

# IMPACT REPORT

**YALE CERTIFICATE IN FINANCING AND  
DEPLOYING CLEAN ENERGY PROGRAM**



<b>SUMMARY</b>		<b>3</b>
<b>INTRODUCTION</b> FROM PILOT TO SELF-SUSTAINING PROGRAM		<b>5</b>
<b>EDUCATION FOR IMPACT</b> A CURRICULUM DESIGNED FOR ACTION		<b>6</b>
<b>REFLECTING OUR DIVERSE WORLD</b> RECRUITING FOR THE CLEAN ENERGY WORLD WE WANT TO SEE		<b>11</b>
<b>INCREASING ACCESS TO EDUCATION</b> REMOVING BARRIERS TO YALE'S INSIGHT AND EXPERTISE		<b>14</b>
<b>BUILDING CRITICAL KNOWLEDGE NETWORKS</b> WE ALL GO FARTHER TOGETHER		<b>16</b>
<b>PROGRAM SATISFACTION</b> PARTICIPANTS HIGHLY RATE THIS PROGRAM		<b>18</b>
<b>WHERE DO WE GO FROM HERE?</b> WHERE WE ARE AND WHERE WE WANT TO GO		<b>20</b>
<b>APPENDIX I.</b> <b>ABOUT THE FDCE PROGRAM</b>		<b>22</b>

# SUMMARY

An aerial photograph showing rows of solar panels installed in a field. The panels are arranged in parallel lines, separated by narrow paths of grass and soil. The perspective is from a high angle, looking down at the panels, which are oriented towards the top-left of the frame.

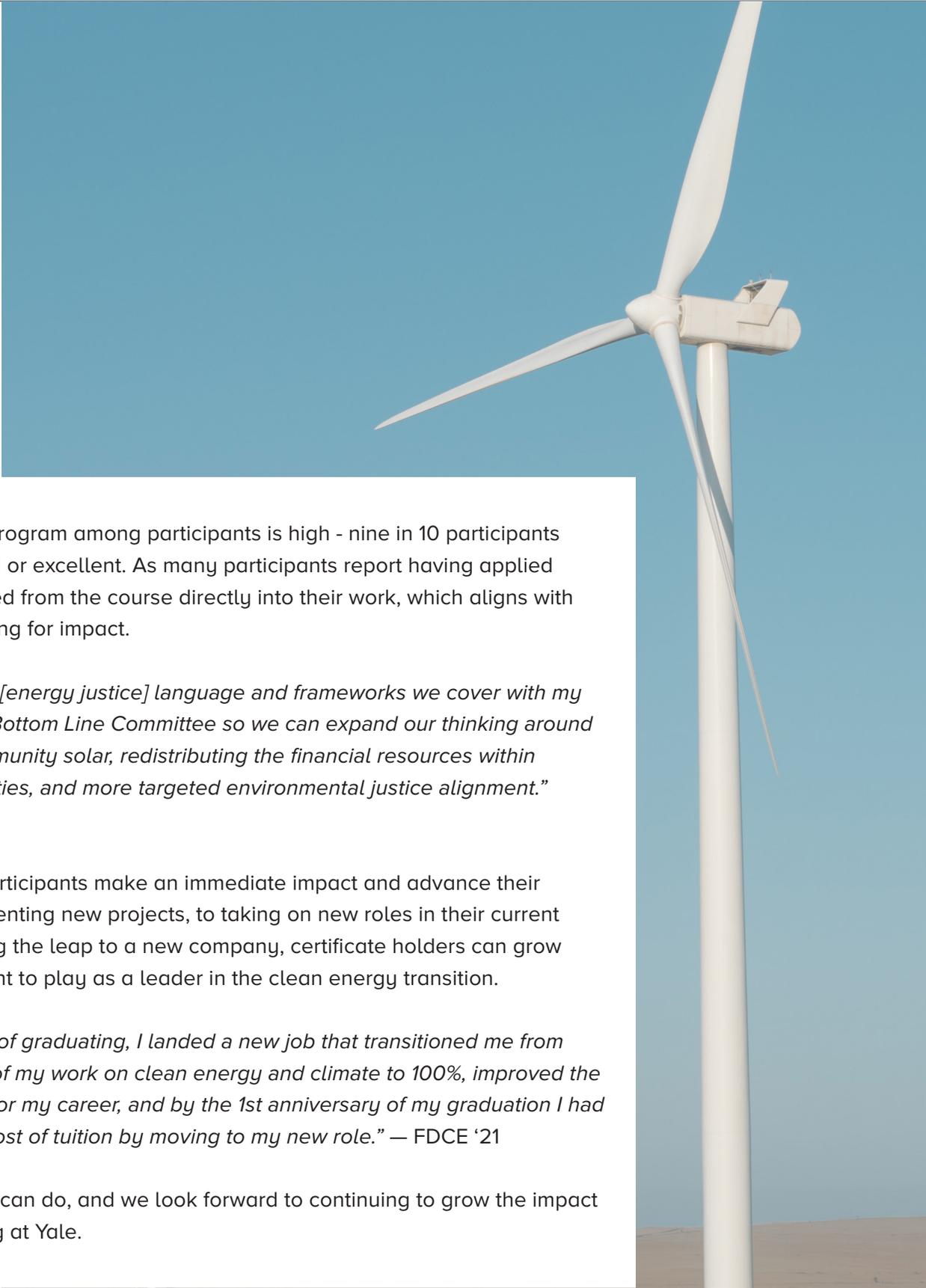
Financing and Deploying Clean Energy (FDCE) is an online certificate program at Yale that trains and connects rising leaders in the clean energy field to catalyze an equitable transition to a clean economy. Below are some impact highlights since the program launched in 2019.

In three years, the FDCE program has trained over 400 working professionals from around the globe to catalyze the transition to a clean economy via clean energy deployment. Our focus is on building global networks, collaborative learning and immediate application.

We have built an engagement platform where the FDCE community and those working in clean energy across Yale can convene to share insights, post opportunities and spark new ideas. Professionals join the program from countries around the world, and the FDCE program has taken intentional steps to recruit women and people of color to exceed representation in energy and renewable energy sectors.

The program is now a financially self-sustaining program, with its primary source of revenue coming from tuition. From the success of this program, we are able to support other important initiatives, such as a new Clean Equitable Energy Development program and an online course in Connected Leadership.

We offer scholarships to stand out applicants with high potential impact. In recent years, mostly women and people of color who have been working the clean energy space and demonstrate financial need received the largest scholarship amounts. In the summer of 2022, we also received a gift which enabled us to offer eight full scholarships to outstanding FDCE '23 participants from India, Kenya, Rwanda, Togo, and Cote D'Ivoire. In total, over \$700,000 has been awarded since the program began.



Satisfaction with the program among participants is high - nine in 10 participants rated courses as good or excellent. As many participants report having applied something they learned from the course directly into their work, which aligns with our mission of educating for impact.

*“I have shared the [energy justice] language and frameworks we cover with my company’s Triple Bottom Line Committee so we can expand our thinking around the impact of community solar, redistributing the financial resources within targeted communities, and more targeted environmental justice alignment.”*

— FDCE ‘20

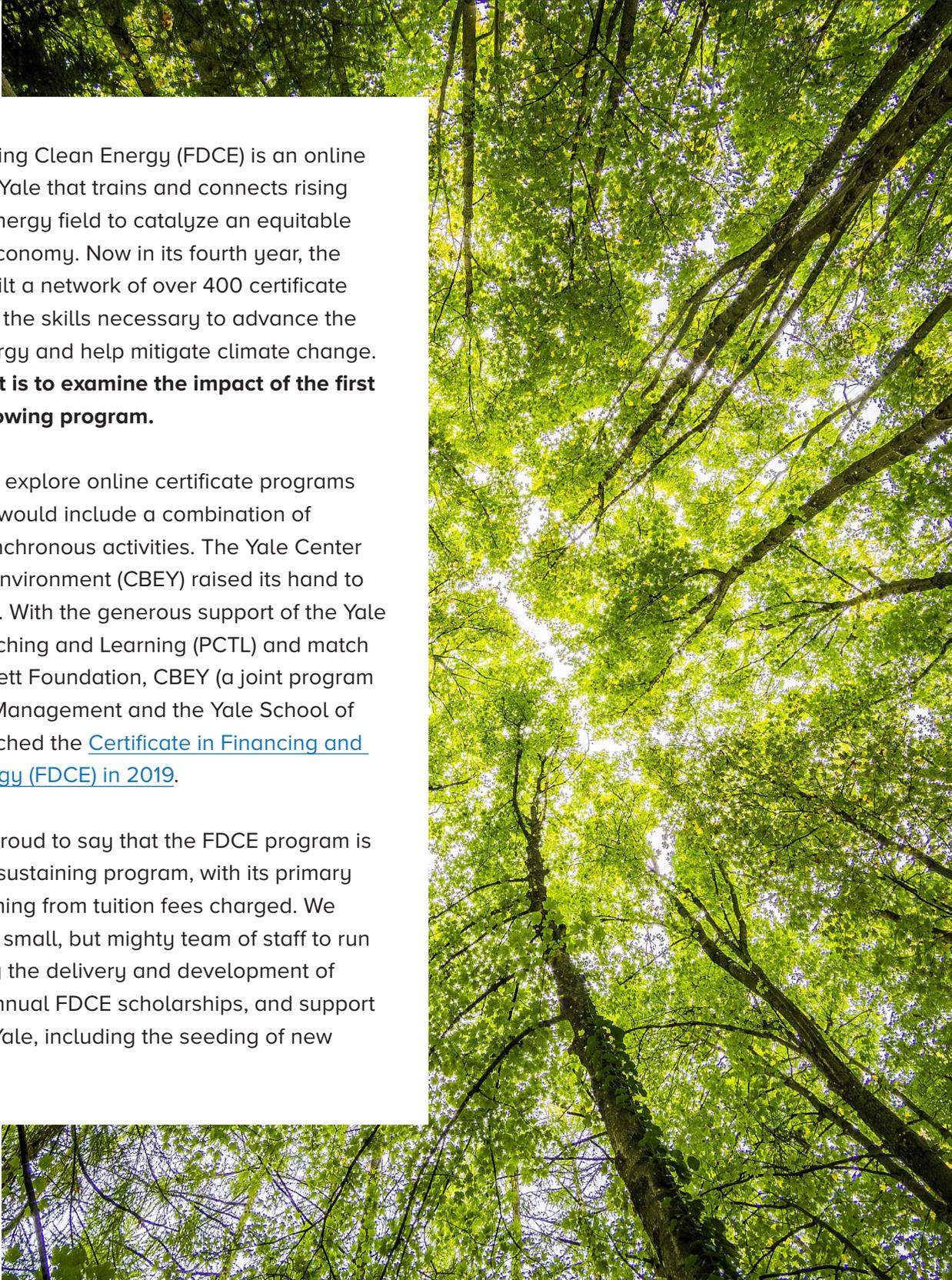
The program helps participants make an immediate impact and advance their careers. From implementing new projects, to taking on new roles in their current organizations or taking the leap to a new company, certificate holders can grow into the roles they want to play as a leader in the clean energy transition.

*“Within 12 months of graduating, I landed a new job that transitioned me from spending 10-20% of my work on clean energy and climate to 100%, improved the overall trajectory for my career, and by the 1st anniversary of my graduation I had earned back the cost of tuition by moving to my new role.”* — FDCE ‘21

There’s a lot more we can do, and we look forward to continuing to grow the impact of online programming at Yale.

# INTRODUCTION

## FROM PILOT TO SELF-SUSTAINING PROGRAM



Financing and Deploying Clean Energy (FDCE) is an online certificate program at Yale that trains and connects rising leaders in the clean energy field to catalyze an equitable transition to a clean economy. Now in its fourth year, the FDCE program has built a network of over 400 certificate participants who have the skills necessary to advance the adoption of clean energy and help mitigate climate change. **The goal of this report is to examine the impact of the first three years of this growing program.**

In 2017, Yale sought to explore online certificate programs to test a model which would include a combination of synchronous and asynchronous activities. The Yale Center for Business and the Environment (CBEY) raised its hand to participate in this pilot. With the generous support of the Yale Poorvu Center for Teaching and Learning (PCTL) and match funding from the Emmett Foundation, CBEY (a joint program of the Yale School of Management and the Yale School of the Environment) launched the [Certificate in Financing and Deploying Clean Energy \(FDCE\) in 2019](#).

The team at CBEY is proud to say that the FDCE program is now a financially self-sustaining program, with its primary source of revenue coming from tuition fees charged. We are able to maintain a small, but mighty team of staff to run the program, including the delivery and development of curriculum updates, annual FDCE scholarships, and support new programming at Yale, including the seeding of new online programs.

# EDUCATION FOR IMPACT

## A CURRICULUM DESIGNED FOR ACTION

While \$1.7 trillion dollars is currently being invested in the clean energy sector, it is estimated that investing \$2.5 trillion annually through 2050 will be necessary to meet our urgent climate goals. There is an undeniable and urgent call for the private sector to support the clean energy transition, and new financing mechanisms hold great promise. Bold enabling policies also need to be enacted. New technologies must be deployed and existing technologies improved and scaled. All of this requires an order of magnitude increase in human capacity.

This is precisely why CBEY has drawn on its vast network of professionals and on the expertise of Yale faculty to offer a unique program marrying academic rigor with practical skills. **In a condensed, user-friendly format, the FDCE program helps professionals understand and navigate the interplay of the financial, technological, and socioeconomic drivers in financing and deploying clean energy.**

Our theory of change is that through online education we can equip those working in the energy sector across the globe to accelerate a clean and just energy transition right away. We have a significant focus on building global networks, collaborative learning and immediate application—as we educate for impact. To learn more about the curriculum design, please see sections below and [visit our website, here](#).



## Our participants are making an immediate impact.

Our participants make an impact right away! In the first core course, Clean Energy Policy, they explore how policy is made and what makes it successful by examining the current regulatory framework, energy policy history, and case studies.

Participants are also required to develop their own policy recommendations, which are peer reviewed and evaluated against different frameworks, such as an adapted version of [Shalanda Baker's Energy Justice Scorecard](#). We then encourage them to send their policy recommendations directly to decision makers.

### **Each year, over a third of the policy memos are indeed sent to a decision maker.**

Since 2019, memos have been sent to:

- Congresswoman Sheila Jackson Lee (TX) to argue for a federal U.S. carbon tax
- Senator Sheldon Whitehouse (RI) to advocate for CO2 capture
- the California Air Resources Board to support minimum standards for EV in rental car fleets
- the US Postal Service to advance an all EV fleet
- CT Green Bank to share ideas on how to meet PURA goals for battery storage
- U.S. Dept of Treasury to suggest purchasing bond issuances from green banks
- the City Council of Flagstaff, AZ to establish a Sustainable Building Resolution for municipal buildings
- Lt. Governor Brian Benjamin to develop a NYS Environmental Bond to fund green energy strategies
- Senator Maria Cantwell to urge the electrification of the American rail system

Policy recommendations were made to the United Nations offices of UNDP, UNIDO, and IOM, as well as in other countries including UK, Bahrain, UAE, Mexico, Algeria, Egypt, Rwanda, Nigeria, and Togo.

## Our participants are advocating for change.

Matt Jordan (FDCE '22) advocated for 100% clean energy through Community Choice Aggregation (CCA) to the Mayors and City Councils of Grandview Heights, as well as a modified version to the Council and Mayor of the neighboring city of Marble Cliff, Ohio. Not only that, Matt has been busy working with an NGO, Power a Clean Future Ohio, to develop, fund and lead the campaign to get the policy passed by voters in both towns.

Cecile Martin-Philips (FDCE '20) advocated with the Minister of Mines and Energy of Togo to join a large group of countries in an international alliance for the deployment of solar power.

Katherine Elliot (FDCE '22) is the Director of Investments and Sustainability at Equity Residential, a publicly-traded real estate investment trust and one of the largest US apartment owners. Katherine successfully advocated for Equity Residential to adopt a new public carbon reduction commitment and is currently busy working on their pathway and target submission package for the Science Based Target Initiative (SBTi) which includes scopes 1, 2 & 3.

### CERTIFICATE HOLDER SPOTLIGHT



[Luis Aguirre-Torres](#) (FDCE '22) is the Director of Sustainability for the City of Ithaca, New York. Luis had just taken on this position when he applied to FDCE program. During the first core course of the program, Luis wrote to the Office of the Mayor and Common Council recommending that Ithaca “shall mandate all building owners and facility managers compliance with strict energy efficiency standards and carbon emissions limits, starting in 2025, and gradually increasing until reaching the highest energy efficiency and lowest possible net-zero emissions from energy use by 2030.” Check out what happened next: [Ithaca, New York becomes first U.S. city to begin 100% decarbonization of buildings, an urban climate change milestone.](#)

About the program, Luis has said, “everything I have learned in the FDCE program has been useful. I have experience in policy, but understanding the contextual information, the technical aspects of environmental policy, the justification based on market behavior and the specific limitations of every agency helped me shape some of what I do every day. Another wonderful aspect has been the engagement with the rest of the cohort, with whom I have developed relationships and with whom I am in the process of developing actual projects in the City of Ithaca.”

He continues to leverage his FDCE education and network to lend more support to his initiatives. Additionally, his office has served as a “client” or case study for groups Yale students to propose solutions. This summer Luis is hosting an inaugural Planetary Solutions in Clean Energy intern (and previous FDCE Teaching Assistant).

Hope Duke (FDCE '22) is a Sustainability Program Associate at RE Tech Advisors. Her ideas are being incorporated into official company-related publications, and the company is making plans to run a short brownbag series with Hope to share some of the key takeaways she's learned from the FDCE program.

Sabina Blanco Vecchi (FDCE '22) is sharing her ideas with colleagues working across the continent of Africa on energy access projects.

**“The Energy Justice Scorecard is a tool I have already shared with coworkers who are trying to develop some equitable renewables programs.”**  
— FDCE '21

**“The path dependency framework is most applicable to my work. I can use this structure to articulate the impacts and importance of green banks to policy makers.”**  
— FDCE '20

### **In their own words:**

*“Within 12 months of graduating, I landed a new job that transitioned me from spending 10-20% of my work on clean energy and climate to 100%, improved the overall trajectory for my career, and by the 1st anniversary of my graduation I had earned back the cost of tuition by moving to my new role.”* — FDCE '21

*“We are beginning to establish a VPPA for the fashion industry and are also looking at a transparency ESG on product labels. It was really useful to review current legislation and case studies to understand the best way to implement these projects and what supporting initiatives are needed to make this holistic, reinforcing, and equitable.”* — FDCE '22

*“As a developer I need to be knowledgeable about the policies that can work for or against my projects. Learning about different strategies to move my projects forward is a direct translation. I reviewed the SMART Program regulation for Massachusetts to help me complete the policy memo assignment. While doing an in-depth review of certain sections of the SMART Program, I was able to identify a way to save a project my company is working on from the brink of regulatory termination!”* — FDCE '20

*“I am really enjoying the content on energy justice, and it is notable how prevalent the material keeps the subject. I have shared the language and frameworks we cover with my company’s Triple Bottom Line Committee so we can expand our thinking around the impact of community solar, redistributing the financial resources within targeted communities, and more targeted environmental justice alignment.” — FDCE ‘20*

*“I’m working directly with the local government to advocate for a shift to 100% renewables. The assignment helped accelerate that effort. The deep dive into the mechanics of the energy system (e.g. capacity markets, ancillary services markets) was really useful—I’d never really gotten such a clear vision of that in my career.” — FDCE ‘22*

*“I am currently responsible for program management services to our renewable energy development efforts. Coming from a transmission background, much of the terminology and principals I have needed to learn on the fly. This course has helped me tie together the daily factoids I’ve been exposed to into a more holistic understanding.” — FDCE ‘22*

#### CERTIFICATE HOLDER SPOTLIGHT



[Miles Braxton](#) (FDCE ‘21) currently coordinates risk management at Goldman Sachs Renewable Power Group, and was formerly an associate at Sol Systems. Miles quickly stood out as someone eager to create connections and make an impact. The third week of our finance course he shared, “As a project analyst for a C&I solar developer and financier, I work on project models every day. One of the reasons I applied for this certificate is because I had no formal economics or finance training in school. Just in the last 6 hours, I have been able to run sensitivity analyses on project models of my company’s biggest markets and campaigns. While my team and the investments team had assumed for years that the biggest driver to internal rate of return, cost of land purchase, or the power purchase agreement were two specific variables, that ended up not really being the case.”

In addition to pursuing his own professional growth to great success, he is also a founding member of the [Black Oak Collective](#), an organization that promotes job opportunities, fosters mentorship, and aims to build a channel for Black talent in environmental fields. It was while he was in FDCE that he co-developed this organization, utilizing the FDCE network as a sounding board for his ideas and learning from others’ experiences around starting an organization. He was recently awarded the Leadership in Green Power Education from the Environmental Protection Agency and Center for Resource Solutions and the JEDI Champion Award from Clean Energy Leadership Institute (CELI) for his efforts in diversifying the clean energy candidate pool. Miles has come back to speak at several CBEY-hosted events.

# REFLECTING OUR DIVERSE WORLD

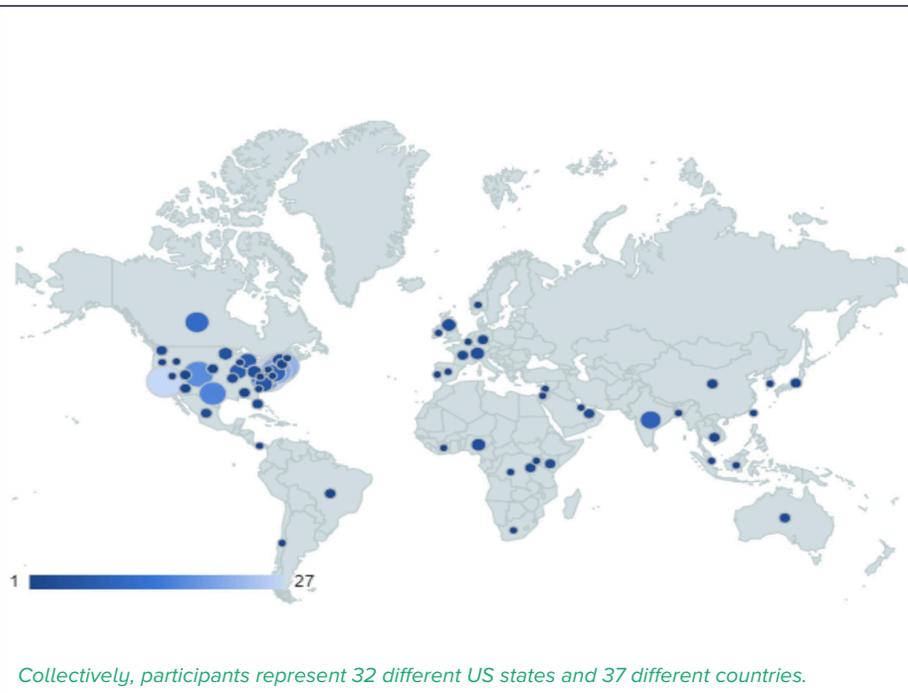
## RECRUITING FOR THE CLEAN ENERGY WORLD WE WANT TO SEE

As the world focuses on clean energy's role in the recovery of the COVID-pandemic and in the mitigation and adaptation to climate change, we need to ensure our clean energy transition is equitable. It's clear that there is a disparate impact of climate change on different populations, and a diversity of experiences and perspectives is needed to create solutions that work for everyone.

In order to center equity in the clean energy transition, and build a program that reflects our diverse world, the FDCE program seeks to recruit and train a

pipeline of diverse (including, but not limited to, professional experience, racial and ethnic backgrounds, gender identity, and socioeconomic status), systems-thinking energy professionals and connect them to a powerful network. In doing so, we seek to contribute not only to solutions to climate change, but also the global challenge of economic inequalities.<sup>1</sup>

Ensuring **greater gender and racial diversity in the clean energy workforce is a priority for the FDCE program.** In the years prior to the COVID pandemic, the U.S. energy sector was growing twice as fast as the overall economy.<sup>2</sup> The U.S. recognizes that with critical investments in infrastructure, it can reignite that job growth.<sup>3,4</sup> Clean energy jobs tend to pay better than other sectors and are often unionized. During this great economic expansion, it is also important to ensure that women, Hispanic and Latino workers, and Black workers don't miss out.



<sup>1</sup> UN Sustainable Development Goals: Affordable and Clean Energy (7), Decent Work and Economic Growth (8), and Reduced Inequalities (10).

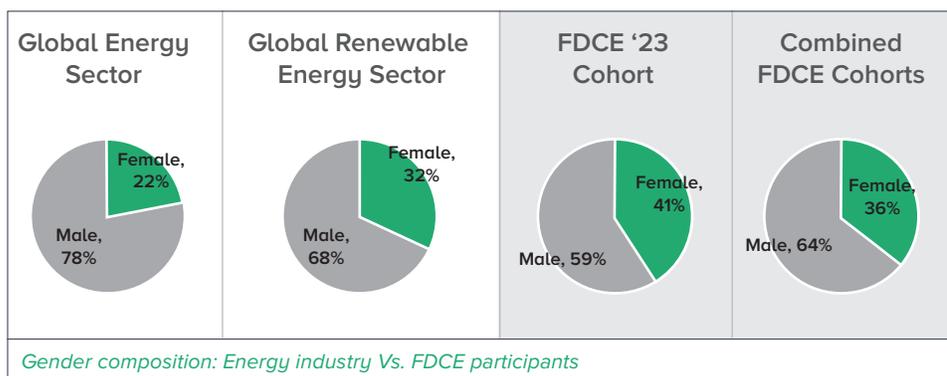
<sup>2</sup> U.S. Department of Energy. "United States Energy & Employment Report 2020." (2021). <https://www.energy.gov/us-energy-employment-jobs-report-useer>

<sup>3</sup> U.S. Department of Energy. "United States Energy & Employment Report 2020." (2021). <https://www.energy.gov/us-energy-employment-jobs-report-useer>

<sup>4</sup> U.S. Department of Energy. "DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver For American Workers, Families and Usher in the Clean Energy Future." (2021) <https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0>

## FDCE promotes the leadership and participation of women in the clean energy transformation.

“Despite making up 48% of the global labor force – women only account for 22% of the traditional energy sector.”<sup>5</sup> The renewable energy space tends to do better, with upwards of 30% of folks working renewable electricity generation identifying as women. This is promising, but if we take a closer look at recent trends, female participation in the clean energy workforce has been deteriorating over the past four years, exacerbated by women suffering a larger economic fallout from the COVID-19 pandemic than men.<sup>6</sup> As global trends worsen, the FDCE program has taken intentional steps to recruit women to exceed representation in energy and renewable energy sectors. There is still some room for improvement to achieve parity in gender representation more on par with the global labor force.



### CERTIFICATE HOLDER SPOTLIGHT



Meet [Ivana Jemelkova](#) (FDCE '21). She is the Managing Director at FTI Consulting. Ivana is a great example of our target audience—someone who is a busy working professional and a mother to a young child who was able to thrive in the online certificate model.

Ivana has been in the energy space for about 10 years and holds deep expertise in several areas of the energy transition—especially renewables, electric vehicles, and hydrogen. She joined the program to fill knowledge gaps and understand how the various pieces connect as well as explore new perspectives. The program not only helped her be a better consultant, but also a better colleague to her team. She reports, “I’m thinking differently about many aspects of the energy transition - more deeply, and systematically. The program has helped me connect the dots and consider the various policy, technical and financing aspects of different solutions in a much more nuanced manner.”

<sup>5</sup> <https://www.iea.org/topics/energy-and-gender>

<sup>6</sup> <https://e2.org/wp-content/uploads/2021/09/E2-ASE-AABE-EEFA-BOSS-Diversity-Report-2021.pdf>

## FDCE promotes the leadership and participation of BIPOC in the clean energy transformation.

The COVID-19 pandemic killed Americans of color at a higher rates than white people due to systemic and structural inequities due to racism. Likewise, the damaging effects of climate change have been unequally and unjustly concentrated in communities of color.

Initiatives like Justice40 ensure that some benefits from climate action go to historically disenfranchised communities, but more can be done, including ensuring greater diversity in the clean energy workforce. Black and Hispanic/Latinx workers are even more poorly represented in clean energy than they are across the rest of the economy. By supporting the inclusion of underrepresented ethnic and racial groups, we are working to ensure that the benefits of this great economic expansion are more equitably shared.<sup>7</sup>

We have been working to bring the demographic composition of our participants in line with the energy workforce. While not perfect, we have recently increased diversity, particularly among people who identify as Black or African American (the most inadequately represented in the sector). As we continue to grow the program, it is imperative that we continue to focus on building diverse cohorts of clean energy professionals.

Demographic	Overall U.S. Labor Force	Total Energy Workforce	Clean Energy Workforce	FDCE '23	Combined FDCE Cohorts
Black or African American	13%	10%	8%	17%	6%
Asian	7%	7%	8%	16%	13%
American Indian or Alaska Native	<1%	2%	1%	1%	0%
Two or more races	2%	8%	8%	3%	1%
Hispanic/Latinx	18%	16%	17%	4%	10%
People of color	22%	28%	27%	47%	37%
Women	48%	25%	27%	41%	36%

<sup>7</sup> <https://e2.org/wp-content/uploads/2021/09/E2-ASE-AABE-EEFA-BOSS-Diversity-Report-2021.pdf>

# INCREASING ACCESS TO EDUCATION

## REMOVING BARRIERS TO YALE'S INSIGHT AND EXPERTISE

Financial support is essential to improving access to the program. **Since 2019, we have offered scholarships of \$500 and up to 47% of all participants, to date that is over \$700,000 in scholarships.** We offer high-level scholarships (up to 75% of tuition) to stand out applicants with high potential impact, most of whom were women of color with primarily 10+ years of experience and a demonstrated financial need. In 2022, we received a gift which enabled us to offer eight full scholarships to outstanding FDCE '23 participants from India, Kenya, Rwanda, Togo, and Cote D'Ivoire.

### Learn more about a few of our scholarship recipients:

In her recommendation letter, **Fally Tikipana** was described as the most brilliant PhD candidate they had ever advised at the National Engineering School of Metz in France. "Although I tried to convince her to become a professor and peer of mine, she decided to pursue a more operational career in the energy sector." For the past nine years, Fally has worked as an energy project manager and an energy data analyst, in Africa and France, with a particular focus on technologies for a clean energy transition. She is joining the FDCE program to gain more understanding of the policies that affect the deployment and financing of these technologies. "What really matters to me is to create hope for local [sub-Saharan African] communities and support them in implementing clean energy projects in agreement with their development imperatives. It is a way of paying back my parents for their tremendous sacrifices." Fally is proud of her Togolese heritage and volunteers frequently.





**Dr. Linda Ogallo** is a climate change adaptation expert for the IGAD Climate Prediction and Application Centre, an organization which serves 11 countries in the Horn of Africa. A well-published researcher, Linda focuses on understanding the impacts of climate change in the region, its impacts and designing the response. She works with regional, national, and subnational governments to pilot adaptation interventions among vulnerable communities, examine gaps in climate services and climate policy. After five years of studying adaptation systems while getting her PhD in climate adaptation and four years of working in the field, Linda recognizes the need to change Africa's approach to adaptation funding. With an increase in global crises like the COVID-19 pandemic and Ukraine war, global funding availability for the continent is at risk. Linda aims to set up a regional climate fund for the Horn of Africa and is looking forward to better understanding innovative financial mechanisms to assist with drawing in and leveraging funding climate action.



**Teddy Mugabo** is a 2022 Eisenhower Fellow and the CEO of Rwanda's Green Fund, which is actively developing a Green Investment facility. "The work I'm involved in at the fund has a strong focus on addressing poverty, building resilience of rural communities against climate change and mitigating/reducing carbon emissions through several clean energy projects that we implement." Using a "green bank" model, the facility aims to address local market gaps and crowd in private finance, strengthen Rwanda's ownership of climate finance and improve access to international finance (non-grant) resources, and build their green finance capacity of local banks through innovation, risk transfer and deal arrangement. Teddy looks forward to learning more in the FDCE program about clean energy technologies, supportive policy frameworks, and project financing & innovative financing mechanisms to support Rwanda's ambitious transition to a greener economy.



**Edore Onamakpome** is a 2022 Eisenhower Fellow and the Regional Infrastructure Portfolio Manager for International Finance Corporation (IFC). Edore's 20-year energy & infrastructure finance career has spanned several African countries, with stints in the UK and US. Most recently, Edore oversaw IFC's +\$5bn Africa Infrastructure Portfolio, which covered 16 countries. Edore now manages a +\$1bn South Asia Infrastructure portfolio. Edore shares her passion for joining the FDCE '23 program: "The pandemic has exacerbated the already significant number of the global population that are excluded from access to electricity, healthcare, and technology; with most of the affected living in sub-Saharan Africa. As the world transitions towards clean energy, it is critical that Africa is part of an equitable solution – which focuses on energy security and affordability. I am looking to unlock the challenges to scaling and commercially funding mini-grids and using clean energy to increase rural electrification access to improve delivery of social services, specifically primary health care and education. The Yale Financing and Deploying Clean Energy course draws on all these aspects in my research and is aligned with my viewpoint that adopting a holistic approach to mini-grid development and stimulating the productive use of energy, will promote sustainable and scalable development of mini-grids."

# BUILDING CRITICAL KNOWLEDGE NETWORKS

WE ALL GO FARTHER TOGETHER

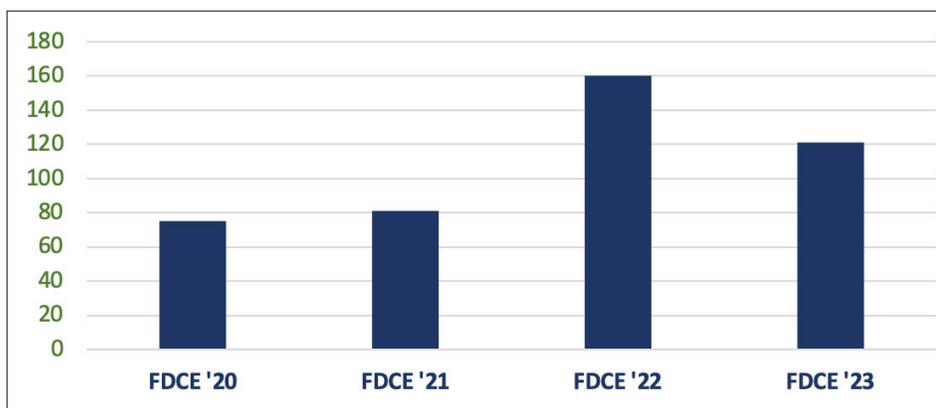
The FDCE program **builds critical knowledge networks** of highly engaged professionals working on the complicated challenges of our global energy transition. Since its launch, over 400 clean energy professionals from around the world have joined the FDCE program.

**To expand our impact, we increased the number of enrolled certificate participants.**

Complex, intersectional global problems like climate change require action at all scales and across sectors. To tackle them, people from many different backgrounds must come together to develop innovative approaches to how we produce, distribute, and consume energy. It requires a cross-sectoral approach and an interdisciplinary lens. It requires an informed workforce and powerful knowledge networks. And it

requires sharp skills and a willingness to learn. After our first two years, we saw the need to empower more people with the tools from this program, and felt confident in our ability to dramatically increase the size of our cohort. FDCE cohorts include participants from:

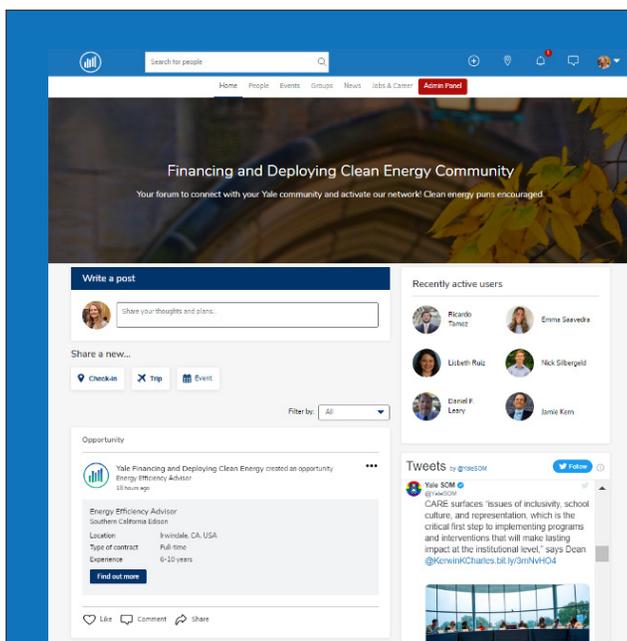
- The finance community across sectors and scales, including capital providers, foundations, and endowment teams focused on climate and/or energy;
- Policymaking organizations at the federal, state, regional, or local levels;



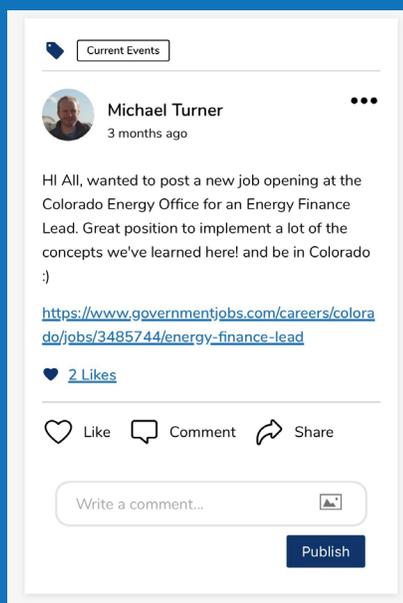
- The power market, including utilities, project developers, clean energy generation, storage, efficiency systems manufacturers, designers, or operators; and
- Nonprofit organizations involved in the clean economy transition, including advocacy and research groups.

Participants come from various organizations spanning the clean energy sector. Some of those organizations include the Connecticut Green Bank, Sol Systems, AVANGRID, Resonant Energy, National Renewable Energy Laboratory, Duke Energy, National Grid Renewables, Inclusive Prosperity Capital, Siemens Energy, New York Power Authority, U.S. Department of Energy, Chevron, Booz Allen Hamilton, Price Cooper Waterhouse, RE Tech Advisors, Calvert Impact Capital, Sparkfund, Charles River Associates, AES Corporation, Citibank, Pivot Energy, ClearPath, Department of Foreign Affairs and Trade, Southern California Edison, Environmental Defense Fund, Ford Motor Company, U.S. Environmental Protection Agency, Amazon, African Energy Commission, various UN and EU bodies, the Cities of Flagstaff, Ithaca, and Santa Barbara, and numerous small organizations or startups.

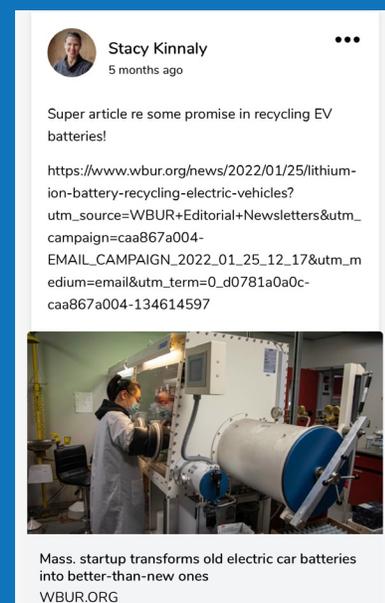
The certificate brings these individuals with varied backgrounds together, who then share a common experience via this program. Certificate participants engage frequently with one another throughout the program in discussion forums, group work, peer-reviews, synchronous live sessions on Zoom, and optional networking activities. And the learning does not stop once certificates are in hand! They continue to share insights and opportunities via a private social networking platform, the FDCE Community Platform. Here they engage with peers, staff and faculty to share events, travel plans, achievements, job opportunities, requests for help, and more.



The FDCE Community platform homepage curates the newest information and posts



Platform members share new job postings with this community



Members love to share interesting and relevant articles on the platform

# PROGRAM SATISFACTION

**PARTICIPANTS HIGHLY RATE THIS PROGRAM**

At the end of each core course, participants are asked to share their feedback on the course. We are proud to say that satisfaction rates are high—nine in 10 participants rated courses as good or excellent! Completion rates are over 90% for each cohort, and reported implementation of the program (i.e., they have they applied something they learned from the course into their work) is also strong, which aligns with our mission of educating for impact.

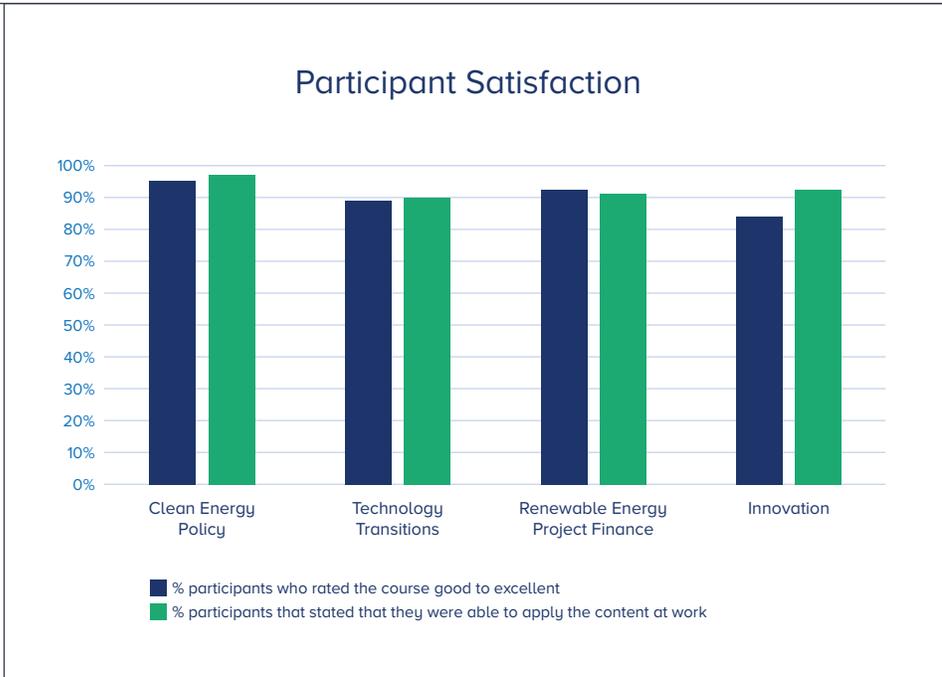
## In their own words:

*“I’m starting to appreciate how much the readings and lectures fit together and especially how thoughtfully timed they are. The sequence of concepts has been very effective in allowing me to enter unfamiliar territory but eventually layer the ideas into a more systemic understanding.” — FDCE ‘20*

*“I appreciate the thoughtful incorporation of evaluating our policy memo in context of the required reading, great way to apply what we learned.” — FDCE ‘22*

*“Following up a concept with discussion is well thought out. The reading introduces a concept, and when we are required to take a side or present our perspective, we need to think critically. That’s the learning.” — FDCE ‘22*

*“I have been really pleased with the program. The cohort is top notch, the work is stimulating and interesting, and the faculty and speakers have been great.” — FDCE ‘21*



*“I appreciate that the same concepts (e.g. electricity market design) are often covered from different angles by different speakers. This light repetition helps drive home the concepts and helps me a lot in terms of retention. Hearing about real-world decisions to shut down coal plants and bring renewable capacity online was a one-of-a-kind opportunity--it was fantastic to get a window into the decision-making process of an executive actually making generation decisions in these markets.” — FDCE '20*

*“FDCE has been instrumental in grounding my work within a greater context. It has also helped me to better understand the policy that governs distributed generation. It has vastly expanded my knowledge of the solar industry and electric sector and helped me understand which policies are best suited to expand solar DG.” — FDCE '21*

*“I work in community and utility solar development and found the information on different energy market structures incredibly valuable to my work. I work in states all over the country and have learned about the nuances of the different market structures. I have also really appreciated the focus on equity and the various ways inequities exist in different market structures and discussion around what can be done.” — FDCE '21*

*“The in-depth explanations have been invaluable knowledge for my job, as it really helps me in work conversations. Also, the whole program has given me a much deeper understanding that is incredibly helpful when reading industry news, which has really amplified my ability to retain/ understand articles on these topics.” — FDCE '20*

*“This was thought provoking. The material made me think about the tension between the ‘best’ solutions and solutions that have the highest chance to be accepted and implemented.” — FDCE '21*

*“This program helped me connect the dots between concepts and tools, and how it might all come together to create innovative approaches to clean energy deployment.” — FDCE '21*

*“FDCE helped me as a policymaker make more comprehensive plans and analyses.” — FDCE '22*

*“The program was of the highest quality imaginable and brought me very far forward in beginning my understanding and forming questions to guide my continued learning.” — FDCE '20*



# WHERE DO WE GO FROM HERE?

WHERE WE ARE AND WHERE WE WANT TO GO

## In three years, CBEY has:

- developed a financially self-sustaining program that welcomes a new cohort each year
- awarded 300+ certificates to working professionals from around the world, with an additional 117 participants in the current FDCE '23 program
- launched a social networking platform which keeps all FDCE cohorts, teaching teams, and others connected for life
- shared content with faculty for incorporation into Yale for-credit courses at YSE
- provided access to content for enrolled YSE students for self-directed, not-for-credit studies
- created additional career-focused programming, including the *What the Heck Do I Actually Do?* speaker series
- supported the development of the Clean Energy Collaborative at Yale, bringing together folks working in clean energy across campus
- supported Yale's inaugural Clean Energy Conference
- supported a [speaker series](#) and seminar course at YSE to help raise awareness on energy justice and bring the voices of diverse experts in the field to the public
- assisted faculty and students to make the transition to remote learning during the COVID pandemic

We continue to be impressed and inspired by the people who participate in this program. By building a community of skilled clean energy professionals, we see the work happening to accelerate the transition to a clean economy. But we have so much more to do!



## Looking ahead:

CBEY is utilizing the experience gained from this successful pilot to help develop new online courses at Yale. And, we have created a new position, Director of Online Programs, to help us increase our impact even further. Other online programming ideas include adapting existing, in-person Yale courses for online delivery, for example:

- a Connected Leadership Online course, taught by Peter Boyd
- Clean Equitable Energy Development (CEED) Program in partnership with the Yale Center for Environmental Justice

We continue to find more ways to educate for impact. We are currently seeking to:

- Develop additional FDCE modules and content, and bring in faculty and guest lecturers that focus squarely on energy justice and equity
- Continue to increase the gender and racial diversity of our cohorts
- Continually update curriculum to best equip clean energy industry leaders to accelerate their work and broaden their impact
- Further develop the FDCE distributed network of action-oriented, lifelong learners across the globe and track their impact on our clean energy transition
- Utilize the lessons we've learned to expand and enhance the impact of online learning at Yale



## APPENDIX I.

# ABOUT THE FDCE PROGRAM

## Who it's for:

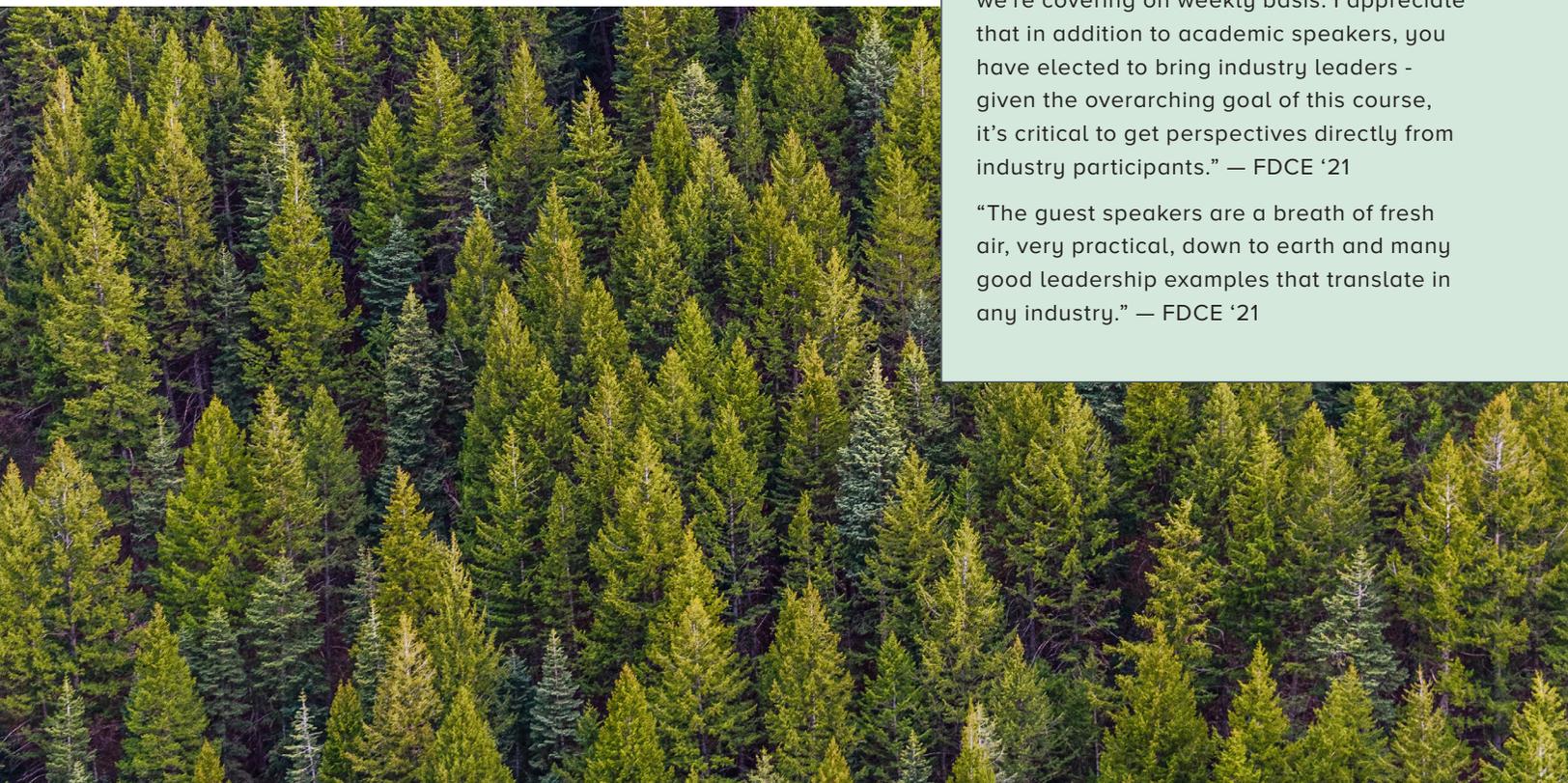
This program is designed for working professionals who are passionate about clean energy and mitigating climate change. They understand how gaining new skills in finance, technology, and policy can advance their current careers. Individuals with more experience in one component of the curriculum, but gaps in other areas, significantly benefit from this program as they develop a more comprehensive approach to the scaling of clean energy deployment. For more information on the curriculum, [see here](#).

Each week, participants gain insights during engaging live sessions with Yale faculty or industry professionals.

“I work at the state level, and it was interesting to hear about Connecticut’s implementation of policies that I hear a lot of objection to and gain the perspective of a regulator.” — FDCE ‘22

“Live sessions have been a great addition to the course. All the speaker have been very knowledgeable and the topics they covered fit well within the broader context of content we’re covering on weekly basis. I appreciate that in addition to academic speakers, you have elected to bring industry leaders - given the overarching goal of this course, it’s critical to get perspectives directly from industry participants.” — FDCE ‘21

“The guest speakers are a breath of fresh air, very practical, down to earth and many good leadership examples that translate in any industry.” — FDCE ‘21





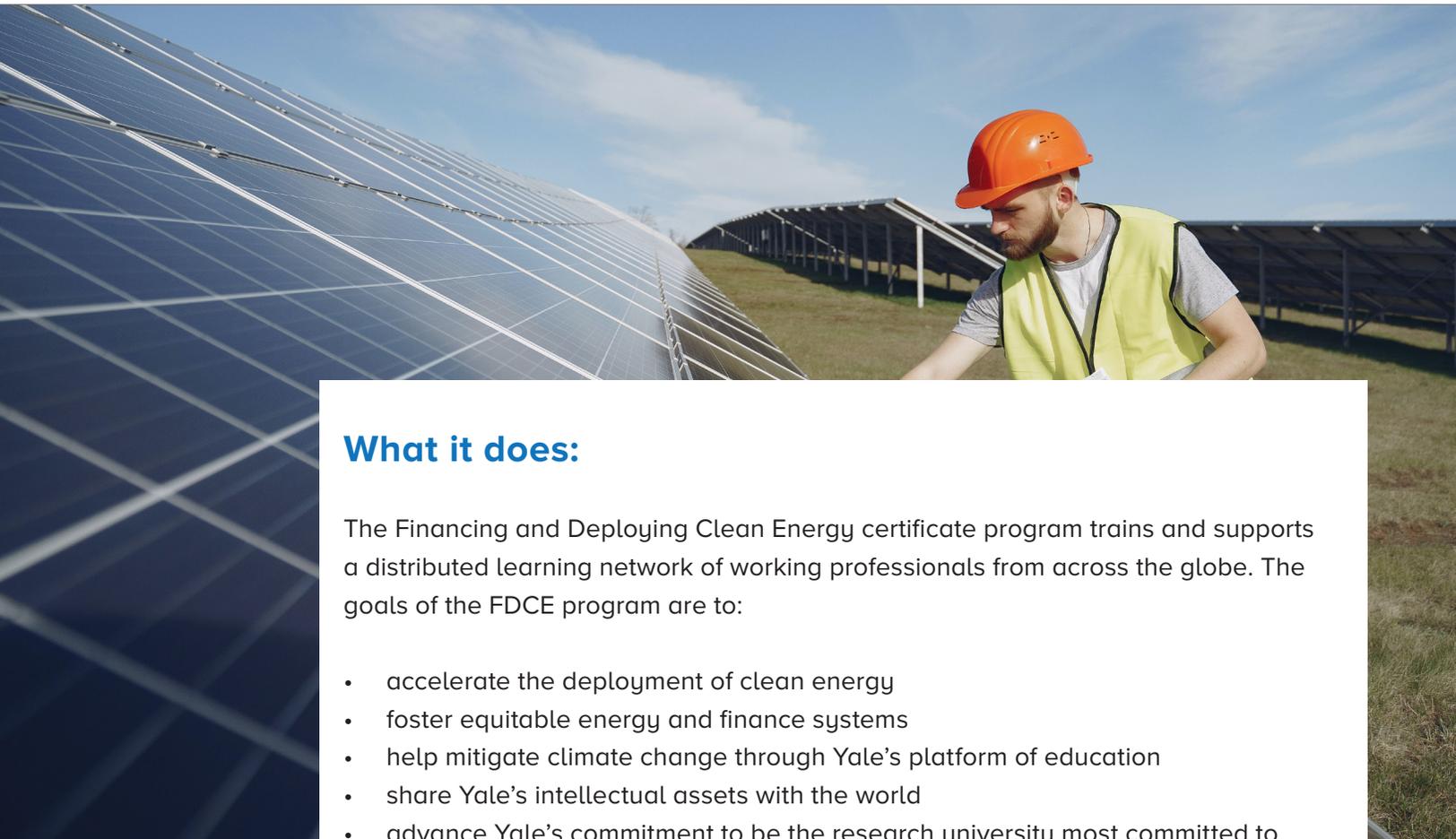
## How it works:

The program runs from July to May. During their ten months in the program, participants complete courses online, spending an average of 1-2 hours each week watching pre-recorded lecture videos (each approx. 7 minutes in length). From there, participants complete various engagement activities, including quizzes, discussions, readings, and some longer assignments, such as writing a policy memo, Op-Ed piece, or working on a financial model. All of these activities are asynchronous, completed at the participant's own pace each week to help accommodate busy working schedules. Participants report working an average of 5 hours each week on these activities. Synchronous activities include a required 1-hour weekly live session on Zoom and other optional virtual get-togethers, like drop-in office hours, networking events, and guest speaker events. For more information on a typical week, [see here](#).

Course content is delivered through the Yale Canvas platform and made available offline for participants. Each Monday, a week's worth of content is made available, and most assignments are due by the following Monday. Once courses are completed, participants retain access to the course platform for one year and content is made available for them to download.

Participants also engage with their cohort, previous FDCE cohorts, faculty and staff on our private social networking platform—the FDCE Community Platform. On the platform, FDCE participants regularly ask questions about homework or course content, share jobs, events, resources and personal updates, and remain engaged with one another through lifetime access to this growing network. There is also a mobile app, so their FDCE community is always at their fingertips!





## What it does:

The Financing and Deploying Clean Energy certificate program trains and supports a distributed learning network of working professionals from across the globe. The goals of the FDCE program are to:

- accelerate the deployment of clean energy
- foster equitable energy and finance systems
- help mitigate climate change through Yale's platform of education
- share Yale's intellectual assets with the world
- advance Yale's commitment to be the research university most committed to teaching and learning