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Fuel to a Man's Dream



Towhidul's project aims to increase the economic development of Bangladesh by producing fuel from polythene and related substances in order to reduce waste from the environment.

SANJIDA CHOWDHURY

It is said that dreams are often the most profound when they are the most unusual. This certainly holds true for Muhammad Towhidul Islam. The journey of this 25-year old has been a roller coaster ride, with continuous strikes of poverty and rejection. Towhidul was born and brought up in Jamalpur. He has recently completed his Diploma in Civil Engineering from Jamalpur College of Engineering. Even though he grew up in a financially constrained family, it was his resolute dreams that helped him stand strong every time he collapsed. He believes, "Everything is possible if one cares enough to value his dreams."

Muhammad Towhidul Islam is the winner of the reality show Udbhobker Khoje organised by a2i -- a flagship programme of the Prime Minister's Office, which hopes to inspire the developing and developed nations on public service innovations by sharing groundbreaking insights supported by examples, lessons and knowledge. It strives to unfold the true potential within the nation builders to create remarkable innovations that can ease and improve the lives of citizens. Towhidul's project aims to increase the economic development of Bangladesh by producing fuel from polythene and related substances in order to reduce waste from the environment. The title of his project is "Production of Fuel and Charcoal from Polythene and Plastic". This won the championship at the grand finale of the reality show on January 16, 2018. The government backed Towhidul's project from the start with the prize money and circumstantial facilities. He now has a huge land from the Jamalpur Municipal Committee with all the necessary raw materials to implement his idea in a more effective manner.

Towhidul's love for chemistry dates back to when he was a school boy. It may sound strange, but his love for the subject derived from one of his favourite pastimes -- gardening. He realised that polythene and similar plastic substances made the land infertile for trees, and he wanted to do something to change that. "Another reason behind loving chemistry was my sickness. I was malnourished when I was growing up.

For various reasons, I could not attend school properly. I used to stay home and was labeled as the bad student for the way I was. The boy, who was fond of his school, started bunking classes to avoid these embarrassments. Sitting home alone, I started reading books and surprisingly found a love for chemistry," he adds.

From the sixth grade, Towhidul



Muhammad Towhidul Islam.

started studying different branches of chemistry. His first attempt included separation of hydrogen from water in order to make a gas, which is similar to how fuel functions. The project was not entirely successful but that paved the path for his later experiments. He carried out all the different experiments in his textbook with his ever-growing interest. However, he did not have the minimum equipment to run the tests. In a family where having daily meals was considered a luxury, Towhidul could never imagine asking for money to buy laboratory kits.

Out of curiosity, Towhidul broke open toys to examine the motors and bolts inside. People around were irritated, and forbade other children to talk or play with Towhidul. His school was his last harbour to seek help, but it eventually turned its back on him after he broke some test tubes in the laboratory. His school lab was under-equipped. So, most of the time, teach-

ers did not even allow him to enter, fearing that he would break something.

Towhidul's knack for chemistry was entirely exposed after he stepped into higher secondary level. He passed his HSC from Shaheed Ziaur Rahman Degree College in 2011. He was glued to his chemistry book in the first year. The hydrocarbon chain of ethylene made him worried and fascinated at

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the same time. Since everything made of this chain hampered the environment, his mind started thinking about ways to destroy this chain. That time, one of his college professors, Mr Ikramuz Zaman, took notice of Towhidul's interest and started mentoring him. "Without Ikram Sir's thorough supervision and technical assistance this project would have been impossible. He constantly pushed me to work harder and found the smallest loopholes, which would have turned out to be catastrophic," says Towhidul. After finding Ikram Sir beside him, Towhidul moved forward with confidence. He started collecting every material that contains hydrocarbon chain of ethylene and made an airtight chamber to burn them. With immense persistence and

intricate regulation, Towhidul detected the exact temperature (350° C) for when the hydro carbon chain would start to break. After some more trials, he compressed some vaporised gas in order to cool them down. Finally, he reached his mission of obtaining fuel from polythene.

"My joy knew no bounds after I realised what had happened. It was midnight but I woke my family up and showed my invention to them. My mother had happy tears in her eyes. I could not sleep for the rest of the night," he says. Mr Ikramuzzaman, Towhidul's mentor, was immensely proud of him.

In 2010, Towhidul won the Jamalpur District Level Science Fair. It was the first time he participated in a science fair. His project was titled "Commercially Utilisable Fuel from Polythene". People were curious about his oil, and suggested that he should sell it commercially. The judges were impressed with his execution and awarded him the third prize. This prize brought name and fame to Towhidul's life, making him well known for his invention. "Apart from the prize, what made me more motivated was the gift I got from Ikramuzzaman Sir. He gave me a lamp to light up my room. After three long years, my house had a well-lit room," shares Towhidul.

Winning the third prize greatly motivated Towhidul. He started producing fuel from his machine daily. He needed a better machine to meet the increasing demand for his product. People from Jamalpur and surrounding areas came to Towhidul's place to refill their motor bikes and machineries with the fuel. Such demand required a fast rate of production. Eventually, in 2011 he made a new, bigger, and faster model. Towhidul's father sold his cow, his mother and sister-in-law sold their jewelry to accumulate the cost - a total of 7 lakh, for the new machine. To make oil from 1000 kilograms of polythene every day, he needed 15-16 lakh taka, which

was beyond his family's reach at that time. That is why Towhidul went for a smaller version that year. From 2011 to 2017, this machine has given financial security to Towhidul's family.

The primary product that comes out of the machine is crude oil. This machine produces 450- 850 millilitres of crude oil from 1 kilogram of polythene. This oil is the mixture of petrol, diesel and kerosene with carbon in it. If this mixture is given more heat, the water evaporates at 80° C. From 80°- 120° C it gives petrol and octane, from 120°- 400° C it gives pure diesel. If the heat is increased up to 600° C, it gives Kerosene. Charcoal, produced as the byproduct of this oil, can be used as Black Oxide to assemble floors in residential buildings. This oil can also be used as inks in different printing presses.

Further to this, Towhidul developed a calling bell which was designed to ensure home security in residential areas. But the project did not see the light of the day due to the financial difficulties of his family. In 2017, when Towhidul registered for Udbhobker Khoje by a2i, he did not think he would even be in the top ten. He enrolled in the competition with the same project but this time with greater hopes. Towhidul had to meet different standards for proving the feasibility of his project. He demonstrated his idea through presentations and exhibition.

After winning a2i, Towhidul received the government's assistance with seed money to implement the whole plant, and has been adorned with love and support from people around him. His oil has been tested and verified by BSTI in order to validate its purity. More than fifty people are currently working under his project. The assistance he gets from Mahmudul Hasan Manik, Shifat Ullah, Farhana Sadia, Muhosinah Akter, Mustakima Billa and his other family members is immeasurable.

He hopes to turn Jamalpur into the cleanest city of Bangladesh by 2021.

