for a large number of people in Bangladesh.



The agriculture sector can contribute significantly to economic growth in normal times and might be one of many solutions to aid escaping from poverty in Bangladesh. However, failure to swell productivity can be a critical constraint to meeting rapidly rising demand. The graph illustrates the multi factor productivity or total factor productivity index for 108 countries for the year 2015. The data presented in the graph show that the TFP index is 1.23 which is higher than the index for world which is 1.18. Of course, there are more efficient countries. The top five countries in the list are Guyana (1.81), Brunei Darussalam (1.76), Libya (1.73), Estonia (1.55), and Bulgaria (1.54). Among South Asian countries, India (1.24) has the most productive agriculture sector. In Asia region, China (1.40) has a better performance.

However, though the data for agricultural productivity indicate that Bangladesh is in a pleasant position, we get to know the real situation once we look into the disaggregated data. The 2017 data for Bangladesh show that agriculture and forestry has a TFP index score of 1.01 which is lower than manufacturing (1.08), hotel and restaurants (1.09) and education (1.58) sectors' TFP (GED, 2019). Further, instead of increasing, the growth rate of TFP index has tumbled and it has gone down to 0.7 percent from 0.9 percent during the period 2001-2010 to 2010-2014 (IFPRI, 2018).

The average agricultural spending for Bangladesh has estimated to be 8.7 percent of central government expenditure for the years 2012-2016 (FAOSTAT, February 2019). This is one of the highest expenditures by government in the world. Why has Bangladesh not been successful in improving the productivity level in agriculture sector despite having one of the highest share in total government spending? Though there might have many reasons, there are three major reasons contributing to this comparatively low productivity in agriculture sector. They are (i) high cost of inputs, (ii) inefficient investment, and (iii) absence of strong institutions. The TFP rightly segregates the first factor causing low productivity in agriculture sector. The TFP is usually measured as the ratio of aggregate output (e.g., GDP) to aggregate inputs. Therefore, high value of inputs ends with low TFP value. In Bangladesh, high usage of inputs is observed in agriculture sector. Thus, it increases the cost of production of agricultural goods and lowers the ratio of output to input. For instance, farmers in Bangladesh use a higher amount of fertilizers and water compared to the amount required. It ultimately increases the cost. Moreover, lack of efficiency in the case of investment is noticed in agriculture sector. Therefore, though the public and private financing is there, agriculture sector fails to extract the full benefit of this investment. The productivity level of this sector cannot be improved if the idea of "efficient investment" is ignored. Similarly, absence of right institutions is affecting the productivity level. There are short term, medium term and long term strategies, i.e. five year plan, delta plan 2100, etc. outlined for agriculture sector. The proper and timely implementation of these policies may help to attain a higher productivity level in agriculture sector. However, lack of strong implementation, evaluation and monitoring agencies delays the process and obstructs the progress.

To have a sustainable agriculture sector, this is the high time for Bangladesh to realise the true importance of this sector and undertake the required initiatives to take the productivity level of this sector to a higher level. For that, Bangladesh needs to lower the cost of production; increase the level of investment efficiency; and ensure the presence of strong implementation, evaluation and monitoring system.

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Is automation a threat for RMG workers in Bangladesh?

Sunera Saba Khan

The fourth industrial revolution is under way and is bringing with it a series of upheavals. Robotics, automation, machine learning, and artificial intelligence are gradually making their way into the production process all over the world. Such major breakthroughs in the production process will have adverse effects on the job market and the Bangladesh economy. As a result of automation the demand for workers in the RMG sector is declining and the future for RMG workers is rather bleak. The introduction of machinery in the production process has a higher probability of affecting unskilled and semi-skilled workers adversely compared to the skilled workers. The Ready-Made Garments industry is the main source of manufacturing employment in the country. However, according to government's a2i project and International Labour Organization (ILO) around 60 percent (5.38 million) of garment workers in Bangladesh will become unemployed by 2030 and be replaced by robots due to automation in the RMG sector, brought about by factory owners.

Bangladesh has always been known for having an abundant supply of cheap labour. The garments sector has played an important role in uplifting the economy of Bangladesh. The sector has created numerous jobs, pushed down the number of people living in poverty and fostered women empowerment. The garment sector was a major reason why female labour participation increased in the country. On the downside a major drawback the country faces is that a large portion of the workers employed in the RMG sector are unskilled. Therefore, the unskilled workers are losing out since as a result of automation the demand for skilled workers is increasing. Bangladesh is known as the second largest garment and textile exporter in the world and the garments sector has created jobs for over four million people. Yet the country lacks the capacity of transferring workers from the apparel industry to another industry. The country also cannot create sufficient jobs for the workers who will be laid off as a result of automation. Thus leading to the probability of mass unemployment in the country.

Despite a large amount of surplus labour in the country, the advances in technology have made it more lucrative for producers to opt for automation. Garment owners in the country are now focused on integrating automatic machinery in the production process. However, automation will affect different countries differently, depending on the stage of development they are in. In a country like Bangladesh it will take time for the RMG sector to become completely automated and there are huge costs involved in the process. Fourteen steps are involved in transforming fabric to ready-made garments. Driven by technological innovation automation has been introduced almost at all stages of apparel making and in turn reducing the dependency on labour. Due to technological transformation all the way through the value chain a number of challenges throughout the production process has been overcome.

According to Bangladesh Garments Accessories and Packaging Manufacturers and Exporters' Association (BGAPMEA), every year around 100 new factories are beginning operation and are using advanced technology in the entire apparel making process.

Featured Article

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Furthermore, these new factories also maintain compliance and factory rules and regulations strictly. Approximately 250 factories in the country are fulfilling orders with the use of latest technology and machinery. The use of advanced technology assists in cutting down production costs significantly (30-40 percent) and has spill-over benefits in terms of higher productivity and helps cut down on lead time. Introduction and use of automatic machinery in the RMG sector is costly but will help the sector reap benefits in the long run in terms of higher efficiency. However, automation leaves the threat of production being redirected to the industrialized countries. Reshoring may also take place, since producers demand a skilled labour force.

Since automation in the RMG sector is in progress and Bangladesh has no other option other than embracing automation to take the apparel sector to the next level, the country needs to face the inevitable challenges along with the opportunities brought about by the fourth industrial revolution. Automation has employment implications. Automation may result in a two-way effect for Bangladesh. Therefore, automation may lead to layoffs and job cuts. Since workers will be replaced by technology and robots. On the other hand, automation may also lead to job creation. Machines need supervision, experience wear and tear, therefore, repair work is necessary and maintenance is required. As a result, some new jobs may be created led by automation. However, the type of jobs created as a result of automation require skill and education. Since the country has a scarcity of skilled labour it will be challenging to fill these posts. One positive side of automation is improvement in the quality of jobs in the RMG sector and a rise in productivity, however, the quantity of jobs will be lower.

In order to address the issue of job displacement brought about as a result of automation the government and policy makers need to step in. The fourth industrial revolution has given rise to the need for skill development of workers. Automation will lead to creation of new jobs in the service sector and the government needs to divert some of the workers to the service sector. However, this will require investment in education and training. Furthermore, the government needs to ensure favorable labour laws, take intiatives for skills development and provide social protection. There is a dire need for training for raising labour market skills to ensure job retention and assist the terminated workers to find alternative ways of making a living. Bangladesh also has the advantage of realizing the demographic dividend. In order to avail the benefits of the demographic dividend, investment in training and education is mandatory. Restructuring of the education system and reducing the gap between the education system and the industry needs to be addressed. This will reduce our dependence on expatriate managers and help curb youth unemployment. Moreover, the government has a target of raising export earnings from the RMG sector to US$50bn by 2021. Therefore, the government must take immediate action to prepare our labour force and the economy for the challenges that lie ahead and facilitate the smooth transition of the RMG industry to a higher value added industry.

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Promoting growth and innovation through R&D spending in Bangladesh

Rafiqua Ferdousi

In early 2018, Bangladesh fulfilled all the three eligibility criteria for graduation from the list of Least Developed Countries (LDCs) of the United Nations. The Committee for Development Policy (CDP) is mandated by the General Assembly (GA) and the Economic and Social Council (ECOSOC) to review the list of LDCs every three years and to make recommendations on the inclusion and graduation of eligible countries on the basis of per capita income, a human assets index and an economic vulnerability index. The committee is comprised of 24 independent development experts from around the world who reviews the list of LDCs, based on a rigorous methodology using a wide range of sustainable development indicators which reflect long-term structural barriers. Thus, countries are eligible to enter or leave the LDC category if they meet the defined inclusion or graduation thresholds of the criteria. The graduation thresholds are usually set higher than the thresholds in order to ensure that graduation is eventually sustainable. Thus, Bangladesh now has the prospect of moving ahead from the list of LDCs subjected to the re-assessment of ECOSOC in 2024.

Likewise, according to the World Bank, Bangladesh became a lower middle-income country in 2015. The World Bank assigns the world's economies into four income groups namely, high, upper-middle, lower-middle, and low. This assignment is based on GNI per capita which is calculated using the Atlas method. The units for this measure and for the thresholds is current US Dollars. These classifications are used by the World Bank to aggregate data for groups of similar countries. Each year on 1st of July, the classifications are duly updated for two main reasons. First, factors such as income growth, inflation, exchange rates, and population change influences GNI per capita in each country and second, to inflation adjust and maintain the dollar thresholds by which separate the classifications fixed in real terms. After the new thresholds are determined, they remain fixed for 12 months regardless of subsequent revisions to estimates. As of July 1 2018, the new thresholds for classification by income are: high-income (>12,055 GNI/capita at current USD), upper-middle income (3,896 - 12,055 GNI/capita at current USD), lower-middle income (996 - 3,895 GNI/capita at current USD) and subsequent low-income countries.

At present there is a broad based aspiration that Bangladesh will soon move up to the middle-income country category. However, in order to ensure a successful transition to the middle income country status the country must find effective ways to overcome a number of challenges and obstacles. Given the backdrop of the fourth industrial revolution (4IR), at present there are still about 24 million people in Bangladesh who live below the poverty line and the labour force participation rate is only around 58.2%. Thus, a lot of effort will have to be generated to increase the current GNI per capita of 1,909 USD to the middle income threshold of 3,896 USD in the coming years. Although, at first glance overcoming these hurdles may appear to be daunting, technology and innovation can play a key role to promote the sustainable growth of Bangladesh.

The government can adopt several strategies to amplify the overall gross national income. The government can take initiative to declare the next five years as the priority period for the development of overall capacity of the workforce. By introducing intensive skills training measures and initiatives to boost quality education, the government can amplify the stock of human capital in the country. This in turn will have multifaceted implications on economic growth and development of the country. Citizens with higher level of education and skills will be more proactive, innovative and productive. As a result, they will be able to avail better jobs at both home and abroad. The government can also increase employment and productivity through promotion of special economic zones and further integration into the global value chain. A rounded approach to reduce unnecessary transaction cost and various other forms of market failures can also improve the overall innovation scene and the flow of foreign direct investment in the country.

Many nations of the world are now investing heavily on research and innovation in order to stay ahead in the race of competitiveness. According to the Global Innovation Index (GII) of 2019, innovation is blossoming around the world despite the recent slowdown of the global economic growth. In fact, there has also been a shift in the global innovation landscape as some middle-income economies are on the rise. Countries around the world are now increasingly focusing on innovation quality than quantity. While it is true that the innovation inputs and outputs are not equitably shared by all the economies, but there are examples that economies can get different return on their innovation investments compared to their comparators. When it comes to innovation, being the small country that it is, Bangladesh offers immense potential. Bangladesh is well known for some of the cutting-edge social innovations and social enterprises have been a success story in Bangladesh. Consequently, prioritising investment on R&D activities across different sectors may also enable the country to both accelerate and sustain its growth journey.

Last but not the least, the government must also prepare for the imminent climatic threats that are ahead of the country and duly invest on technological solutions to reduce the environmental impact of development activities. It is imperative to keep in mind that drastic actions taken up for a short interval may sometime bring about some of the immediate expected results, but the question remains that what will follow in the long run? As the world prepares for embracing the forthcoming fourth industrial revolution, Bangladesh must also prioritize investment in R&D to grasp the immediate opportunities and mitigate the uncertainties of the future. Finally, increased investment in human capital formation and R&D activities will also ensure continued growth beyond the upper middle income status and help Bangladesh to escape the possible risk of being entangled in the 'middle income trap'.

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SANEM and World Bank jointly organised the 4th South Asia Economic Network Conference on Subnational Finance and Local Service Delivery in Dhaka

SANEM and the World Bank organised the 4th South Asia Economic Network Conference on "Subnational Finance and Local Service Delivery" from September 7-8, 2019 at BRAC Centre Inn, Dhaka. The chief guest of the inaugural session was Mr. Muhammad Abdul Mannan, MP, Honourable Minister, Ministry of Planning, Government of the Peoples' Republic of Bangladesh. Dr. Mercy Miyang Tembon, Country Director for Bangladesh and Bhutan, The World Bank was also present at the session. Dr. Hans Timmer, South Asia Chief Economist, The World Bank, Dr. Ahsan H. Mansur, Executive Director, PRI, Dr. Ishrat Husain, Advisor for Institutional Reforms and Austerity to Prime Minister of Pakistan, Dr. Isher Judge Ahluwalia, Chairperson, Indian Council for Research on International Economics, and Dr. Selim Raihan, Executive Director, SANEM attended the conference. Twelve papers were presented by researchers from various South Asian countries.

Dr. Selim Raihan made a presentation at the conference organised by UNU-WIDER and UNESCAP in Bangkok

Dr. Selim Raihan, Executive Director of SANEM made a presentation on "Structural transformation, inequality dynamics and inclusive growth in Bangladesh" in the session titled "The Developer's Dilemma II" on 11 September 2019, the first day of the three-day international Conference organized by UNU-WIDER and UNESCAP in Bangkok, Thailand. The session was chaired by Professor Ravi Kanbur, Chair of the Board of UNU-WIDER and Professor of Economics at Cornell University. United Nations University World Institute for Development Economics Research (UNU-WIDER) in partnership with the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) organized the conference on transforming economies in Bangkok, Thailand, during 11-13 September 2019.

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The workshop on "Bangladesh Institutional Diagnostic" held in Dhaka

The workshop on "Bangladesh Institutional Diagnostic" was organized from 2-3 September 2019 at BRAC Centre Inn, Dhaka where the first drafts of the Bangladesh Institutional Diagnostic were discussed. This research project is led by Dr. Selim Raihan, Executive Director, SANEM. The participants of the workshop were Prof. Francois Bourguignon, Former Chief Economist, the World Bank and Chair Emeritus, Paris School of Economics, Prof. Thorsten Beck, Cass Business School, London, Dr. Elizabeth M. King, Former Director of Education, Vice President for Human Development, and Senior Education Adviser of the World Bank, Prof. Jean-Philippe Platteau, Emeritus Professor of Economics, University of Namur, Belgium, Prof. Jaime de Melo, Emeritus Professor, University of Geneva, Prof. Christopher Heady, The University of Kent, Dr. Umar Salam, Oxford Policy Management, Mr. Josh Chipman, OPM, Dr. Bazlul Haque Khondker, Chairman, SANEM , Dr. Mirza M. Hassan, Senior Research Fellow & Head, Governance & Politics Cluster, BIGD, Dr. Sayema Haque Bidisha, Research Director, SANEM and researchers from SANEM.

World Bank and SANEM jointly organised the workshop on "Writing, Presenting, and Publishing Academic Papers" at SANEM Office

SANEM in association with the South Asia Economic Policy Network and the World Bank organised a workshop on Writing, presenting, and publishing academic papers on 05 September 2019 at SANEM office. The workshop was conducted by Dr. Robert C. M. Beyer, Economist at the South Asia Office of the Chief Economist at the World Bank and Ms. Rucheta Singh, Consultant at the South Asia Office of the Chief Economist at the World Bank. In the first session titled "Research writing – do's and don'ts", Dr. Robert covered the Do's and Don'ts of academic writing and gave advice on writing a good paper and how to get it published. Ms. Rucheta talked about how to present academic research in her session titled "How to best display and present your research". Dr. Selim Raihan, Executive Director of SANEM handed over certificates to the participants at the end of the workshop.

Events

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SANEM is a non-profit research organization registered with the Registrar of Joint Stock Companies and Firms in Bangladesh. Launched in January 2007 in Dhaka, it is a network of economists and policy makers in South Asia with a special emphasis on economic modeling. The organization seeks to produce objective, high quality, country- and South Asian region-specific policy and thematic research. SANEM contributes in governments' policy-making by providing research supports both at individual and organizational capacities. SANEM has maintained strong research collaboration with global, regional and local think-tanks, research and development organizations, universities and individual researchers.

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