



FIRST GLOBAL CHALLENGE
GENEVA
2022

**One Planet,
One Alliance**

2022 Impact Report



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Our Mission

To inspire leadership and innovation in youth from all nations by empowering them through education in science, technology, engineering, and mathematics (STEM).

FIRST Global seeks to solve two of the most pressing issues facing the world today: lack of access to STEM education internationally, and a need for increased and improved international cooperation.

The *FIRST* Global Challenge is our key mechanism for accomplishing this. It brings together youth from nearly every nation to **design, build, and program robots** to compete in a collaborative olympics-style robotics event themed around an issue of global importance.

By nurturing **cross-cultural communication** and **cooperation** among high school students around the world, *FIRST* Global prepares them to **collectively tackle the world's greatest challenges** and come up with solutions that improve quality of life for all.

[LEARN MORE ABOUT US >](#)

*Plus tens of thousands more within countries through *FIRST* Global teams.



700+
mentors
empowered
teams

1,535+
students
directly
impacted*



179
teams



73%
first-time
participants



Founder's Letter

Greetings to all of you who are a part of what makes *FIRST* Global a unique, vibrant, and high-impact community. Together we are uniting the world beyond borders to improve our planet today and for the future. Thank you for supporting us in our mission.



We have a clear and present goal: to use the platform of science, technology, engineering and mathematics to ignite a fire among youth to develop a passion for innovating solutions to global problems. We strive to provide them with the inspiration, opportunities, learning, and tools necessary to take that passion forward to action. The 2022 *FIRST* Global Challenge did exactly that.

After two years of sustained remote engagement, Geneva, Switzerland welcomed youth worldwide to compete in person once again over four days of international partnership, collaboration, and celebration. The theme of *Carbon Capture* simulated real aspects of the technology with embedded educational components, and afforded teams multiple pathways to engage before and during the event. The New Technology Experience, in partnership with XPRIZE, inspired teams to create real climate change solutions. The Innovation Gallery and STEM Symposium, a new feature at the event this year, attracted teams and guests to imagine and innovate a better future. And though the event is over, our impact is continuing with additional engagement over the coming months.

I encourage you to read and reflect on what you find in this 2022 Impact Report. It is the result of your investment. You are a part of what you will see in terms of data, stories, and images from this year. Engagement is record high. Impact is measurable, documented, and distinctive. *FIRST* Global cannot continue its momentum without you. I need to count on your continued involvement and support - in whatever ways are possible. Please reach out at info@first.global with ideas or suggestions, so we can help you help *FIRST* Global!

With thanks,

A handwritten signature in black ink, appearing to read "Peter Kamen".

SUPPORT NOW >

Making Robotics a National Movement

A seed was planted in the mind of Nurdaulet Dosmagambet as he listened to Dean Kamen's speech at the inaugural 2017 *FIRST* Global Challenge in Washington, DC. He was inspired by Dean's words to go back to his country of Kazakhstan and take on the responsibility of spreading this experience to many more youth, especially in rural areas.

Five years later, his organization hosted the largest-to-date national robotics competition in Kazakhstan. Supported by the Minister of Education and Science, they engaged more than 10,000 students across the country, including 3,000 girls. Twenty-two teams competed in the final championship, including a team of Uygher students who were the youngest in attendance and new to robotics, yet placed 5th.

"The most interesting thing for me is that we don't usually get this many students at any competitions in Kazakhstan," says student Zhantore, whose team won first place and moved on to represent their country in Geneva. "Robotics and these kinds of competitions are something I'm really passionate about, and being able to share this passion with so many new students that are from my own home country is a special feeling."

Despite reaching such an impressive milestone, Nurdaulet is as committed as ever to expand their efforts and reach even more kids. "We have put our best efforts to make *FIRST* Global more accessible to students in Kazakhstan and Central Asia," he says. "We genuinely feel that the talented and gifted students are in the rural areas, especially because of their hunger for the knowledge, the new technology. If we could deliver the opportunities that *FIRST* Global gives to the students, I genuinely believe they could achieve far more, they could be really beneficial for the whole world."

Kazakhstan isn't the only country developing national competitions at this scale. Other partners that have helped expand the impact of *FIRST* Global to tens of thousands of students this year include Angola, Bolivia, Colombia, Denmark, Guatemala, Libya, Malaysia, Slovakia, Venezuela, and Vietnam.



National competitions hosted in 4 continents



Global Reach

83%
of North
America

85%
of Europe

81%
of Asia

100%
of South
America

100%
of Africa

59%
of Oceania

FIRST Global Challenge



Carbon Capture in Geneva, Switzerland

The 2022 theme of *Carbon Capture* highlighted the importance of capturing and storing carbon dioxide (CO₂) to reduce and prevent its accumulation in the atmosphere. Teams learned about the impact of CO₂ on our environment and the technologies being developed and already in place to ensure the safety of our planet through the future. In the game, six national teams worked together as a single global alliance to capture and store carbon, demonstrating the collective effort required to protect our shared atmosphere. They then divided into two regional alliances to employ local solutions to achieve effective long-term storage methods and slow the effects of climate change.

The New Technology Experience (NTE)

The New Technology Experience: *Carbon Countermeasures*, hosted in partnership with XPRIZE, guided teams in learning about climate change, the impact of CO₂ on our environment, and developing their own innovative solutions to combat it. The gold, silver, and bronze medal winners were Zimbabwe, Indonesia, and Greece, respectively.

The Skills Challenge

The Skills Challenge consisted of actions a robot performs in the course of playing *Carbon Capture*, and was an opportunity for each team to show off their robot's abilities, whether they attended the event in-person or participated remotely. The gold, silver, and bronze medal winners were People's Republic of China, Uzbekistan, and Moldova, respectively.

[VIEW OUR 2022 SEASON ARCHIVE >](#)



65+
NTE projects
developed by
teams

96% are more
confident in
their ability to
innovate



45+ alumni
returned as
volunteers



150+ event
volunteers



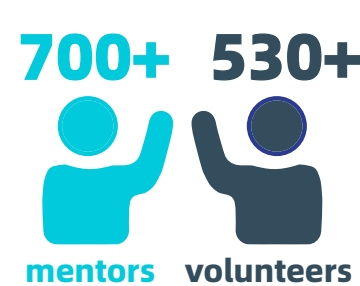
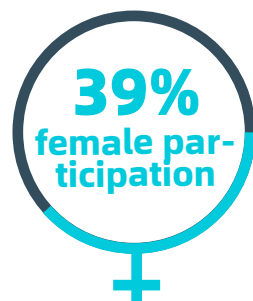
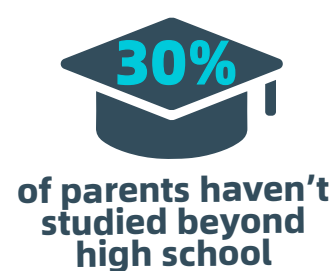
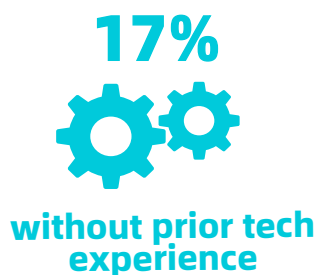
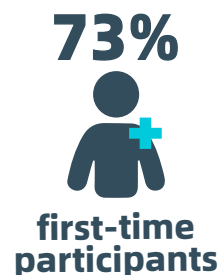
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I participated in the inaugural *FIRST* Global Challenge 2017 in Washington, DC, representing my country, Malaysia. It was **truly a life-changing experience** and one that **opened many doors of opportunities for me** to grow my passion in robotics. I can honestly say, **I would not have been where I am right now had I not participated in the *FIRST* Global Challenge.** It was so rejuvenating to be back with the *FIRST* Global community this year, where every one of us shared the same goal – to **work together to build a better world** through technology, without political divisions. I would like to thank *FIRST* Global for giving me the **opportunity to give back** to the *FIRST* Global community and hopefully I can be back next year!

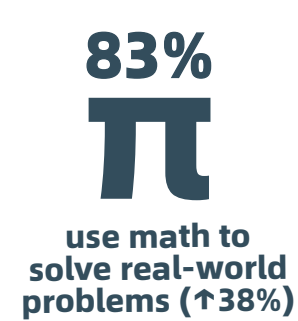
–Muhammad Arash Danial bin Mohd Hamdan, 2022 volunteer and alumnus of Team Malaysia 2017



By the Numbers



Students are now more confident in their ability to...



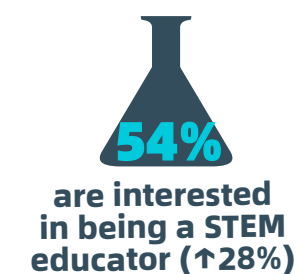
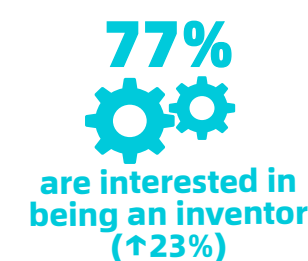
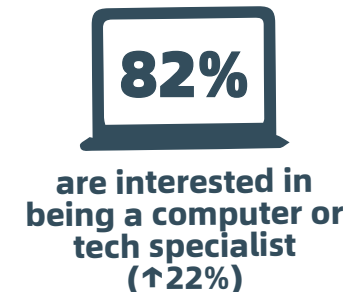
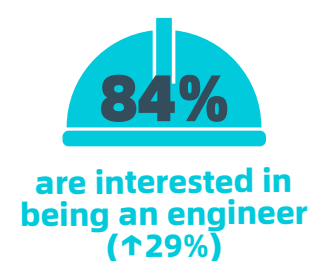
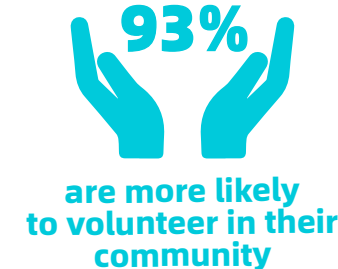
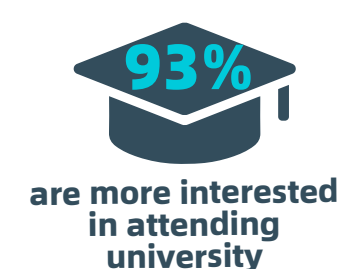
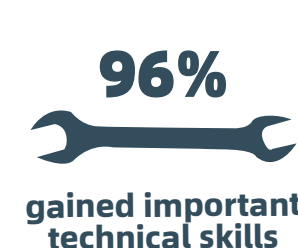
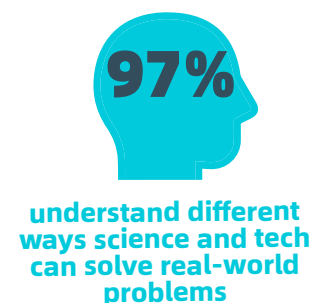
↑ Indicates the increase between pre-participation and post-participation percentages.

“

The *FIRST* Global Challenge opened my eyes in many regards, specifically in math. Before FGC I hated everything associated with mathematics, **now I can't wait to learn how to solve complex problems.**

–2022 male participant

Through participating, students...



All data sourced from *FIRST* Global students' self evaluations.

39% female participation



Comoros

53 female-majority or all-girl teams



South Africa



Guinea-Bissau



Philippines

Empowering Young Women

For many girls, their participation is just the beginning of a longer-term effort to empower their communities. As part of sharing their experiences with other young women, teams such as Comoros, Ghana, and Uganda have planned community initiatives to pass on their knowledge. For example, Team Comoros 2022 created a 6-month program called “Girls STEAM’ING” with the vision to create the very first STEM clubs in different schools in Comoros. As the team stated, they want “to spark hope in our girls and show them that they, too, have a seat at the STEAM table.” The program is hybrid and started with 25 students from five different schools attending a weeklong STEAM bootcamp. As each team goes back to their school, they’ll create a STEAM club, teach their classmates the different skills they acquired, and participate in challenges and mentorship offered by the 2022 Team Comoros. In June 2023, they plan to host an exhibition of all of the work accomplished alongside a scaled *FIRST* Global Challenge national competition.

“*FIRST* Global is important because it **creates a platform for girls** and boys in technology from all over the world to come together to solve the world’s problems. It fosters a sense of creativity, innovation, and cooperation needed to unite us. **This experience has made my love for STEM grow beyond words.** A love I want to share with my community in various ventures I aim to carry out.

–2022 female participant

“
The *FIRST* Global challenge is very important because it made me think differently about the problem our planet is facing and **I have learned that I am the one who should come up with solutions.**

–2022 female participant

“
It gave me confidence in myself that my thinking and creativity might be a solution to the problem.

–2022 female participant



Bermuda



Honduras

71% of participants are more likely to address climate change



Niger



Romania



Indonesia

“

This work [in the Global STEM Corps] excites me because it helps pave a student’s path for the future. Without *FIRST* Global many students would not have the opportunity to have hands-on experience in robotics, mechanics, and coding. The *FIRST* Global Challenge **goes beyond innovation and encourages students to work together and foster team spirit.**

It’s provided me with a sense of satisfaction, with the added benefit that our sponsorship is helping students around the world grow.



–Divya Bellamkonda, manager of software development in the Computational Products division of Lam Research, a Gold-level sponsor; advisor to Team Antigua and Barbuda in *FIRST* Global’s Global STEM Corps (GSC) technical mentorship program

**380+ GSC
volunteers
mentored
teams**



Antigua & Barbuda



Cambodia



Uruguay



Burundi

“

Both the climate change crisis and the loss of nature require people from all over the world to come together much like we’ve done in *FIRST* Global. To bring innovative solutions, to deploy them at multiple scales - to their communities, to their national governments, to international institutions... **We need these brilliant brains to help us solve the greatest challenge of our time.** The Bezos Earth Fund is proud to support these leaders - leaders already today and no doubt tomorrow.

–Dr. Kelly Levin; chief of science, data and systems change at the Bezos Earth Fund, a Gold-level sponsor

Teams Represented

Afghanistan	Brunei Darussalam	Czech Republic	Grenada	Kenya	Micronesia, Fed. States of	Portugal	Syria
Albania	Bulgaria	Denmark	Guam	Kiribati	Moldova	Puerto Rico	Tajikistan
Algeria	Burkina Faso	Djibouti	Guatemala	Korea, Republic of	Montenegro	Qatar	Tanzania
Angola	Burundi*	Dominica	Guinea	Kosovo	Morocco	Romania	Thailand
Antigua & Barbuda	Cabo Verde	Dominican Republic	Guinea-Bissau	Kuwait	Mozambique	Rwanda*	Togo
Argentina	Cambodia	Ecuador	Guyana*	Kyrgyzstan	Namibia	Saint Kitts & Nevis	Tonga
Armenia	Cameroon*	Egypt	Haiti*	Laos	Nepal	Saint Vincent & the Grenadines	Tunisia
Australia	Canada	El Salvador	Honduras	Latvia	Netherlands	São Tomé & Príncipe	Turkey
Austria	Cayman Islands	Equatorial Guinea	Hong Kong, China	Lebanon	New Zealand	Senegal	Turkmenistan
Azerbaijan	Central African Rep.*	Eritrea	Hope (Refugees)	Lesotho	Nicaragua	Serbia	Uganda*
Bahamas	Chad	Estonia	Hungary	Liberia	Niger	Seychelles	Ukraine
Bangladesh	Chile	Eswatini	Iceland	Libya	Nigeria	Sierra Leone	United Arab Emirates
Barbados	China, People's Republic of*	Ethiopia	India	Lithuania	North Macedonia	Singapore*	United Kingdom
Belarus	Colombia	Fiji	Indonesia	Luxembourg	Norway	Slovakia	United States of America
Belize	Comoros*	Finland	Iran	Madagascar	Oman	Slovenia	Uruguay
Benin	Congo, Dem. Rep. of the*	France	Iraq	Malawi	Pakistan	Somalia*	Uzbekistan
Bermuda	Congo, Rep. of the*	Gabon*	Israel	Malaysia	Palestine	South Africa	Vanuatu
Bhutan	Costa Rica	Gambia	Italy	Mali	Panama	South Sudan*	Venezuela
Bolivia	Cote d'Ivoire	Georgia	Jamaica	Malta	Papua New Guinea	Spain	Vietnam
Bosnia & Herzegovina	Croatia	Germany	Japan	Marshall Islands	Paraguay	Sri Lanka	Yemen*
Botswana	Cuba	Ghana*	Jordan	Mauritania	Peru	Sudan	Zambia
Brazil	Cyprus	Greece	Kazakhstan	Mauritius	Philippines	Suriname	Zimbabwe
				Mexico	Poland	Switzerland	

Due to varying circumstances, not every team was able to attend the Geneva event in person. Learn more about 2022 *FIRST* Global teams by viewing the [map on our website](#).

◆ A changemaker team that contributed to measuring *FIRST* Global's impact in 2022.
* Participated remotely.

Teams were featured in the news 60+ times



Teams met with 50+ officials (prime ministers, ambassadors, presidents, etc.)

“ Through the 2022 *FIRST* Global Challenge, I was able to learn a lot of STEM principles and applicable skills. However, perhaps more importantly, **I was able to learn more about how to be a leader, work in a team, and plan big projects...** My exposure to so many diverse and new countries, cultures, ideas, and people really opened my eyes and **helped me develop not only my skills, but also my character.**

–2022 male participant

From India's Slums to the Robotics World Stage

In India, more than six million kids drop out of school every year. Out of every 100, 29 don't even get the opportunity to complete elementary education.

By providing these youth with opportunities to realize their potential, we are able to change this. Team India 2022 is a perfect example. Composed of five students from different government schools, they all come from underprivileged backgrounds living in urban slums.

The *FIRST* Global partner in India first met the kids who would soon form Team India when distributing laptops to underprivileged children. They then enrolled in the organization's Digital Literacy program, and were soon training in robotics for the *FIRST*® Tech Challenge regionals in India.

Selected separately for the *FIRST* Global team, they didn't really know each other, but soon became close as they expanded their skill sets in coding, mechanics, and even English. Despite traveling around two hours to the workshop space, they saw their school grades improve as they focused on their academics and learned to manage their time.

"This experience has opened up a plethora of possibilities, opportunities and life-goals for these students," says team mentor Meenal, acknowledging that now they all want to pursue degrees in engineering.

No one in their families had ever even had a passport, let alone flown out of the country. They were the first. And while the idea of representing India on the world stage would have seemed like a fairytale just a few months ago, they did just that and placed in the top 30 in Geneva.

"I hope that children like me never stop dreaming," says team member Sumit. "It has been a magical experience for me. Now I feel everything is possible."



76% of participants are more likely to educate their local youth in STEM



Turkmenistan



Zimbabwe



Switzerland



Vietnam



Venezuela

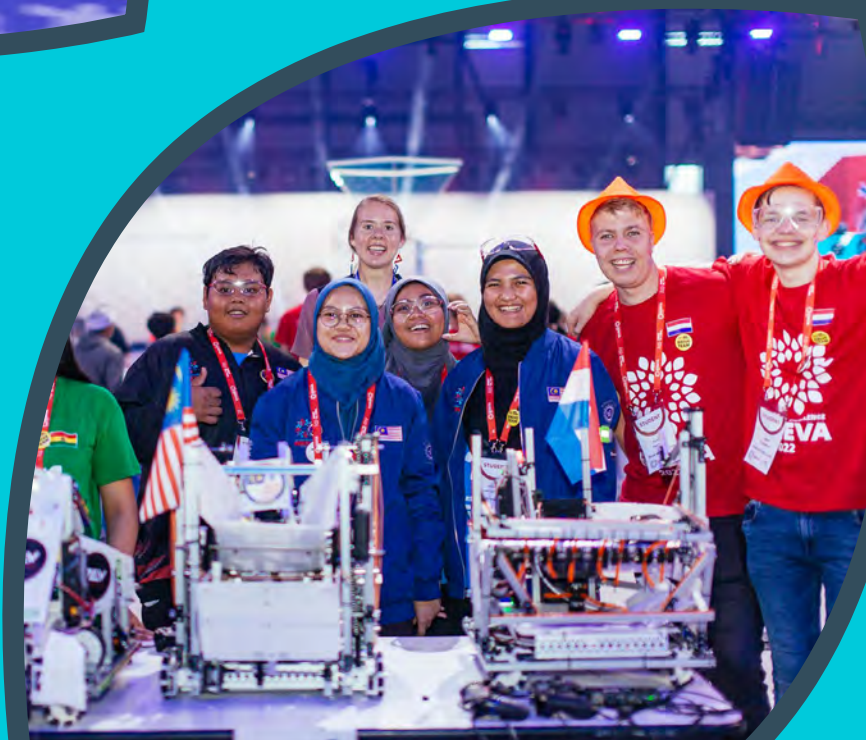
“ This competition was a long time my dream and I hope that I can bring this experience to others from our country, and I think **this is not the end... this is the BEGINNING of something big and amazing!** Thank you so much for this chance to make the world a better place.

–2022 male participant

“

For me, the *FIRST* Global Challenge does two very important jobs: **uniting students with similar passions** from almost the entire world **and addressing the global problems** that need global, collaborative solutions. Besides promoting STEM fields, *FIRST* Global gives unparalleled experiences and opportunities to all who are interested, without any racial or financial discrimination, which is what I revere in this project.

–2022 female participant



Continuing Partnerships

Lam Research®

Lam Research is a leading global supplier of innovative wafer fabrication equipment and services to the semiconductor industry. As part of its commitment to enabling transformative learning around the world, in 2022 Lam announced a \$10 million donation to *FIRST* Global, which will be distributed over a three-year period. The funds will help elevate and amplify Lam's commitment to cultivating diverse future talent in STEM, showcase the importance of nurturing innovation on a world stage, and foster the critical thinking required to address the challenges facing this industry and, more broadly, society. Lam is proud to team up with *FIRST* Global to excite and inspire tomorrow's innovators and semiconductor technologists.

Intel®

Intel is an industry leader, creating world-changing technology that enables global progress and enriches lives. Intel is sponsoring a Student Maker Cohort intended to create a community for shared learning between industry leaders, technologists, and the next generation of student makers. *FIRST* Global participants will be introduced to a novel way to deploy computer vision using technology that replicates the way the retina of a human eye processes visual information. The initiative will launch in January 2023.

Worcester Polytechnic Institute (WPI)

WPI, in partnership with DEKA Research and Development Corp., unveiled the XRP (Experiential Robotics Platform) a new robotic platform that is poised to be a game changer for the STEM education pipeline. The XRP robots are simple, inexpensive, easy to build, just as programmable as a far more expensive robot, and come with built-in educational support, enabling broader implementation and expansion of robotics programs around the world. All *FIRST* Global teams in Geneva were provided with a free XRP robot to take back to their home countries for this purpose.



Thanks to Our Lead Sponsors!

Gold



Silver

ROYALTY PHARMA

Miguel and Jacklyn Bezos



Bronze



Alexandra/Clemmer Foundation

Our full list of 2022 supporters can be found [here](#).