TECHNOVATION

A BLUEPRINT FOR FUTURE-SKILLING 25 MILLION YOUNG WOMEN

Strategic Plan
2022-2037

Education + Innovation + Entrepreneurship
for a Better World for All

There are nearly a billion adolescent girls in the world **(UN, 2020)**. Can you imagine what the world might be like if we supported all of them to develop leadership, creativity, and problem-solving skills? The impact would be planet-sized:

- Women make up 70% of the world's poor **(UN 2012)**. Increasing women's economic power, particularly through education, reduces poverty for everyone, including their families and communities **(Oztunc et al, 2015)**.

- Women and girls in low-income countries are responsible for food production and resource management **(FAO)**. Increasing their education levels and access to technology impacts productivity as well as sustainability, since education is key to addressing food waste, consumer behavior, and sustainable agriculture practices **(Dixson-Declève et al, 2022)**.

- Empowering women as leaders increases innovation and accelerates progress toward much needed breakthroughs **(Wang et al. 2019)**.

Educating girls is the most powerful tool we have to create a better world, and Technovation has a plan.

Above: A 2019 Technovation Girls finalist presents her team's application to address environmental issues in her community.

Cover: Technovation Girls teams rehearse an international flag procession for the 2017 World Pitch event on the Google campus in California.

Technovation is the world's largest technology entrepreneurship program for girls and is committed to empowering 25 million young women over the next 15 years. We'll continue doing what works as part of an expanded network of partners in industry and communities around the world and multiply it by leveraging new partnerships and automation technologies. Technovation will help girls build their skills, voices, and mindsets to adapt and drive innovation.

To reach 25 million girls, Technovation will use a combination of powerful levers: partnerships, automation, and increased visibility.

Technovation is the organization to lead this ambitious project because of its proven long-term impact at global scale, and resilient global network of community, industry and research partners.

17+ year

Track record of successfully increasing girls' access to resources, voice and agency

10k +

Global partners representing industry, university, community, and government

76%

Technovation alumnae who go on to pursue STEM degrees

60%

Technovation alumnae who go on to work in STEM careers

Educating girls is humanity's strongest lever for progress and well-being for all.

Reaching all the girls who need our support requires hard work. But collectively, we have the technology, knowledge, and strategy to do this. We need to set bolder, bigger goals to reach all girls, and we need to rethink how we view girls' education—moving beyond basic literacy to imagine a world where many more women know how to use cutting-edge technologies to tackle the enormous problems we face. Educating girls is humanity's strongest lever for progress and well-being for all.

Above: A mentor gives guidance to a Technovation Girls participant at a workshop in 2016.

Contents

Impetus:
Meeting the Moment

In the past 17 years, Technovation has proudly engaged ~400,000 students, mentors, volunteers, and educators in our programs. Each year, we review the data and prioritize efforts that result in sustained impact on participants. We have continually fine-tuned our program model for long-term impact, while also ensuring it could scale across nations, cultures, and languages.

Having successfully built an effective and scalable program, we are ready to make a significant impact on the challenges facing our planet. So in 2022, instead of setting incremental growth targets, we asked ourselves, "How can we address gender inequality and achieve sustainable development?" The answer is that **we need to rapidly equip many more girls with technology innovation, entrepreneurship, and leadership skills**—skills the Technovation model develops. Here is our plan to help meet that need.

Technovation 2019 Finalist Gitanjali Rao from the United States presents her app, Epione, designed to diagnose prescription drug addiction early from patient protien samples. Gitanjali has since been recognized as Time Magazine's first-ever Kid of the Year and has published a book to encourage other young innovators to solve big problems.

Why Educating Girls Matters

Educating and empowering girls and women is the most powerful lever for sustainable development and climate resilience. It addresses poverty, reduces inequalities, increases health outcomes, increases food productivity, conserves natural resources, ecosystems and biodiversity, and reduces greenhouse gas emissions, while also driving innovation, peace and community resilience (**Dixson-Declève, et al., 2022**).

This one strategy has such an outsized effect because most of the world's poor are women and educating and empowering women directly lifts them and their families out of poverty—and it also strengthens their nation's GDP and builds more equitable societies (**World Bank. 2018**).

Educating girls is one of the best investments towards sustainable development and the single most important social and economic factor for climate resilience.

Finally, because women are underrepresented in high-growth sectors across the world, they are an untapped source of potential progress and growth for their countries.

Educating girls is therefore one of the best investments towards sustainable development and the single most important social and economic factor for climate resilience. Knowing this, we need to set powerful global goals that will help us accelerate towards a future where all humans and our planet can thrive.

Above: Technovation Girls participants at a program orientation in Vietnam in 2022.

Left: Technovation Girls 2016 Senior Division Winner Lilia Lobato presents OOL, her app to connect volunteers with nonprofits.
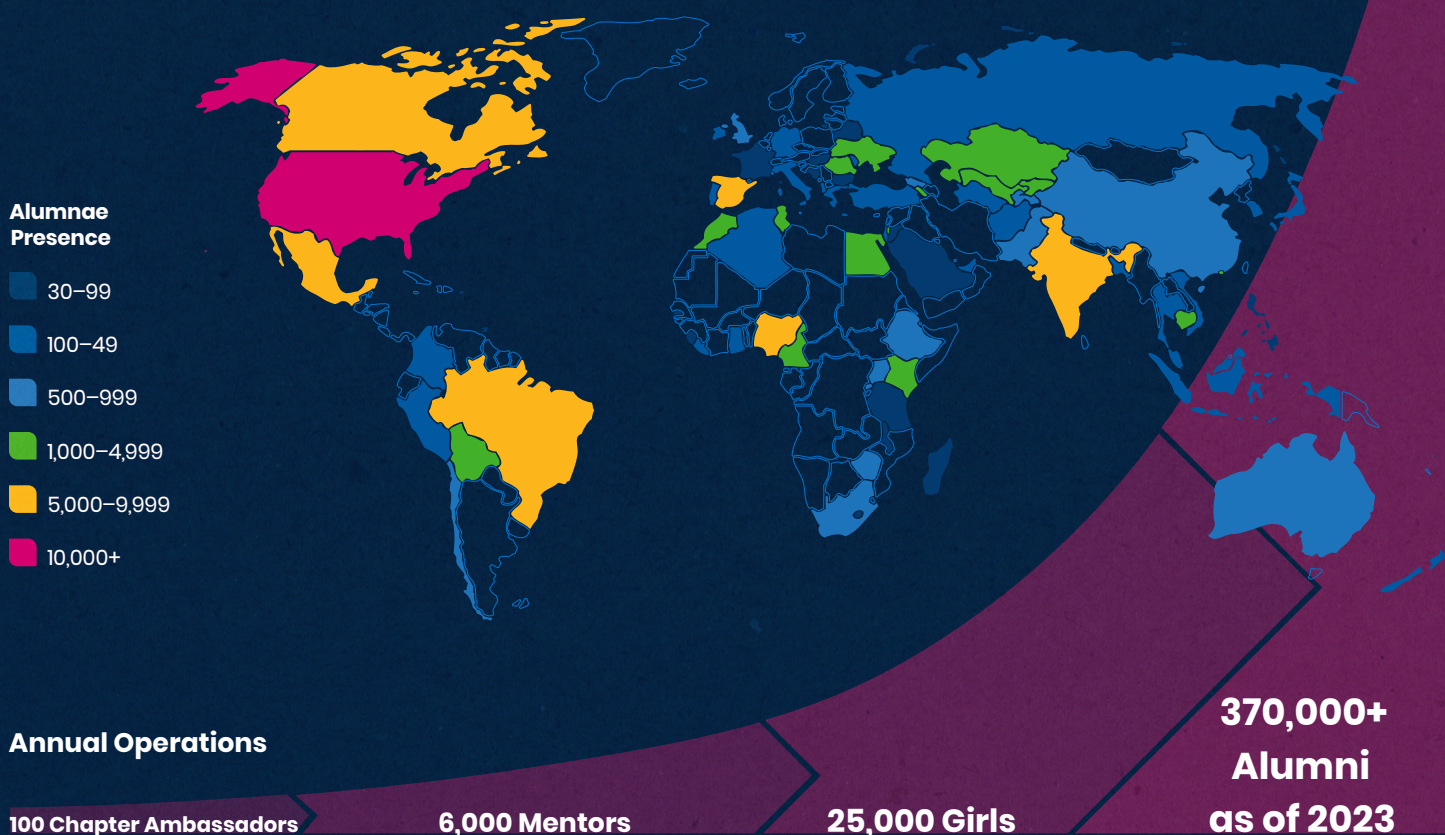
Technovation's Model Works

Technovation is the world's largest technology entrepreneurship program for girls. It is also one of the few tech education programs with longitudinal impact data that demonstrates a lasting impact on attitudes, beliefs, higher education, and career choices of girls.

The backbone of Technovation's success is a curriculum that guides students through identifying a meaningful community problem and teaches them skills to create a technology-based solution. Those skills are also vital for future success: computational thinking, machine learning, block coding, understanding and using data, AI ethics, prototyping, as well as critical thinking, problem-solving, and collaborative skills. Technovation has refined this curriculum over 17 years, reaching 400,000 participants, families, educators, and professionals in over 120 countries.

After completing the program, 76% of Technovation alumnae pursue STEM degrees, while 60% work in STEM careers **(WestEd, 2020)**. Many alumnae credit Technovation with influencing their career choice and increasing their self-efficacy while choosing careers in computer science, data science, or engineering. Technovation alumnae are working in multi-national companies such as Shopify, Google, Apple, Intel, Oracle, Microsoft, LinkedIn, Amazon, and Meta.

Figure 1. Technovation's Global Network

Alumnae Presence

- 30–99
- 100–49
- 500–999
- 1,000–4,999
- 5,000–9,999
- 10,000+

Annual Operations

100 Chapter Ambassadors

6,000 Mentors

25,000 Girls

370,000+ Alumni as of 2023

Technovation Girls doesn't just teach girls to code, it also allows them to immediately apply their skills to address actual problems.

Girls from Cambodia worked to protect the Reang Pen Bey Tor preserve from fires by developing a **wildfire monitoring and reporting app.**

Gabriela from Mexico created an app called **"Ohtli, a journey to reading"** for children to enjoy stories written and read by Mexican authors.
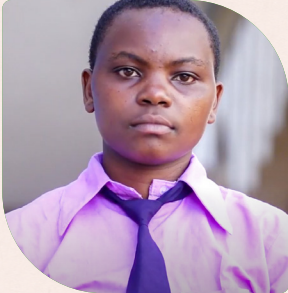
Emaculate from Kenya created **an app connecting water sellers with buyers** so girls aren't burdened to carry 60 liters of water every day for their households.

Several Technovation Girls alumnae have gone on to successfully launch business ventures. **Jenny Xu** started **Talofa Games** which is now in a Series B round of fundraising; **Sidney Hough** (a 1st year undergraduate) was recently awarded $600k from an accelerator to grow her AI-based startup to curate customer reviews; **Winnie Msamba** launched a successful sustainable soil substitute business in Tanzania and is now employing 25 people; **Fatou Kourouma** launched **a business** on Shopify selling fitness apparel featuring African prints for African

In 2022, girls gained skills in coding, entrepreneurship and problem-solving:[1]

85%
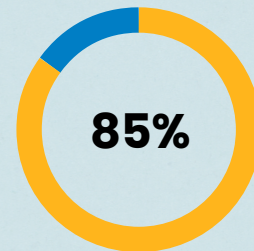
of girls reported that they improved their **coding skills** after participating in Technovation

85%
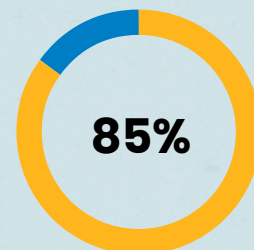
of girls reported that they know how to **start a business** after participating in Technovation

80%
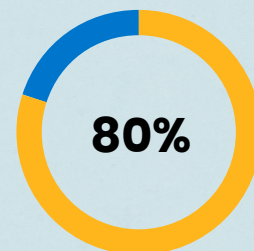
of girls reported that they know the best way to **solve a problem** after participating in Technovation

[1] 2,050 Technovation Girls students responded to our post-program surveys in 2022.

girls, and a **team from Ukraine** successfully raised $55,000 in 2022 to launch their nonprofit organization and app to support refugee children.

We Have a Master Plan

What has worked well (and what will we continue to do)

We arrived at today's Technovation Girls model after years of field testing 14 different program models that reached learners of all ages, gender, socioeconomic backgrounds and nationalities. We experimented, collected data, analyzed for long-term impact and then cut the program if we weren't seeing durable impact.

We then narrowed the model to the following features that have enabled the program to scale across hundreds of different nations, cultures and languages, while having a durable impact on girls.

Competition model vs traditional program model: Our impact data shows that a competition model motivates participants to complete the program and effectively apply what they learn through the curriculum. A global competition also builds local and national pride, and the finite goal and short timeline create a high-intensity experience.

High quality curriculum: Technovation has developed open-source, project-based curriculum that makes cutting-edge technologies accessible to all communities. Our entire curriculum is online and freely accessible. It is also designed to be adaptable to learning environments and local needs.

Deep network of people supporting the girls: Online-learning research shows that average retention rates are usually less than 10% unless learners are well supported by caring, trained people (**Bawa 2016**). A key component of Technova-

tion's success is the network of people who support the girls through the 12-week program. This includes Chapter Ambassadors, Club Ambassadors, Student Ambassadors, mentors, educators, industry professionals, peers, program alumnae, and parents. Girls who are supported by adults are much more likely to finish the full program than those who are not (**Bandura, 1997**, **Reboot Representation, 2018**). But this also makes it much more challenging for us to scale in comparison to a purely online curriculum.

Top: Technovation Girls finalists practice new technology skills at a workshop during Technovation's World Summit event in Silicon Valley.

Bottom: Technovation Girls 2015 Finalist team pitches their app, Discardious, to address waste disposal in thieir community at the global World Summit event.

Leveraging technology for efficiency and impact: Technovation has leveraged technology for deeper impact since our start. Technovation Girls began as one of the first MOOCs (massive open online courses), and Technovation has been developing curriculum and resources about artificial intelligence since 2016. Our materials, training, and tutorials are hosted online, as are our mentoring and judging platforms. Using technology for program operations has enabled us to efficiently scale globally while also supporting strong learning.

Localized Learning Experiences: Early on, we found that encouraging girls to focus on problems in their community allowed the the curriculum to be localized and more impactful. Instead of a top-down franchise model, we opted for a model where a standard competition judging rubric, a centrally developed curriculum, and mentor training helped maintain quality. This combination of a student-centered curriculum, supported by a universal judging rubric allowed each region to localize and implement the program in the ways best suited for their communities.

Top Left: Girls in Uganda identify problems in their community they want to address with technology in 2022.

Top Right: Girls work with a volunteer mentor at a regional Technovation launch event in Germany in 2020.

Bottom Left: Girls learn how to code a mobile application in a classroom in Madurai, India in 2017.

A Plan to Educate and Empower 25 Million Girls

A goal for the world. A goal for Technovation.

When building this master plan, we set out to identify two numbers—the total number of girls who could benefit from a technology entrepreneurship program and the number of girls Technovation can realistically reach. The former is a goal for an alliance of partners collectively interested in building gender equality in technology, innovation, and leadership. The latter is a target for Technovation, which we are setting as our north star to make a significant impact for our society and planet.

To calculate these figures, we began with the basic facts. There are ~600 million girls (ages 7-18) in the world. Based on our prior experience, we know that on average **30% of students are interested in participating in Technovation from any given student body.** This reduces the pool to ~180 million girls and young women who would be interested in technology entrepreneurship.

To identify an achievable goal for Technovation, we used the following data points to develop a prediction model:*

- Our own past experience and data from years when we were able to scale 500x using a combination of increased funding, automation and brand awareness
- Growth models and data from other nonprofits operating in some combination of education, technology, entrepreneurship, mentorship, girls empowerment, and global scale who scaled rapidly and reached millions of participants

* See the Appendix for more detail on this prediction model

- Feedback from 50+ partners and funders and hundreds of hours of internal and external team meetings to draw on extensive on-the-ground experience

Based on these factors, evidence of impact to date, and the relevance of our approach to what the world needs now, **we estimate that we can secure large, strategic partnerships that will enable us to reach ~25 million girls and young women,** and with increased resources and funding, we will be able to strengthen our operations, infrastructure, network, and technology platform to ensure these girls continue to have a transformative experience.

Girls from Noida, India begin learning to code. For some, it is also their first opportunity to use a computer.
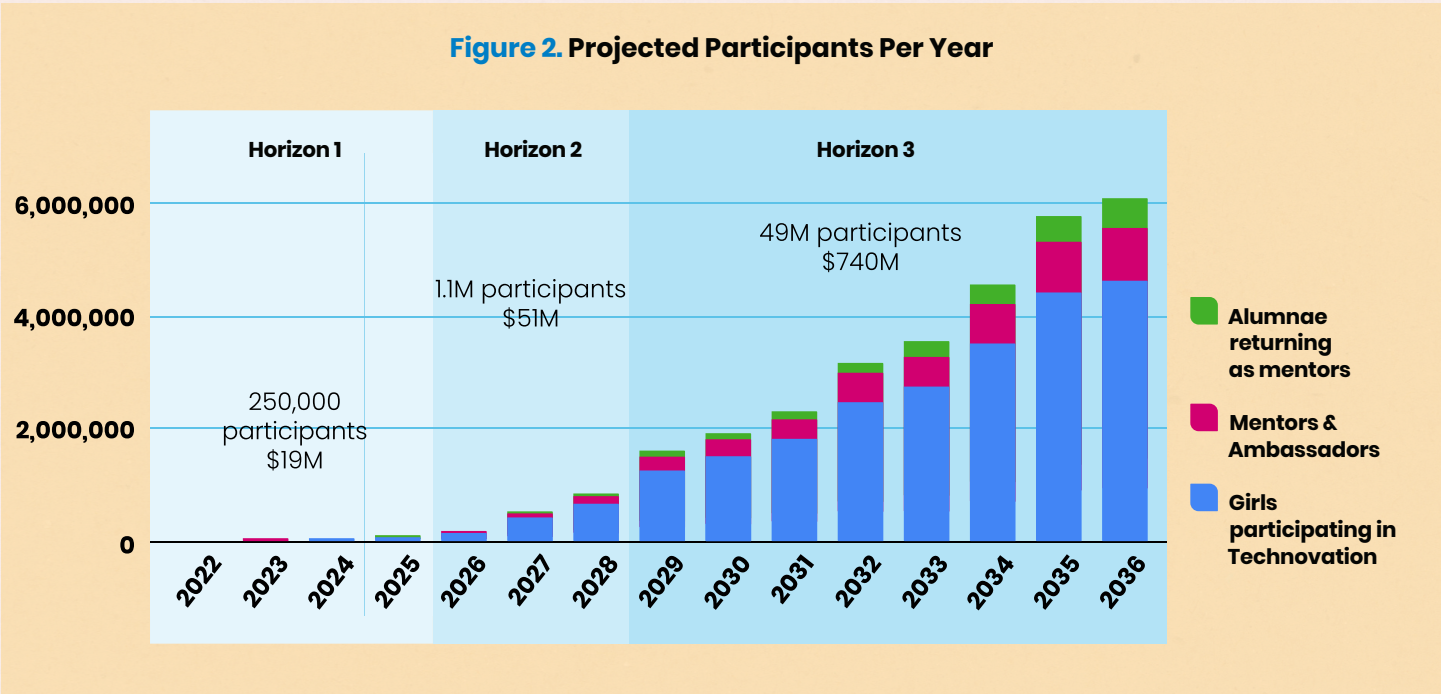
Key Strategies and Timelines

We developed a three-horizon framework to build a strong foundation with an eye to significant scaling in later years[2].

- **Horizon 1:** Expansion and Investment
- **Horizon 2:** Curriculum, training, and thought leadership
- **Horizon 3:** Building an ecosystem of women investors and entrepreneurs

The graph below outlines the key targets for each horizon in terms of total number of participants engaged (girls, mentors, ambassadors, and alumnae), as well as the funding needed to implement the program.

Figure 2. Projected Participants Per Year

Horizon 1

Horizon 2

Horizon 3

250,000 participants $19M

1.1M participants $51M

49M participants $740M

Legend:
- Alumnae returning as mentors
- Mentors & Ambassadors
- Girls participating in Technovation

Our overall approach will be similar to what we have always done (and what every successful entrepreneur or engineer does)—which is to study existing data on what works, develop and implement a pilot, establish and collect metrics of impact, analyze the failures and successes and do more of what works. Each successive horizon will build on and amplify the activities from the previous horizon.

Overall Goals:

- **Reach 25 million girls.** (50 million total participants, including alumnae and volunteers)
- **Connect & work with 50 large NGOs** to reach our participant goal
- **Create long-term, sustainable relationships** with ~1,500 universities and ~5,000 corporations to recruit mentors to support 25 million girls

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[2] Technovation has experienced such periods of exponential growth in the past, notably when (1) partnering with large organizations like the Office of Naval Research and Google that provided significant funding enabling discovery and innovation, and (2) when building visibility, as when we were featured in the documentary Code Girl.

- **Partnering with large, national and multinational community organizations and industry partners.** We will expand our network of partners (built up through 17 years and ~$40 million in investments and made up of corporations, schools, community partners, and foundations) and deepen the trust that we have built in communities across the globe. We will also increase resources for partners to help implement the program and strengthen their local networks. *This will help us recruit and engage more girls, ambassadors, and corporate mentors..*

- **Continue leveraging technology to automate program operations.** We will enable rapid program scale by removing bottlenecks of limited staff capacity. *This will help us onboard and support more volunteers and improve the user experience for all participants.*

- **Community investment.** We will seek out funding to make significant investments in local partners to implement Technovation in underinvested communities. *This will help us recruit, retain, and support local volunteers and Chapters, while also deeping impact.*

- **Raise awareness of Technovation's program.** We will leverage strategic brand partnerships with industry, community, and government partners, in addition to highlighting the inspiring stories of Technovation girls and alumnae around the world. *This will help us recruit more girls, mentors, and ambassadors, as well as community and corporate partners.*

Volunteer mentors from Technovation industry partner and program sponsor, Oracle, celebrate completing the Technovation Girls program in 2022.

We have used each of these strategies in the past to increase program scale, sometimes even doubling our reach within a year.

An additional strategy will focus on volunteer mentors. Technovation's long-term impact is due in large part to the strong network of adult volunteers supporting the girls. Internal evaluations show that mentors with technical expertise and strong management skills have the greatest impact. We will diversify our mentor recruitment strategies over the coming years so that we are able to annually recruit nearly a million mentors by 2037. A key strategy to achieve this scale is to invite and support alumnae to return as mentors, which has already proven a successful model. We aim for almost half of the mentors to be alumnae by 2037.

On the following pages we outline the main thrusts and impact of each of the three horizons[3].

[3] For additional details on the actions outlined for Horizon 1 and Horizon 2, see the Appendix. Action plans and details for Horizon 3 will be developed in response to the effectiveness of our efforts in Horizon 1 and the first years of Horizon 2.

Horizon 1:
Expansion and Investment

2022-2025

LEVERAGING TECHNOLOGY TO DIRECT HUMAN, SOCIAL, AND FINANCIAL CAPITAL TO COMMUNITIES THAT NEED IT

Goals: Reach 79,000 girls   **Funding needed:** $22M

Actions:

- **Develop relationships with new community partners** (NGOs, community-based-organizations etc) to reach more students and teachers.

- **Develop relationships with new corporate partners** to (1) engage employees in skill-based volunteering opportunities, (2) connect with tomorrow's tech entrepreneurs and innovators, (3) share their technology and business expertise with girls around the world

- **Work with new and existing funders** to invest in the Technovation Girls model and global community:
  - Invest in the global Technovation community, supporting Chapters and community partners with funding, training, and event support

- Invest in Technovation's technology infrastructure to automate program operations like matching mentors with teams, or connecting students to technical subject matter experts.

- Build Technovation's brand to reach more girls and more volunteers

- Increase impact transparency. Showcase the learning and innovation driven by Technovation girls, while also sharing more detailed global and regional impact data with partners to build trust and accountability as we scale.

- Work with experts to expand Technovation's curriculum to include more technical support on using AI to tackle complex social issues as well as key UN Sustainable Development Goals.

Above: A class of girls from Madurai, India learn how to use MIT App Inventor with the help of a mentor from Adobe.

Below: A volunteer Regional Ambassador poses with Technovation Girls participants at a 2022 regional pitch event in Nigeria.

Horizon 2:
Curriculum, Training, and Thought Leadership

2026-2028

TRAINING THE TRAINERS, DEVELOPING BETTER CURRICULUM TO DRIVE GREATER INNOVATION, AND SUGGESTING BETTER WAYS OF MEASURING EMPOWERMENT

Goals: Reach 653,000 girls   **Funding needed:** $51M

Actions:

- **Develop engaging trainings for educators and mentors**, including a video series of the best educators teaching different parts of the Technovation curriculum (filmed in multiple languages and with localized examples).

- **Improve and expand our curriculum** through updated units about ideation and choosing problems to address; translations in more languages; and improved UI.

- **Create better coding tutorials** that not only provide step-by-step guidance for building a technology solution, but also tell the full story of what it's like to develop a real-world solution. These stories would follow the failures and successes of young female innovators and developers around the world as they code prototypes, user test them, incorporate feedback and debug.[4]

- **Continue to expand and deepen relationships with community partners** including clubs and universities offering more resources for training, teaching, and improving access to the curriculum and other online materials. We'd also use feedback from Horizon 1 for ways to offer more support for partners running the program locally.

- **Continue to develop and expand relationships with corporate partners, alumnae returning as mentors.** This provides opportunities to engage employees in volunteer opportunities, and also continues to connect girls around the world to resources and technology.

- **Curate and share innovative solutions** from Technovation's database of thousands of community problems and tech solutions, collected over 10+ years. We can better leverage this database alongside AI-based tools to help girls iden-

Above: A team of girls from the United States work through the Technovation curriculum.

Left: A Technovation Girls participant uses Thunkable to code a mobile application with map and geolocation functions at a workshop in hosted by a Technovation Germany chapter. Credit: Franziska Schmitt

tify more innovative ways to solve complex problems.

Thought leadership: We need better ways of measuring girls and women's empowerment.

And we'll need to build a coalition of funders, partners, and other organizations to help make this argument.

Women's empowerment is currently measured by how many women own mobile phones (**SDG indicator 5.B.1**). And students' digital skills are measured by the **number who are able to use presentation software**. These goals are too weak to get us to where we need to be; especially not by 2030.

We need to rethink how we educate and empower girls worldwide, moving beyond basic literacy or phone ownership. **We need to measure success by the number of women who are actually developing technology, leading innovation in their respective communities, and driving progress along the way.**

Left: Two Technovation girls from Minnesota take a selfie with then Vice President Joe Biden at while presenting their app at the **White House Science Fair in 2016**.

Top Right: Technovation Girls participants hear an engineer explain GPU units, necesary for AI technologies, at a tour of NVIDIA during the Technovation World Pitch event in 2017.

Bottom Right: A Technovation Girls participant presents the results of her team's mobile app ideation session at a workshop hosted by Oracle in Brazil in 2022.
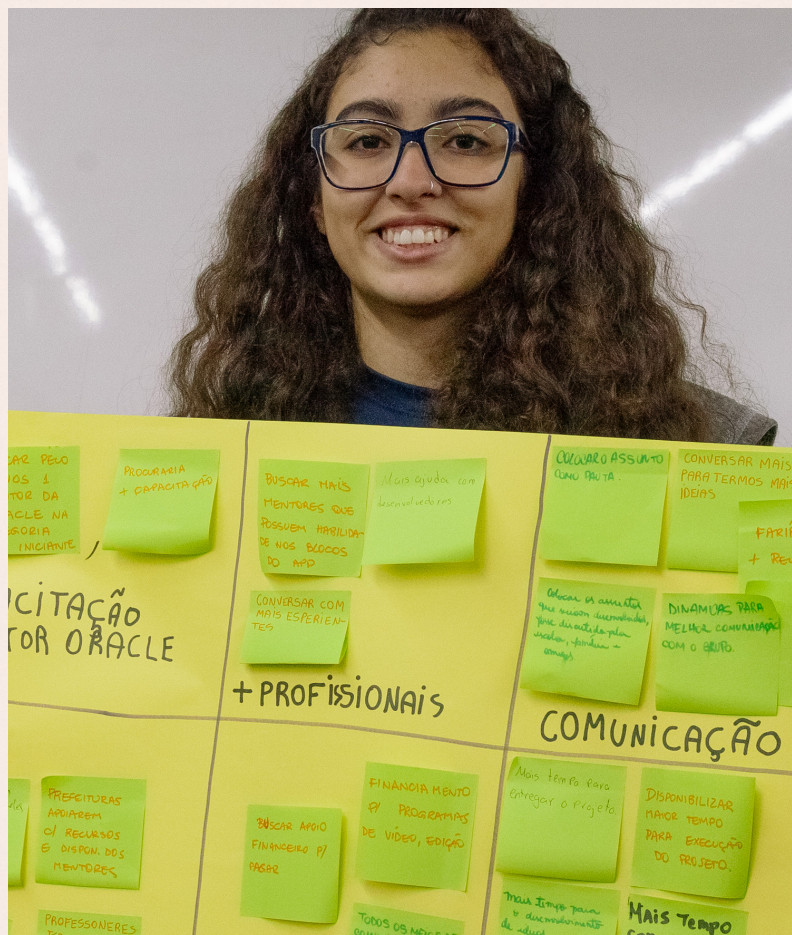
[4] Inspired by Mark Rober's engineering design challenges.

Horizon 3:
Nurturing the world's largest ecosystem of female technology entrepreneurs and investors

2029-2037

CONNECTING WOMEN INVESTORS TO WOMEN INNOVATORS BUILDING POWERFUL SOLUTION-ORIENTED TECHNOLOGY

Goals: Reach 23M girls   **Funding needed:** $749M

Actions:

- **Build on learnings from Horizon 2 activities, to rapidly accelerate expansion and build this ecosystem.** These insights will be critical to ensuring retention of chapters and ongoing sustainability for the explosion of growth we anticipate.

- **Provide deeper support for Technovation Chapters and Clubs.** Based on feedback from Horizons 1 and 2 we will now explore deeper models of support, adapting lessons from other large scale chapter models (Girl Guides/Scouts, Rotary Clubs, YMCAs and, large professional associations). Our goals will be to optimize funding, impact reporting/storytelling, quality, and localization while preventing burnout of local volunteers.

- **Connect thousands of innovative, young female technology leaders to the workforce, especially the technology industry.** Helping alumnae secure jobs with corporate partners and other leading companies will prove the value of the program and build or deepen connections with companies to invest in Technovation and their own future workforce.

- **Create a technology platform where Technovation alumnae can invest in Technovation startups**. As our network of alumnae continues to grow, we plan to increase the ways in which women can support other girls and women problem solvers and tech entrepreneurs. A possible solution could be to create a platform similar to those used by Kickstarter, DonorsChoose, and Kiva to connect alumnae entrepreneurs and investors.[5] This type of platform was instrumental in unlocking huge amounts of funding in the form of individual donations directed to specif-

Above: A Technovation finanlist pitches her app at a networking event co-hosted by Technovation and venture capital firm Andreessen Horowitz.

Below: Alphabet and Google CEO Sundar Pichai visits finalist teams with Technovation Founder and CEO Tara Chklovski at the 2017 World Summit event. Credit: Ethan Baron of Mercury News

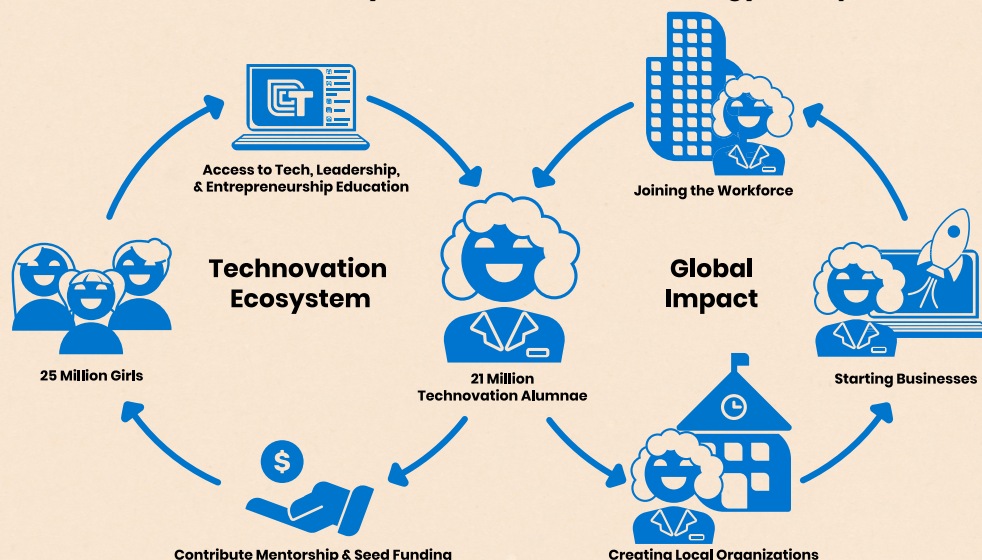[5] Here is **a rough concept video**

ic causes, and was the reason for the explosive growth and scale of DonorsChoose. During this stage, we will invest in exploring technology platforms, matching algorithms, and transparency that could direct funding to the Technovation groups that need it (eg: clubs, chapters or alumnae businesses).

- **Continue to build the global alumnae network.** By this point, we anticipate that the network of Technovation alumnae will include nearly 21 million young women. We estimate that at least 13,000 of these alumnae will start technology-based businesses, and that the earliest cohorts of Technovation alumnae will be well-established in their careers and have the resources to invest back into the Technovation ecosystem.

- **Explore different models of ownership** where alumnae are owners of this ecosystem. We will explore preliminary models of organization structure and ownership—of Technovation itself —beyond or in addition to the traditional nonprofit structure. The goal is to enable financial sustainability for Technovation, while providing alumnae more ownership, authority and decision-making power. A potential model to explore would be a cooperative business model where alumnae jointly own, invest in, and democratically lead the Technovation ecosystem. There are many successful and long-running co-operatives earning billions in revenue that we can learn from to see if this would make sense to the Technovation ecosystem (**Cooperatives: Characteristics, activities, status, challenges, 2019**).

- **Prepare for the next powerful technology to introduce in the curriculum**. We will explore upcoming edge technologies to determine which ones would be valuable to introduce to the students. It takes 5-7 years to develop engaging curriculum and training materials that then last for a decade or so. (We adopted the mobile-app curriculum in 2010; and started piloting AI curriculum in 2016—5 years ahead of when each became mainstream).

Figure 3. Technovation's Global Ecosystem of Female Technology Entrepreneurs and Leaders

Access to Tech, Leadership, & Entrepreneurship Education

Joining the Workforce

Technovation Ecosystem

Global Impact

25 Million Girls

21 Million Technovation Alumnae

Starting Businesses

Contribute Mentorship & Seed Funding

Creating Local Organizations

[5] Here is **a rough concept video**

Measuring Impact

Monitoring and evaluation framework

Technovation's model was built around deeply embedded program assessment. We measure program impact by evaluating student and adult development of specific knowledge, skills, and personal growth, and conduct both annual and longer term data collection.

ANNUAL DATA COLLECTION

Surveys: we survey girls, parents, educators, mentors and alumnae every year. These surveys track changes in:

- Content knowledge
- Interest in STEM education and careers
- Technical skills in STEM and entrepreneurship
- Leadership skills
- Metacognition skills and real-world problem-solving skills
- Personal growth throughout the program, including self-efficacy

Event-based exit polls: after events large and small we conduct quick participant exit polls to evaluate the effectiveness of these events as well as the community response.

Qualitative Interviews. At periodic intervals, we conduct interviews and focus groups with key groups of participants.

- We regularly **speak to alumnae** to collect ongoing feedback about what resources they find most useful, their career and education paths, their interests in the Technovation community and more.
- We aim to conduct a **deep dive survey every five years** with all alumnae ages 18+. This is an external evaluation.
- We ran a series of **small focus group interviews**

in 2021 with Chapter Ambassadors, Mentors, Students, and Alumnae. Since then, we have incorporated similar questions in our monthly Chapter Ambassador community meeting so we constantly have updated information about these groups' varied needs.

Web Analytics: we review web traffic and learning management system analytics to measure curriculum use from season launch to submission.

Judge Analysis: We analyze the judges' scores of technology prototypes, business plans and pitch videos submitted by students to see if there are any patterns that could direct improvements for following seasons.

A Technovation Girls alumna presents at a 2022 Technovation launch event in Nigeria.

LONG-TERM DATA COLLECTION

Annual and longitudinal alumnae surveys. We conduct an annual alumnae survey as well as regular "lookback" surveys with alumnae who participated several years prior. We evaluate the program's impact on:

- Access to resources
- Agency
- Self-efficacy
- Empowerment
- Life achievements

Periodic third-party evaluations. At periodic intervals we partner with external research organizations to evaluate the long-term impact of the program.[6]

Capability-based framework. We also evaluate our alumnae for gains in:

- Resources: Access to material, human, and social resources
- Agency: Abilities, participation, voice, and influence in the family, workplace, school, community

- Achievements: Improvements in well-being and life outcomes that result from increasing agency and cognitive skills (Kabeer, 1999).

ADDITIONAL MEASURES OF IMPACT AND SUCCESS

As part of this long-term strategic effort, we will also research, adapt and develop metrics of measuring the overall impact of our program and approach on the community itself. We hypothesize that a community will be more resilient to external changes and shocks if its members (especially women):

1. Increase their sense of agency, influence and self-efficacy
2. Have an increased and more diverse set of social connections (e.g. mentors from industry and leaders from government)
3. Are more open to girls and women becoming technology innovators and entrepreneurs (**Rights and Resilience, Technovation 2020**)

CHANGEMAKER

DORCAS
ANONO LITUNYA
SOFTWARE ENGINEER INTERN @MICROSOFT
STEM EDUCATOR | OUTSTANDING MENTOR
A PROBLEM-SOLVER
ADVANCING GIRLS EDUCATION IN KENYA

LEADER

WINNIE
MSAMBA
CO-FOUNDER OF MOROGORO COCOPEAT
COCO PEAT USED AS AN ALTERNATIVE FOR SOIL IN
THE HORTICULTURAL SECTOR IN KENYA

LEADER

DARIA
TABUNSHCHYK
A STEM CHAMPION AND
AN OUTSTANDING MENTOR

LEADER

JENNY XU
CEO/ FOUNDER / CREATIVE DIRECTOR @TALOFA GAMES
SHE'S SHIPPED 10 TITLES ON THE MOBILE APP STORES WITH
OVER 9.2 MILLION DOWNLOADS!

Technovation Girls alumnae featured in Technovation's "Power of Girls" campaign, recognizing insipiring alumnae who are making positive impact on their communities.

[6] Previous research partners include WestED, MIT, University of Washington, and Oregon State University.

Building a Coalition

This master plan lays out how Technovation will play our part to address gender inequality and achieve sustainable development—but there's more to do. We have a plan to reach 25 million girls...but by our calculations, there are still 155 million girls interested in technology and entrepreneurship who will still need access to resources, people, and communities that can help them explore those interests.

We need to build a coalition of partners who are committed to building gender equality in technology, innovation, and leadership. We need corporate partners, industry partners, government partners, community partners, NGOs, and individuals. And we need to agree on a better way of measuring women's empowerment than basic literacy and familiarity with mobile phones.

> *Educating girls*
> *results in well-being*
> *for all, and the planet.*

Educating girls and women is the most powerful lever we have for solving our biggest challenges, because educating and empowering girls with technology and leadership skills enables:

- Uplifting communities from poverty
- Reducing inequalities
- Increasing health outcomes
- Increasing innovation
- Increasing economic growth for communities
- Improving food systems
- Reducing greenhouse gas emissions
- Increasing peace and stability

In other words: educating girls results in well-being for all, and the planet.

We have the knowledge, the resources, the tools and the strategy to act—and the time to act is now. We hope you'll join us in building a world where girls and women have access to the education, resources, and opportunities they deserve.

Appendix

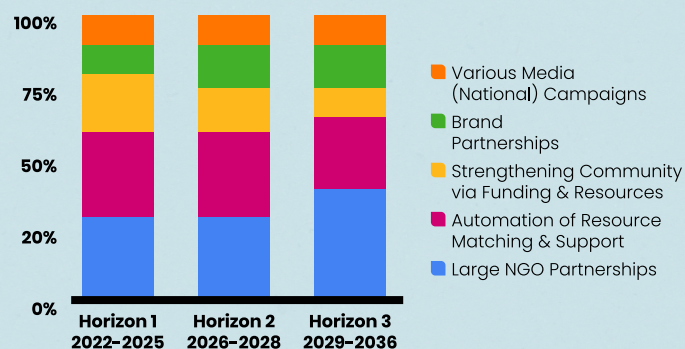## Factors guiding Technovation's Prediction Model

Our own past experience and data showed us that a few key factors have the greatest impact.

- **Increasing Funding.** This enabled us to support more partners and underserved communities.
  - **Growth Partnerships:** In 2013 we partnered with Boeing for their 100 year anniversary and built a multi-layered partnership through which we were able to engage and train thousands of Boeing employees to mentor families in their communities, across the US and globally.
  - **Raising Awareness:** We partnered with Google's Made with Code initiative to bring more girls into technology and were featured on Google's homepage, which significantly increased our reach. Our program was featured in the documentary **Codegirl**, leading more girls and mentors to learn about the program.
  - **Automation:** Leveraging technology to increase scale and impact has been a tried and tested strategy for us. In 2013 we published the **Technovation Girls curriculum** and **mentor training** on Mozilla's Peer2Peer University online platform, launching one of the world's first online MOOCs. This increased our global scale from being a US program to one engaging girls in 13 countries. We also pioneered one of the first online mentoring platforms, **Curiosity Machine**, where students could upload pictures of their projects
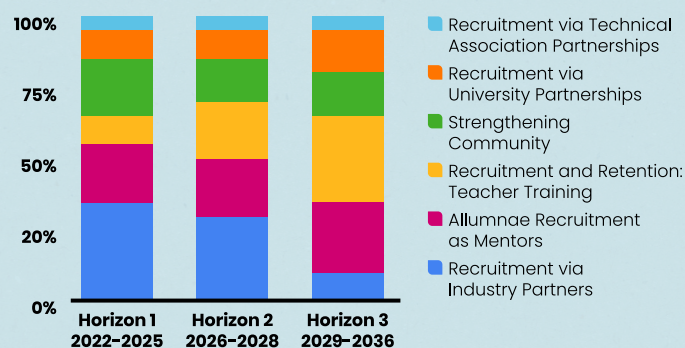
and get feedback from trained mentors on how to improve their design. We will continue to innovate and leverage technology to meet the needs of more girls as they go through Technovation.

- **Growth models and data from "competitor" nonprofits.** We closely studied other nonprofits in coding, girls' education, technology education, online learning, and entrepreneurship, as well as nonprofits using technology to scale globally in innovative ways, to identify key levers for their growth. Two common strategies that we have not previously emphasized in our operations are

Figure 4. Effectiveness of Proposed Strategies for Reaching More Girls

Legend:
- Various Media (National) Campaigns
- Brand Partnerships
- Strengthening Community via Funding & Resources
- Automation of Resource Matching & Support
- Large NGO Partnerships

X-axis: Horizon 1 2022–2025, Horizon 2 2026–2028, Horizon 3 2029–2036

Figure 7. Effectiveness of Proposed Strategies for Mentor Engagement

Legend:
- Recruitment via Technical Association Partnerships
- Recruitment via University Partnerships
- Strengthening Community
- Recruitment and Retention: Teacher Training
- Allumnae Recruitment as Mentors
- Recruitment via Industry Partners

X-axis: Horizon 1 2022–2025, Horizon 2 2026–2028, Horizon 3 2029–2036

1) investing resources and effort in raising awareness through a strong brand and 2) partnering with local and national governments. We are beginning to focus on these areas as well as increasing transparency and donor trust through the innovative use of technology that has enabled some other nonprofits to grow to $200 million+ in revenue.

- **Feedback from 50+ partners and funders and ~100 working meetings with Technovation team.** Finally, we leveraged the significant network of experts that Technovation has built over the past 16 years to provide feedback on our model and approach, as well as conducted extensive internal discussions with our team to identify gaps and areas for innovation and impact.

Horizon 1 & 2 Activities for Strengthening the Program

Action plans and details for Horizon 3 will be developed in response to effectiveness of our efforts in Horizon 1 and the first years of Horizon 2.

Supporting more girls to finish the full 12-week program: Each year we want to increase the number of girls who finish the full 12-week program (starting from the 2022 baseline of 34% and growing it to about 40% in 2-3 years).

We will address the barriers that prevent girls from finishing the full program, which include:

- Difficulty matching with mentors
- Difficulty finding teammates or teams virtually
- Getting stuck in the problem identification phase of the curriculum
- Struggling to debug their prototype

We will invest more resources in both techno- **logical and human solutions** to match teams with mentors and to help them build teams. Our platform improvements will improve these matching processes, and our expanding corporate partnerships, in addition to deeper community partner support and improved brand recognition, will expand both student and volunteer pools.

We will pilot ways to provide more support to teams through subject matter experts who will act as coaches. These coaches can provide one-off support for questions about project management, motivation, coding, and problem areas. This could help ease the time commitment for mentors by distributing it across more volunteers, while also increasing the social capital and knowledge for the girls.

We will explore how to improve the user experience on our platform so that participants, many of whom visit the site via mobile device, are able to find a mentor, learn about pitch events, and submit their projects in an intuitive interface that ensures technical issues do not keep girls from finishing the program.

We will experiment with ways to recruit volunteer judges who can provide early feedback to the girls in the ideation stages of their project to motivate them, while also helping them strengthen their ideas.

We know that many girls who finish the program are connected with our regional chapters. As part of our software platform, **we will develop additional administrative tools for the Chapter Ambassadors** that provide them with ways to access training resources and support more participants. **We will also create chapter websites** that allow our region-

al chapters to more easily share information about the events and workshops they hold for participants, list volunteer opportunities, and provide links for donations to the chapter.

Curriculum Roadmap

Each year we will continue improving the curriculum, making it more accessible and user friendly, streamlining it while strengthening the real-world problem solving elements, adding more specific tutorials and curriculum for each SDG according to the following timeline:

2023: SDG 6 (access to clean water), 12 (responsible consumption) and 13 (climate action).

2024: SDG 14 (life below water), 15 (life on land), SDG 2 (no hunger) .

2025: 3 (good health), 4 (quality education), and 16 (peace).

For the technical elements of the curriculum, we will continue to integrate AI across all age divisions, while providing more support and tutorials on how to publish a working app on the App store.

Alumnae Support: Social, Technical and Financial Capital

To date more than 100,000 girls have participated in Technovation to varying degrees. This global community of young women ranging in age from 10-28 is very diverse, entrepreneurial, not afraid of technology, or of standing up against injustices, and see themselves as the leaders and drivers of change. In extensive conversations with alumnae we realized that even though these young women are formidable forces, they still need support, and especially in the early stages of their journey as technology innovators and leaders.

With that in mind, in Horizon 1 we will deepen our efforts to support our 18+ alumnae with:

- **Employment Opportunities:** Direct connections to internships and jobs through our regular newsletter, LinkedIn community and career summits.

- **Professional Development:** Continued access to training (ranging from technical to leadership). We will develop and pilot an advanced technology entrepreneurship curriculum for alumnae, exploring the use of line-coding (e.g python) platforms to better prepare them for technology workforce.

- **Social Capital:** Support to forge new connections with other Technovation alumnae and mentors—both online and through in-person national and regional alumnae hubs in focus countries.

- **Financial Capital:** We will pilot efforts to provide alumnae with financial capital through specific awards, incubator programs as well as direct connections to investors.

- **Influence Platform:** We will continue to connect more alumnae with influential speaking opportunities at global forums, helping them amplify their voices and build their own sphere of influence.

Diversifying funding

For the past 4-5 years more than 70% of our funding has come from corporate partners. As we scale, we will work to diversify our funding portfolio to include funding from non-US governments, global foundations that support girls' education, and individual donors.

In Horizon 1 we will pilot efforts to increase transparency of operations and impact to donors. The Technovation model is unique in that every girl who finishes the program develops impressive examples of learning that have value in the real world, because they are addressing real-world problems! Each girl who finishes the program develops a technology prototype, a business plan and a pitch video. These can easily be shared with donors so that they can directly see the impact of their funds and be inspired to continue supporting the girl or the Club or even the national Chapter.

Community Building

We will strengthen the community through in-person regional pitch and World Summit events. We will increase funding (for travel) and resources towards hosting regional, national launch and pitch events, as well as a hybrid World Summit in 2023, to inspire and refuel the community. We will host the 2023 World Summit in Silicon Valley (building on our strong foundation there). Following that, we will explore hosting the World Summit in countries such as Canada, Brazil, Nigeria, India, Spain, Mexico, and Bangladesh.

Human Resources Plan

Program Governance Models: We will research, develop, and pilot different models of governance that will enable each region to localize and customize the program (as they have in the past), while ensuring participant safety and program integrity with increasing scale.

In Horizon 1 and 2, with increased funds, we will pilot conducting background checks in the following countries: Canada, Spain, India, Nigeria and Bangladesh. We will also explore different models of governance (national Technovation NGOs, association, membership, etc.) that allow us to be agile and responsive, while also providing the formal organizational support many volunteer Chapter Ambassadors need in order to access increased funding and prevent burnout. Possible models to explore include (in order of preference):

- Formalize a partnership with an established NGO in the country
- Invite long standing national Chapter Ambassadors to join the Technovation team as full-time employees based in the country
- Formalize a Technovation NGO in the country

Each of these options would need additional research, experimentation and funding. The strategic plan budget factors this increase into the later years of Horizon 1 and Horizon 2.

Team

As we aim for greater scale, we will also grow the team by 30-40% in Horizon 1. With such growth comes the need for stronger processes in place for onboarding, professional development, team goal setting, incentives and accountability. The Technovation model is a highly complex one to execute at a global scale, requiring an unusual degree of internal collaboration. This requires more thoughtful KPIs that increase accountability and transparency across teams. To date we have used a mix of outputs and learning gain indicators, which may not be enough for what lies ahead. We will explore metrics that encourage the team to collaborate, innovate and improve the program - resulting in a better experience for all participants.

The graph below shows the projected growth in the various team functions that support the three horizons.

Figure 5. Projected Allocation of Team Resources by Year

Legend:
- Curriculum development
- Events
- Assessment
- Volunteer support
- Fundraising
- Marketing
- Operations
- Alumnae
- Community partner support
- Software