



Annual Report 2019

Innovating to improve the health of everyone, everywhere 

A Message from our CEO

First and foremost, we at Nexleaf hope you and your families are safe and healthy.

All of our lives have been upended by the pandemic, and our hearts go out to those who are fighting illness, reeling from loss, and suffering hardship during this crisis.

The past year has brought a multitude of challenges for our world, our countries, and our communities, as well as for our ongoing projects and our Nexleaf team members around the globe. But these circumstances have increased our resolve, as our work is more relevant and critical than ever.

The whole world is now paying attention to the stability of vaccine supply chains. Our ColdTrace technology already protects and supports the complex infrastructure required to get safe vaccines

for routine immunization to 1 in 10 children born on Earth each year. Now, that scope is expanding, as Covid vaccines will need to reach not just kids, but everyone. Our Vaccine Program team members are taking on new global leadership challenges to address the current crisis, and we are grateful to be able to offer our experience and expertise to the monumental and critical task of vaccinating every person.

As I have been doing all I can to support our now fully-remote team, I've had many opportunities to question and evolve my thinking on what leadership means now, and what it will mean for the future. For me, leadership has never been about coming into a situation to "take charge," but about initiating connections and creating space for collective learning and actions that result in something greater. This approach underpins our commitment to supporting country-led uptake of innovations and reinforces our core company value that *the Pursuit of Truth* — continually striving for a more accurate understanding of the world — will always result in better outcomes.

At Nexleaf, we work to address problems at a systems level. We challenge ourselves to design technologies that function through the last mile to put decision-making power into the hands of the people working on the front lines of public health and climate change. We create mutual benefit for stakeholders by gathering data from the ground that reveals fresh insights. For instance, in Nigeria, we partnered with women energy entrepreneurs to reimagine how we tackle household air pollution and scale highly useful,

women-centered solutions to clean cooking. We see ourselves as mutual participants and collaborators — with health workers, with governments, with women in remote areas preparing food for their families — as we build, iterate, and expand the systems-strengthening capacity of our tech. And we push our partners to understand data as a resource, and to cultivate the policies and capacity necessary for data to proliferate and improve outcomes for all.

This report highlights some of our achievements from 2019. We've once again accomplished a remarkable amount, especially given the constraints we've all faced. As our world confronts multiple crises at once, we at Nexleaf are cultivating collaborations that result in concrete actions to address complex problems. I could not be prouder to be a contributing member of this team.

Sincerely,



Nithya Ramanathan, Ph.D.
CEO & Co-founder

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Protecting Vaccines for Millions of Newborns

Nexleaf's deep knowledge about temperature-controlled vaccine supply chains is in high demand. Our Vaccine Program continues its emphasis on serving countries, while bringing state-of-the-art vaccine science and data analytics to understand and improve the supply chain for stakeholders at every level.

In 2019, Google.org announced that Nexleaf was one of its AI Global Impact Challenge grant award winners. With this support from Google.org, and from the Elma Vaccines and Immunization Foundation and Gavi, we are enhancing the modeling capabilities of the cold chain data we collect around the world.

But this cutting-edge data modeling can only reach its full potential with end-to-end temperature data. And evidence abounds that vaccines are particularly vulnerable to temperature excursions during transport — including damaging freezing excursions. That's why we've been working with partner countries to test and improve our vaccine transport modeling sensor and user interfaces.

Our biggest country partnerships, in Tanzania and Kenya, have yielded many lessons. We shared these lessons with supply chain experts from countries in Africa during a first-of-its-kind workshop at the Regional Center for Excellence in Rwanda in Fall 2019.



2019 Google AI Global Impact Challenge Grant Award Winner

As we look to the future, we continue to work with countries to mobilize our data to inform and improve decision making. With IMPT, funded by Gavi, we are engineering a tool that will change the way countries evaluate and plan for cold chain equipment management.

In the coming year, we will work tirelessly with our dedicated partners to apply all of this knowledge to help countries distribute Covid-19 vaccines safely and equitably.



ColdTrace Devices connect refrigerators from



16,822 health facilities

Gather and operationalize vaccine cold chain data in

23 COUNTRIES



Protect the vaccine supply for

1 in **10** babies born on Earth each year



1384

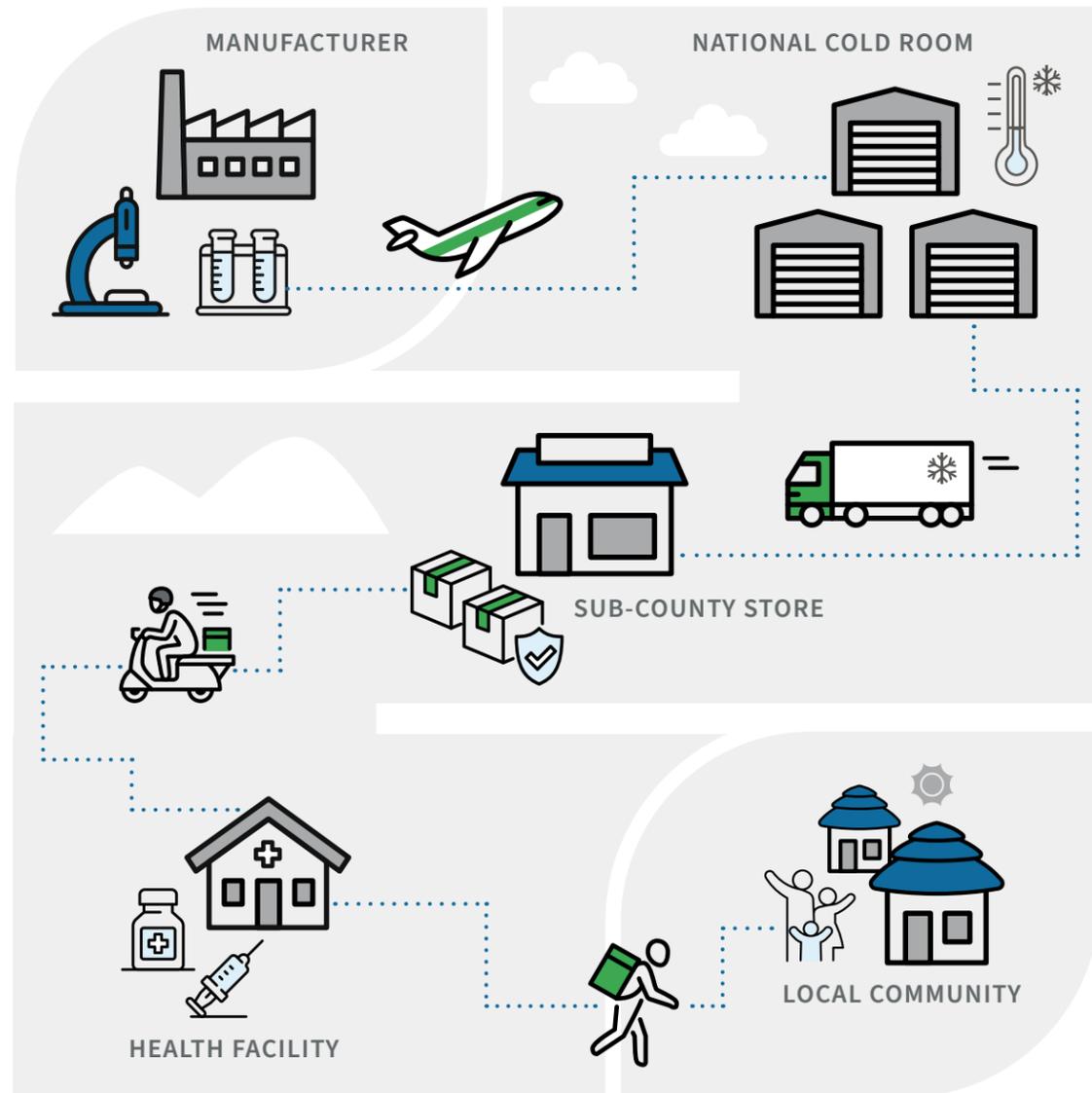
Number of Health Workers Trained



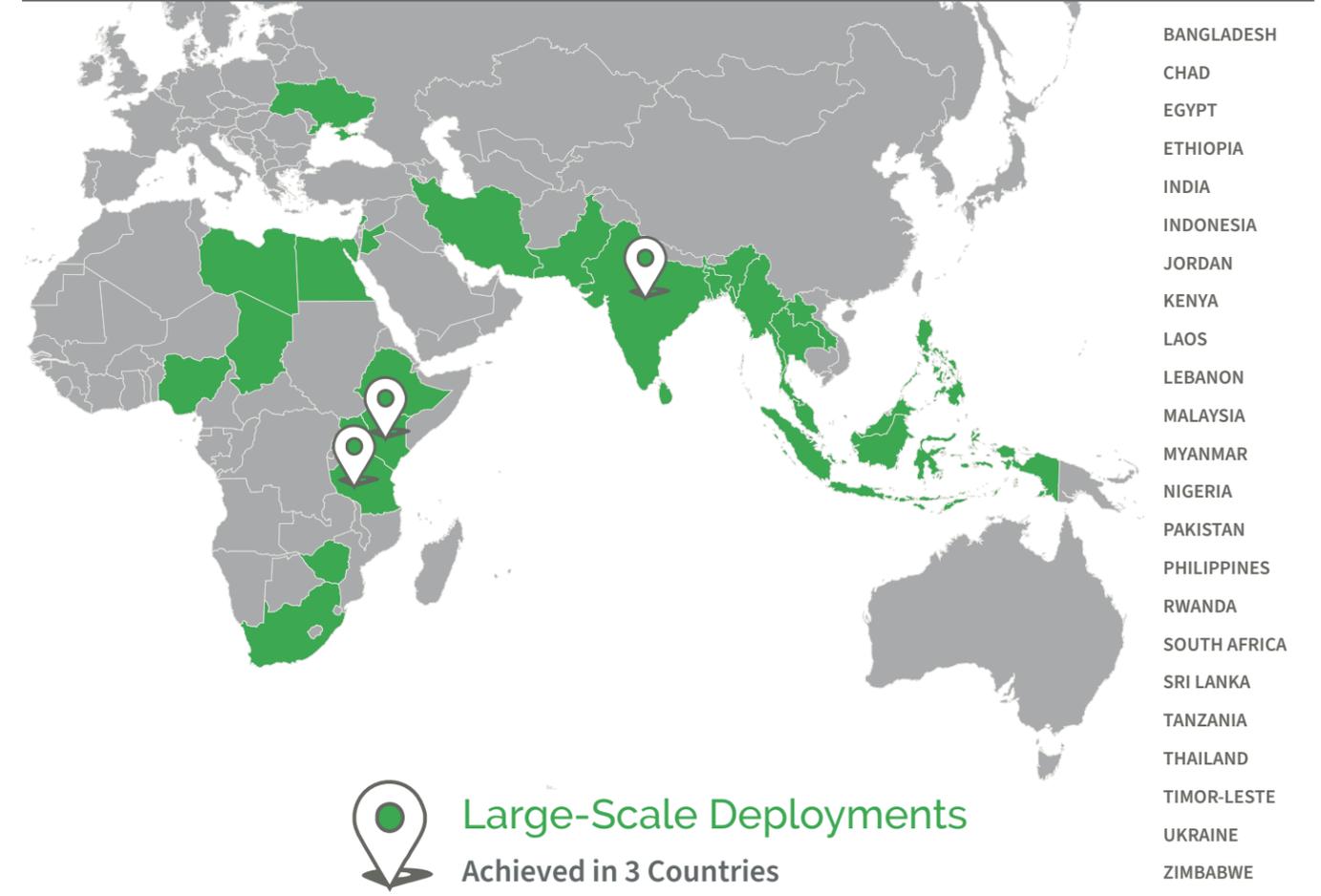


A Vaccine's Journey to the Last Mile

Achieving end-to-end vaccine visibility



DEVICES GENERATING DATA FROM 23 COUNTRIES





Cleaner Cooking Solutions for Families

Nexleaf's Clean Cooking Program had a breakthrough year. Our growing body of evidence and our mission to amplify women's needs through data set the stage for a paradigm shift away from cost-driven stove design, broken incentives, and haphazard financing. While continuing our data collection work in households, we have simultaneously been pushing the Clean Cooking sector to fund stove solutions that ensure utility and reliability for the women who cook. This year, our message gained some powerful champions.

In Nigeria, in partnership with RUWES and with support from CCAC, we applied Nexleaf's "Stairway to Scale" approach to test five different clean cookstove models across 50 households. The objective data from Nexleaf's StoveTrace technology, paired with qualitative data from households, enabled RUWES and Nexleaf to select the most promising biomass and "cleaner" fuel stove models for Phase 2 of this project.

And the tremendous potential of electric cooking — much of it solar and zero emissions — has pushed us to expand our

tech suite to monitor e-cookers as well. We are currently piloting our newest StoveTrace TrekAmp sensor device in Tanzania, in partnership with several global leaders in e-cooking, and we're learning more every day about how to adapt our data analytics to quantify the utility of emerging e-cooking technologies in households.

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Cooking solutions evaluated in field

INCLUDING:

- Biomass
- Liquid Petroleum Gas
- Ethanol
- Charcoal
- Electric Pressure Cookers



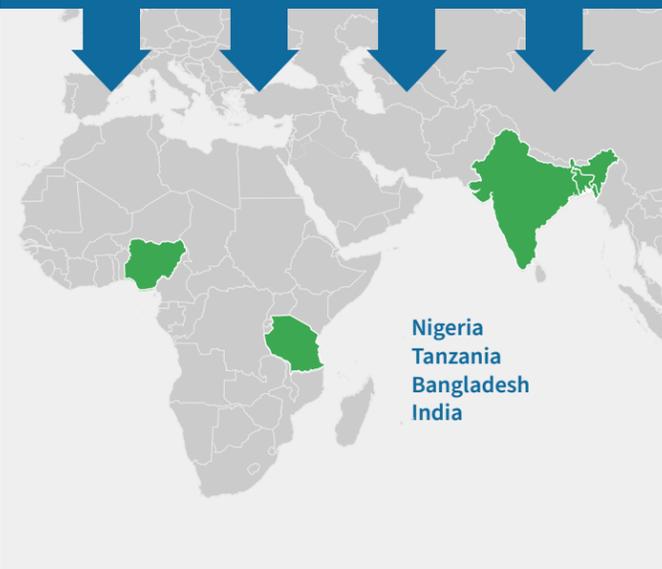
StoveTrace Devices

We are currently using

STOVETRACE



to monitor cookstoves across 4 countries



We've deployed

821
Devices

located across
540
Households

to test **13**
cookstove models

and **5**
different fuel types

to drive better adoption,
design, implementation,
and financing of
**reliable clean cooking
solutions across the globe**



Innovating for Good

Monitoring Life-Saving Equipment for Newborns

We continue to expand our impact through new innovations, under the leadership of Nexleaf's Co-Founder and CTO, Martin Lukac. This year we launched a new project, in partnership with Boston University, the Bill and Melinda Gates Foundation, and Lata Medical Research Foundation, to bring data-derived insights to Neonatal Intensive Care Units in emerging settings. Led by Program Manager Marym Mohammady, this work focuses on objective data streams gathered from NICUs to understand how highly-specialized equipment performs in real-world contexts.

"Our NICU equipment monitoring work is very energizing. We are exploring never-before-seen data streams coming out of real-world NICU settings so we can better understand the key barriers, such as those around equipment maintenance and power access, that prevent healthcare workers from being able to use intensive care equipment effectively," says Marym Mohammady.

Continuing the Innovation Journey

As a mission-driven tech company, Nexleaf always innovates using our own data insights, intelligence from life-saving interventions, and context-appropriate wireless sensing. We've prototyped and deployed several new devices, including:

- ST Trek, for remote clean household energy deployments
- CT Trek, for vaccine transport
- TrekAmp, for power monitoring and e-cooking solutions
- ColdTrace X, the next generation RTM device

Through this project, we have demonstrated how collecting data on power availability, power quality, and equipment utilization can yield rich and even unexpected insights. By combining objective sensor data with qualitative data, we are developing a more complex and nuanced understanding of the barriers to achieving the full potential impact of this life-saving equipment.

When we understand the landscape of challenges for specialized equipment use, we can address the problem of "equipment graveyards," a disastrous pitfall of uninformed equipment deployment that ends in piles of idle, defunct resources that we highlighted in an op-ed featured in *Stanford Social Innovation Review* earlier this year.

Our CTO, Martin, likes to remind us that innovation doesn't happen in one part of the company — we are all innovators. It is our collective challenge to push for progress, find daring solutions, and seek new opportunities to maximize the impact of life-saving interventions with Nexleaf tech and data solutions.



"Our NICU work is very energizing. We are exploring never-before-seen streams of data coming out of real-world settings so we can better understand the key barriers that prevent healthcare workers from being able to use intensive care equipment effectively." — Marym Mohammady

Nexleaf Health Advocates



Marym

What motivates me:

I am passionate about working with others to build systems solutions that improve health and benefit vulnerable populations. I'm especially interested in proactive, holistic and sustainable approaches that empower local communities.

What I learned this year:

Power access and electrification is critical. Even a one minute lapse of power in a health setting can have serious implications to the quality of health care and service delivery. Many people don't realize power outages are such a big problem. Everyone thinks generators are fail-proof, but our data shows that back-up power systems fail too, so it's important to address this infrastructural gap if we want to improve health outcomes.

What surprised me:

I'll never forget walking into a public NICU in India and witnessing a lack of essential resources that many of us take for granted, from adequate staffing to basics like gloves, consistent power, and functioning equipment...unfortunately, the list goes on. It's one thing to read about these gaps on paper, but quite another to see them in person. The nurses were doing the best with what they had-- it's quite humbling-- but they should have better access to resources and more support to do their meaningful work. Health care providers should not be stuck having to make tough decisions about which patients to save on any given day. We must ask ourselves: how can we ensure a well-functioning health care system that will drive us towards a healthier, more equitable world?

What brought you to Nexleaf / Why work at Nexleaf?

I was really inspired by Nexleaf's focus on identifying and addressing specific problems with very concrete, data-driven solutions. I especially appreciate the emphasis Nexleaf places on engagement with the people on the ground to understand their needs from their perspectives, rather than coming in with a solution that sounds good but doesn't actually work. Too often we see well-intentioned solutions that fail because there is a lack of on-ground, community engagement from the beneficiaries themselves. We need to change that and look to the people we intend to serve for real guidance.

What I'm looking forward to in 2021:

I'm thrilled about our collaboration with Dr. Bernard Olayo's inspiring team at the Center for Public Health and Development in Kenya on advocating for better neonatal care equipment ecosystems and power for health facilities. By bringing our unique expertise to identify the barriers around equipment use with good data, we can start to make noise where it matters and co-create effective solutions, and ultimately make an impact for healthcare workers and their patients. We can change how vulnerable populations experience the healthcare system and help people live healthier lives, starting at birth.



Hosea

What motivates me:

This past year I had the opportunity to contribute to many aspects of Nexleaf's work, from inputting on design for our new vaccine monitoring device (CTX), to field-testing new technologies. I enjoy sharing what Nexleaf has been doing with big audiences, bringing people in, and talking about the value and potential of data.

What I learned this year:

In light of the pandemic, it's so important to make sure Nexleaf plays a part in countries' preparation for COVID vaccine distribution.

What surprised me:

When I started, I thought my role would be more rigidly defined. But my role changed last year, from being coordinator to project manager, and again, less than a year later, my focus changed a bit. I get to be involved in multiple different projects within Nexleaf, and it fits well to my personal style. For me, it really surprised me and it's a good feeling to be in that kind of situation. I'm really happy with where I'm at.

What brought you to Nexleaf / Why work at Nexleaf?

I like technology, and when I found that I was going to get involved in data-related activities, that's when I knew I found exactly what I liked to do. I am very happy to have a chance to do advocacy work, talking to people about data, what it means, and how to utilize data to make the vaccine supply chain system as successful as possible.

What I'm looking forward to in 2021:

I look forward to bringing more users to use Nexleaf's products. Also, CTX is going to come out soon, and I look forward to countries benefiting from the advanced sensor device as they work to strengthen their vaccine cold chains.



Nelima

What motivates me:

I joined Nexleaf in January. I'd never heard of Nexleaf, but the mission drew me in. I appreciate the passion of the whole team and the measurable impact of the data, and also seeing how the data can drive decisions for positive change.

What I learned this year:

Before coming to work at Nexleaf, I didn't realize how much work goes into keeping vaccines safe and potent, and stored at safe temperatures until distribution.

What surprised me:

I quickly came to appreciate how dedicated the Kenya MoH team is to ensuring that every child is immunized, and that everything comes together to ensure an efficient supply chain. Also, Nexleaf's organizational culture is — so warm and open. Everyone I've worked with has been so helpful, and the organization genuinely fosters this culture. It's really amazing to see it happen.

What brought you to Nexleaf / Why work at Nexleaf?

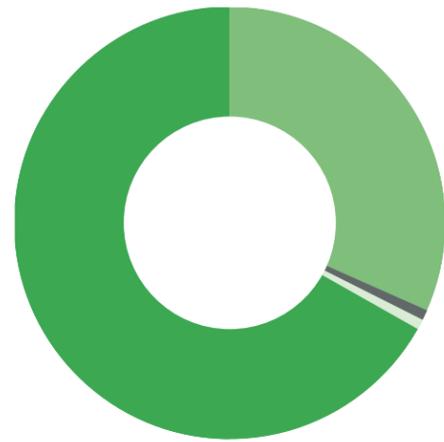
I was drawn by the impactful work that Nexleaf has been able to do in only 10 years! I was also drawn by the fact that it's a young-ish organization and thus is hungry for learnings and insights. This fits into what I value — continuous learning and improvement.

What I'm looking forward to in 2021:

I'm excited for more data discussions, especially on data ownership and integration. I'm also keen to explore how Nexleaf's data can have greater prominence in decision-making discussions among key stakeholders.

Financial Dashboards

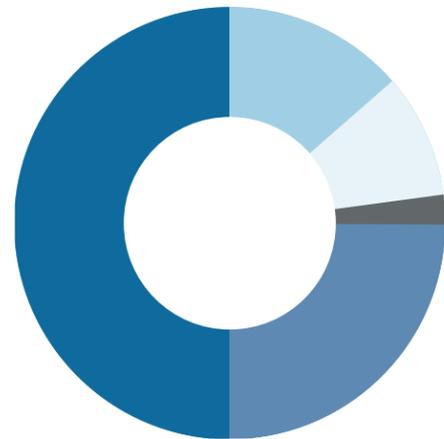
2019 Revenue by Sources



		2019	2018
66.9 %	Grants & Foundations	\$ 3,083,667	\$ 2,054,840
31.9 %	Earned	\$ 1,468,313	\$ 612,801
0.5 %	In-Kind	\$ 24,247	\$ 134,057
0.7 %	Individual	\$ 30,196	\$ 36,899
	Total	\$ 4,606,423	\$ 2,838,597



2019 Expenses by Program



		2019	2018
52 %	Vaccines	\$ 2,496,836	\$ 1,658,682
22 %	Clean Energy	\$ 1,045,241	\$ 833,043
12 %	Innovation	\$ 559,404	\$ 282,898
11 %	Operations	\$ 533,439	\$ 161,818
3 %	Fundraising	\$ 155,105	\$ 159,501
	Total	\$ 4,790,025	\$ 3,095,942





New voices from our growing team



Nishanth

- While technology has been my passion and the focus of my career, it's everything else about Nexleaf (the mission, the people, and the programs) that keeps me excited to show up to work. It has been a pleasure to work alongside such an ambitious and supportive team focused on adding something positive to this world.



Megan

- Coming from many years in the non-profit sector, I saw Nexleaf as a unique organization that was willing to acknowledge the shortcomings of health and development initiatives and provide real tools to address the types of problems that conventionally get glossed over or ignored. Since joining Nexleaf, I've been part of an amazing team that is incredibly collaborative, adaptive, open-minded, and committed. I feel grateful that my work helps to create the knowledge and evidence so that clean cooking can better meet the needs of women around the world.



Lucas

- The incredible people and culture at Nexleaf never ceases to impress me. Getting the chance to come to work with all these amazingly smart, hardworking, and motivated people has been a true joy. We've overcome so many challenges together and our ability to adapt, iterate and solve real world problems always comes down to the amazing team assembled here and the principles that guide us.



Aayush

- I'm really lucky to be working at a place where I get to learn a lot and work on a lot of different aspects — from understanding how users use our products, to designing interfaces, to implementing the tech. I enjoy working for a company that helps people improve their quality of life. Most engineering jobs are trying to solve very specific problems which don't help improve people's quality of life. I found Nexleaf to be a great balance in terms of impact and challenge.

Recognition & Support

Nexleaf Donors, Partners, and Champions

Nexleaf wishes to offer our sincerest thanks to the following donors, partners, advisors, and enduring champions:

Access to Energy Institute (A2EI)	Gerson Lehrman Group, Inc.	RippleWorks
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Foundation Beyond Belief	Qualcomm for Good	VillageReach
Gavi	Radhika & Ambarish Malpani Foundation	Waldfogel Family Foundatio
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Doug Smith	June Sugiyama	Reshma Anvekar	
Durwood Zaelke	Karan Sagar	Rick Buettner	

Press Features

 Nexleaf regularly shares our work in peer-reviewed publications, journals, and a variety of media outlets each year. Click below to explore a few highlights from 2019.

PODCAST: GettingThere
Household Air Pollution | How can 3 billion people living in underdeveloped nations breathe cleaner air?

ARTICLE: The Beam
Clean cooking: a vital tool to combating global climate change

ARTICLE: Financial Times
Delivery innovation spreads vaccines' benefits

ARTICLE: Global Health: Science and Practice Journal
Using Data to Keep Vaccines Cold in Kenya: Remote Temperature Monitoring With Data Review Teams for Vaccine Management

 Successful uptake of clean cooking solutions is challenging because oftentimes, the cookstoves or fuels are not adaptable to the needs of communities."
– Rotimi Olatunji

ARTICLE: The Beam
Clean cooking: let the data speak for itself



Vision for the future

During our first decade, Nexleaf made the case that objective data from the ground can and should influence how we design, carry out, and sustain public health and environmental interventions. Now, our emphasis shifts to ensuring that these data streams will continue to proliferate, drive system-wide improvements, and create human-centered feedback loops that protect our planet and save lives.

In the coming months and years, we will work with our partners to ensure the responsible and transparent use of

data. In the face of a changing climate, the threat of disease, and the destabilization of traditional infrastructure, we will refine both our tech and our approach to ensure that country leaders and last-mile communities are always in the driver's seat of interventions intended to save lives. And we will work shoulder to shoulder with governments to maximize the impact of our work in global immunization, clean household energy, neonatal health, and beyond.





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