

Marine Renewable Energy Career Development & Current Barriers



International Network on Offshore Renewable Energy

“Realising the potential of early-stage researchers and offshore energy”

Jia Mi—Education Background



Wuhan Uni of Tech
(09/2014-06/2018)

B.S in Automotive Engineering



Virginia Tech
(08/2018-05/2022)

Ph.D. in Mechanical Engineering
M.S. in Mechanical Engineering



University of Michigan
(08/2022-)

Ph.D. in Marine Engineering

Jia Mi– Outreach Activities

Outreach

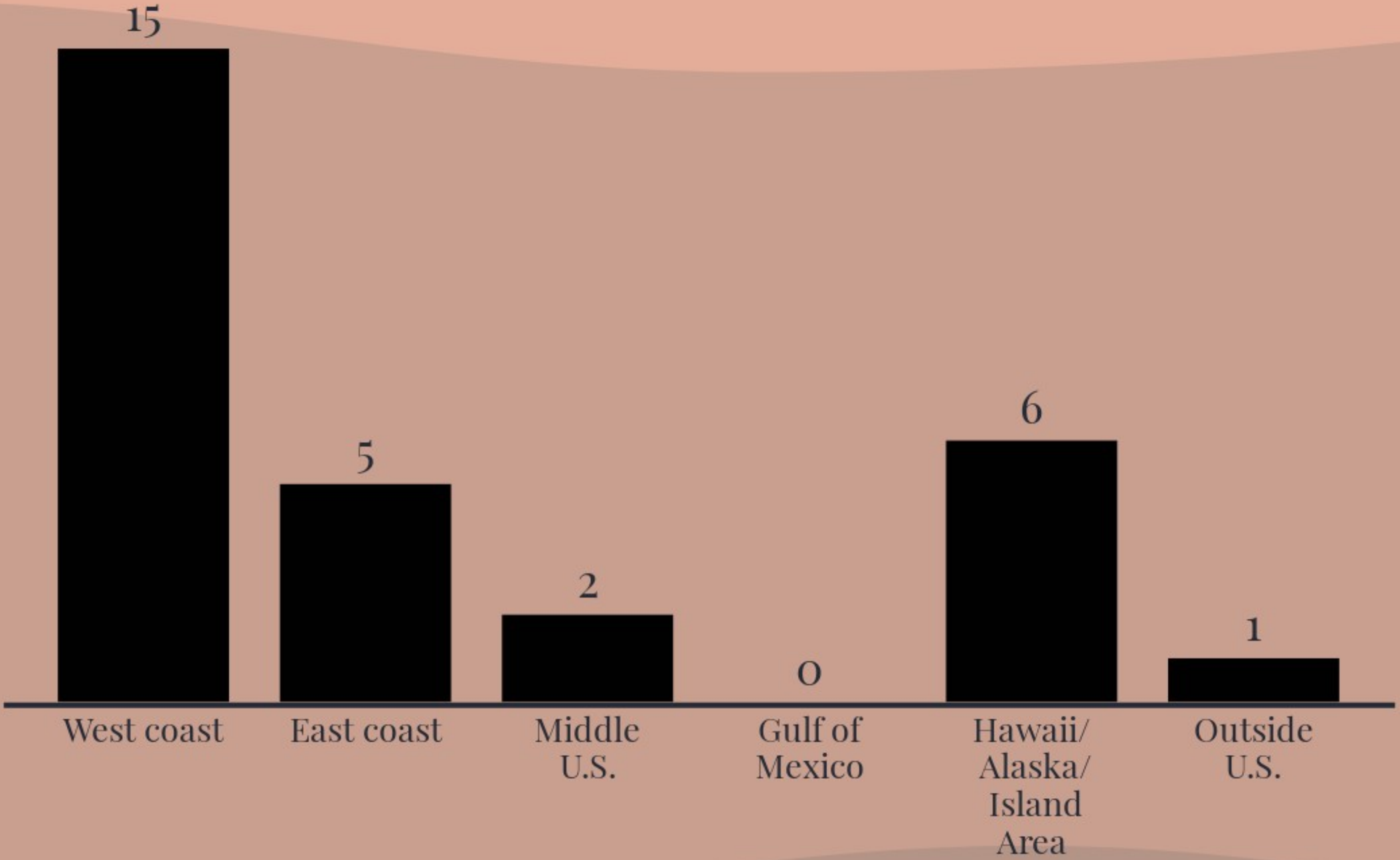
- International Network on Offshore Renewable Energy (INORE)
Co-chair 2022—present
Event Coordinator 2019—2020



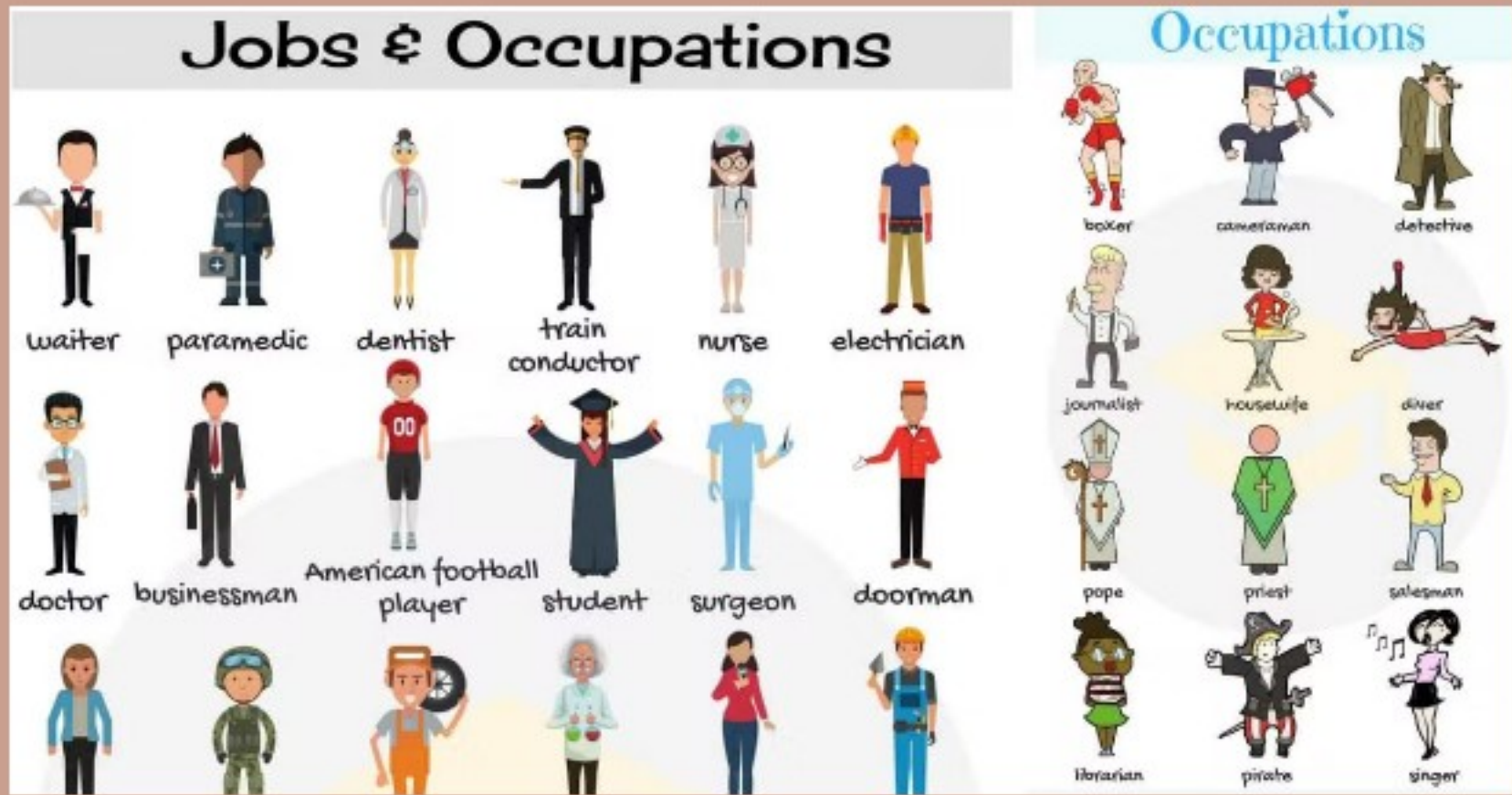
- University Marine Energy Research Community (UMERC)
Board of Director 2021 — present



Which region are you from?

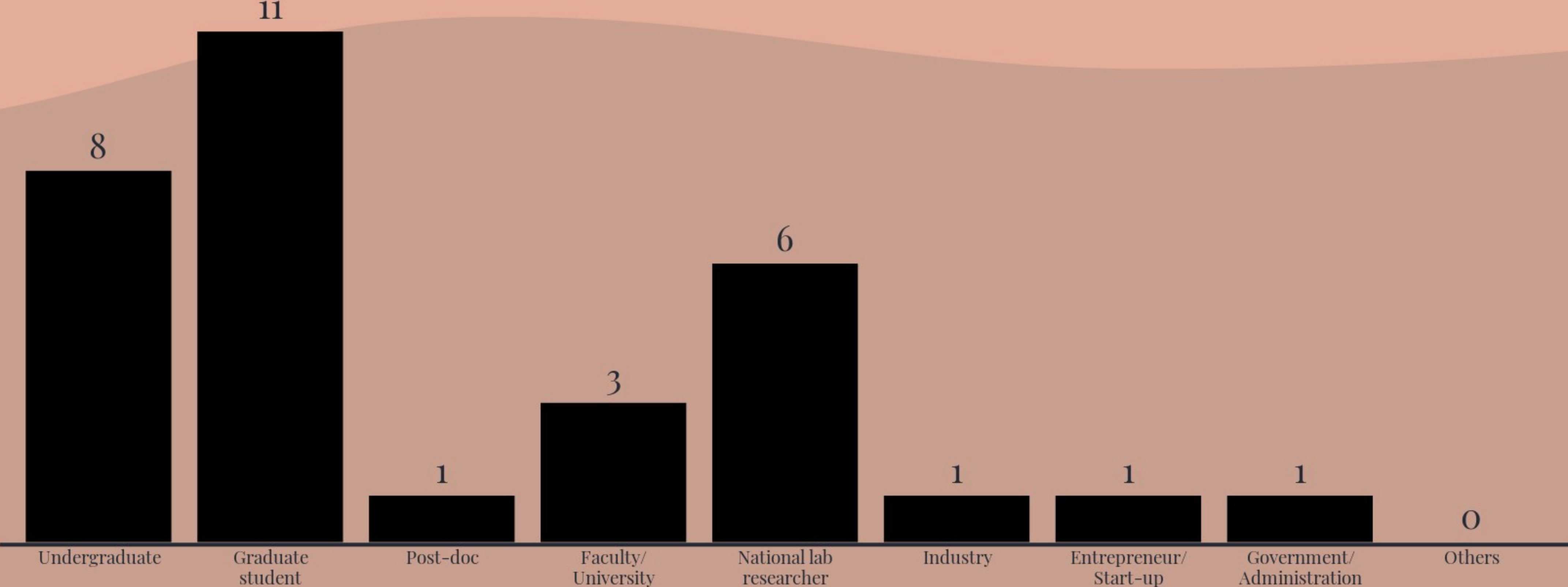


What was your dream job when you were a child?

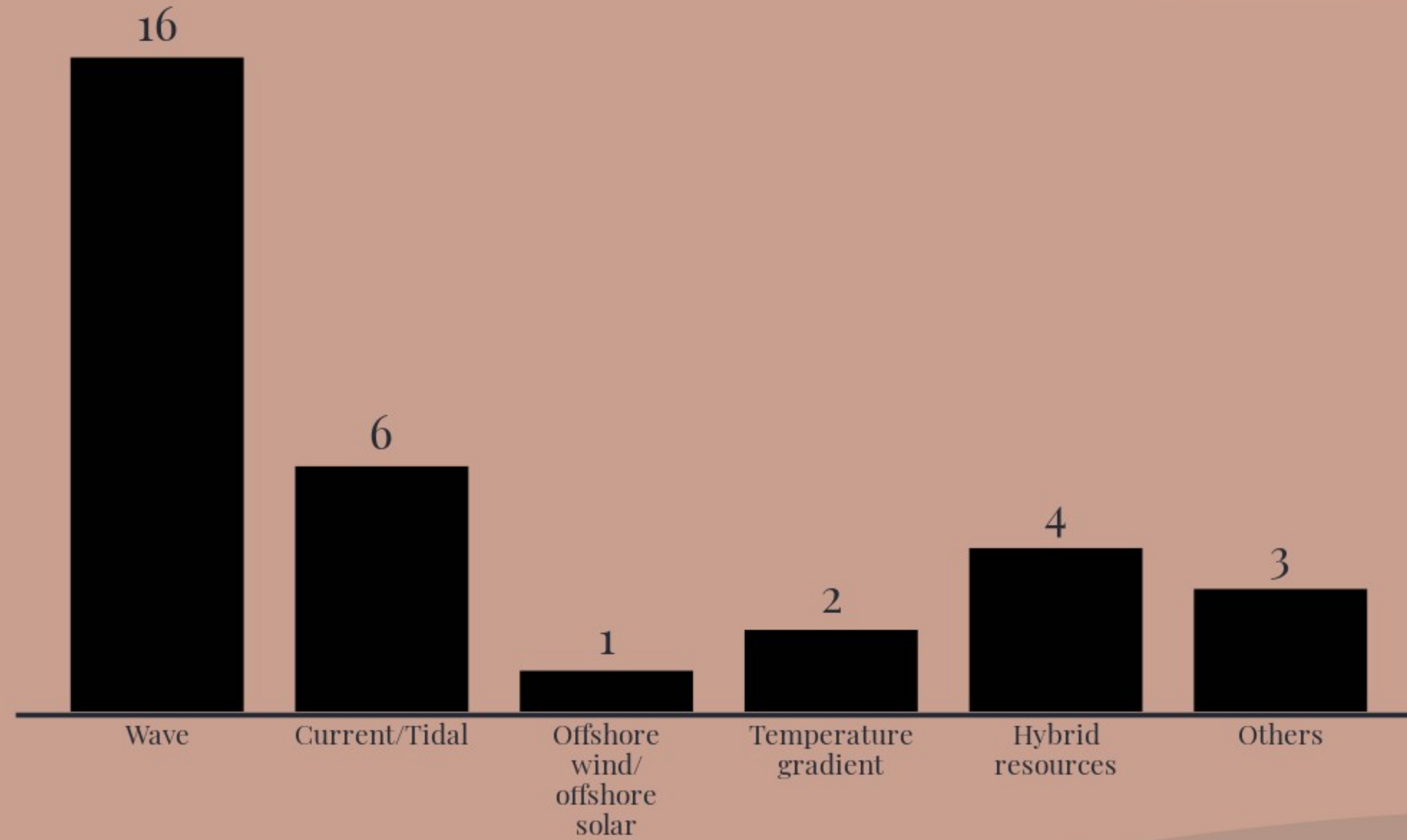


waitress
 geologist
 ballerina
 rockstar
 architect
 teacher
 paleontologist
 nurse
 dive instructor
 dolphin trained
 president
 chef
 veterinarian
 astronaut
 soccer player
 engineer
 doctor
 amazon logistics analyst
 television writer
 video game designer
 hockey player
 explorer
 forest ranger
 graduate student
 government
 professional athlete
 pilot
 artist
 biologist
 marine biologist

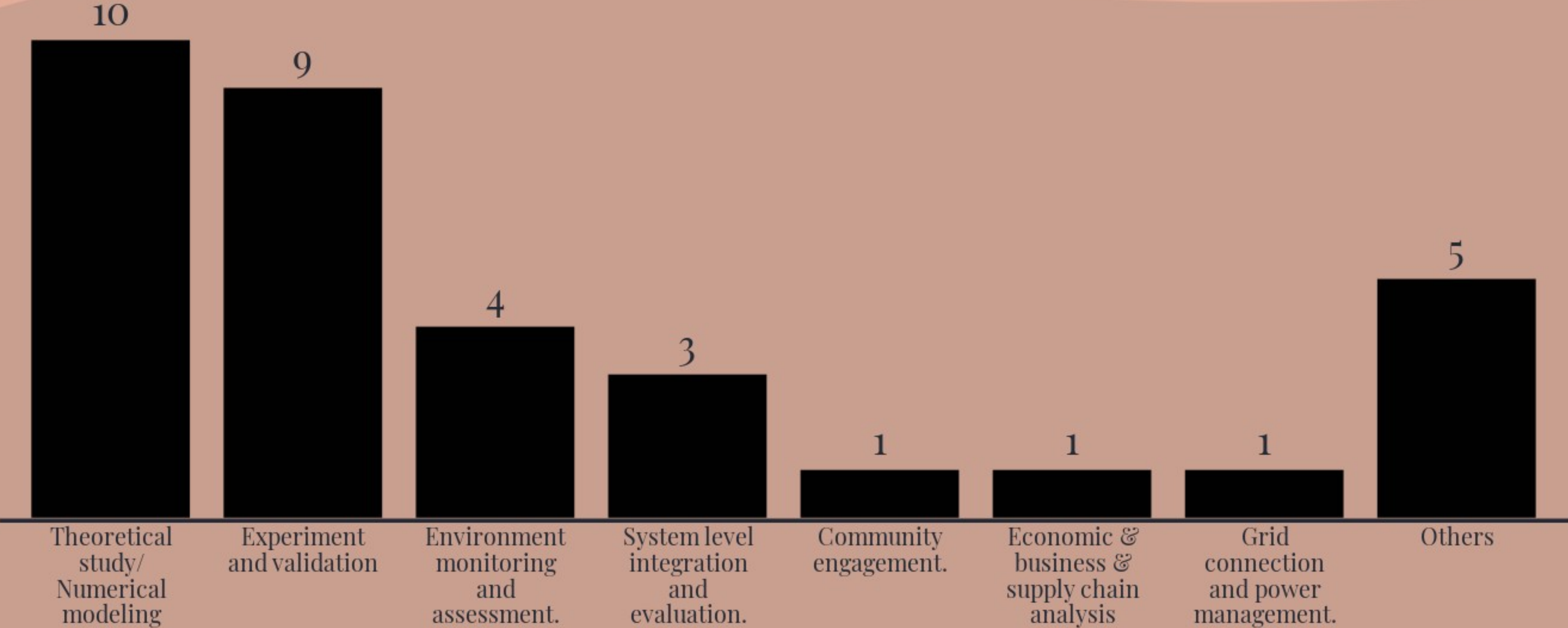
What is your current position/ affiliation?



Which energy resource are you working?



What kind of direction/scope you are working now?



International Network on Offshore Renewable Energy (INORE)

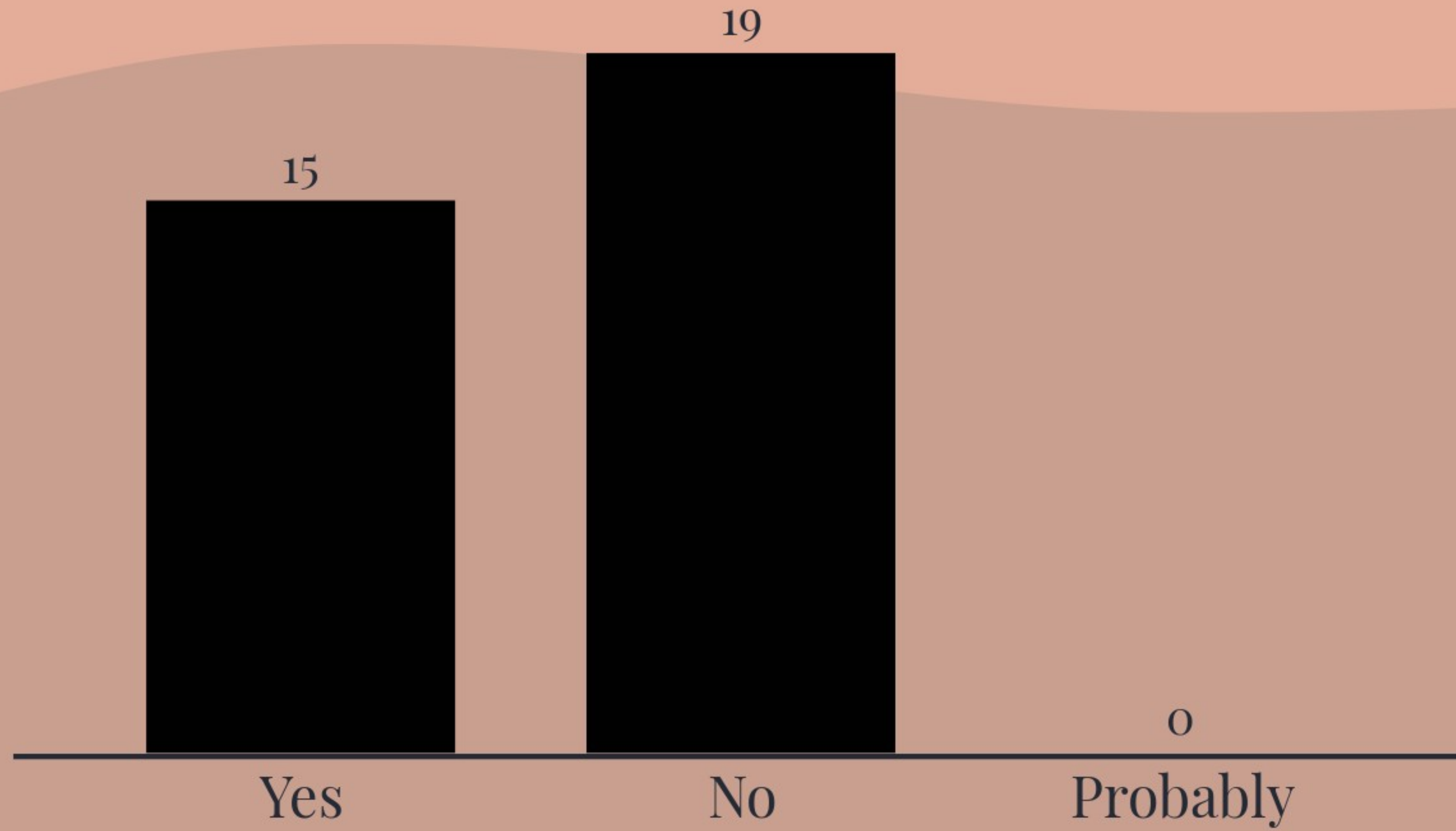
https://inorean.org/about-us_new/



International Network on Offshore Renewable Energy

“Realising the potential of early-stage researchers and offshore energy”

Do you know **INORE** before?



What is INORE?

- ▶ An international association of early-stage researchers working on ORE across all disciplines
- ▶ ~**1500** members across **75** countries
- ▶ Non-profit (registered UK Charity) run via sponsorships
- ▶ Word-of-mouth organization run by volunteers
- ▶ Aim: **to facilitate networking and knowledge transfer between young researchers in ORE**



History



2006: Founded in Norway

2010: First North American Symposium

2015: Became a non-profit association (Limited by Guarantee Company)

2020: First virtual event

2018: Held first events in Asia, Australia, and Latin America

2007: First committee meeting with participants from 4 countries

2014: Established head office in the UK (Plymouth)



Community

International, Interdisciplinary

1400+ members

75+ countries

all aspects of ORE



Online Resources

Well connected

www.INOREan.org

Member database

Positions

Opportunities



Activities

Fun, friendly and informal

Symposia

Workshops

OES-BEC Scholarships

Networking

CALL FOR APPLICATIONS



2022 INORE European Symposium

11th to 17th October 2022, Gipuzkoa, Spain

Are you a graduate student, early-stage researcher or young professional in offshore renewable energy?

Then you are invited to **Spain** for the **23rd INORE Symposium!**

Join us on the **11th to 17th October 2022** (a week before [ICOE 2022](#)) for seven days of research sharing, ideas exchange, workshops and site visits in a dynamic and informal environment. Meet and collaborate with like-minded individuals from around the world specialising in offshore renewable energy.

This year's Symposium will be held in the Basque city of Zarautz, home of one of the most renowned Spanish cooks, and a world-class surfing spot. The main venue and accommodation will be the [Albergue-Igerain](#), in Zarautz, just 15 km west of San Sebastian, where ICOE 2022 will be held.

Thanks to our sponsors, symposium **activities, food and lodging are free for attendees**. However, travel expenses to reach the symposium will not be covered.

To apply, fill out [this form](#)

APPLICATION DEADLINE 22nd AUGUST 2022

Questions? Contact us!

events.eu.inore@gmail.com



be held in LA in Sep)

d to enable informal
d collaborative relationships



Blue Energy Collaborative Scholars

- ▶ Sponsored by Ocean Energy Systems (OES)
- ▶ Aims to:
 - Enable collaborative research work among different INOREans
 - Facilitate access to research facilities
 - Motivate the scientific publication of the collaborative research
- ▶ Amount of scholarship: up to €1000
- ▶ Eligibility conditions:
 - At least 2 INOREans from 2 research institutions in 2 countries
 - Must disseminate results through a publicly-available means
- ▶ Application: **annually, please check our website!**
- ▶ More info: <https://inorean.org/oes-blue-energy-collaborative-scholarship-call-for-applications-2022>



Mentimeter



INORE x SUT YES Webinar Series #1

17TH MAY 5:30 PM - 7 PM AWST



Speaker # 1

JACK JORGENSEN

Presents in

Statistical learning methods for emulation of complex numerical simulators - an offshore renewables perspective

Committee members



Chair

Paul Pirrie

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U.K



Research Coordinator

Edith Rojo

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MX



Co-Chair

Jia Mi

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U.S.



Sponsorship Coordinator

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ITA



Secretary

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Raphael Alwan

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Aus



Pan-Am Events Coordinator

Marianella Bolivar Carbonell

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Columbia

2022 New Committee members



Outreach Coordinator

Qiang Gao

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Aus



NA Outreach Coordinator

Xian Wu

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U.S.



EURO Event Coordinator

CHIAGORO AHAOTU

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Norway



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Costa Rica



NA Event Coordinator

Shangyan Zou

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U.S.



Asia Event Coordinator

Fangtai Meng

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China

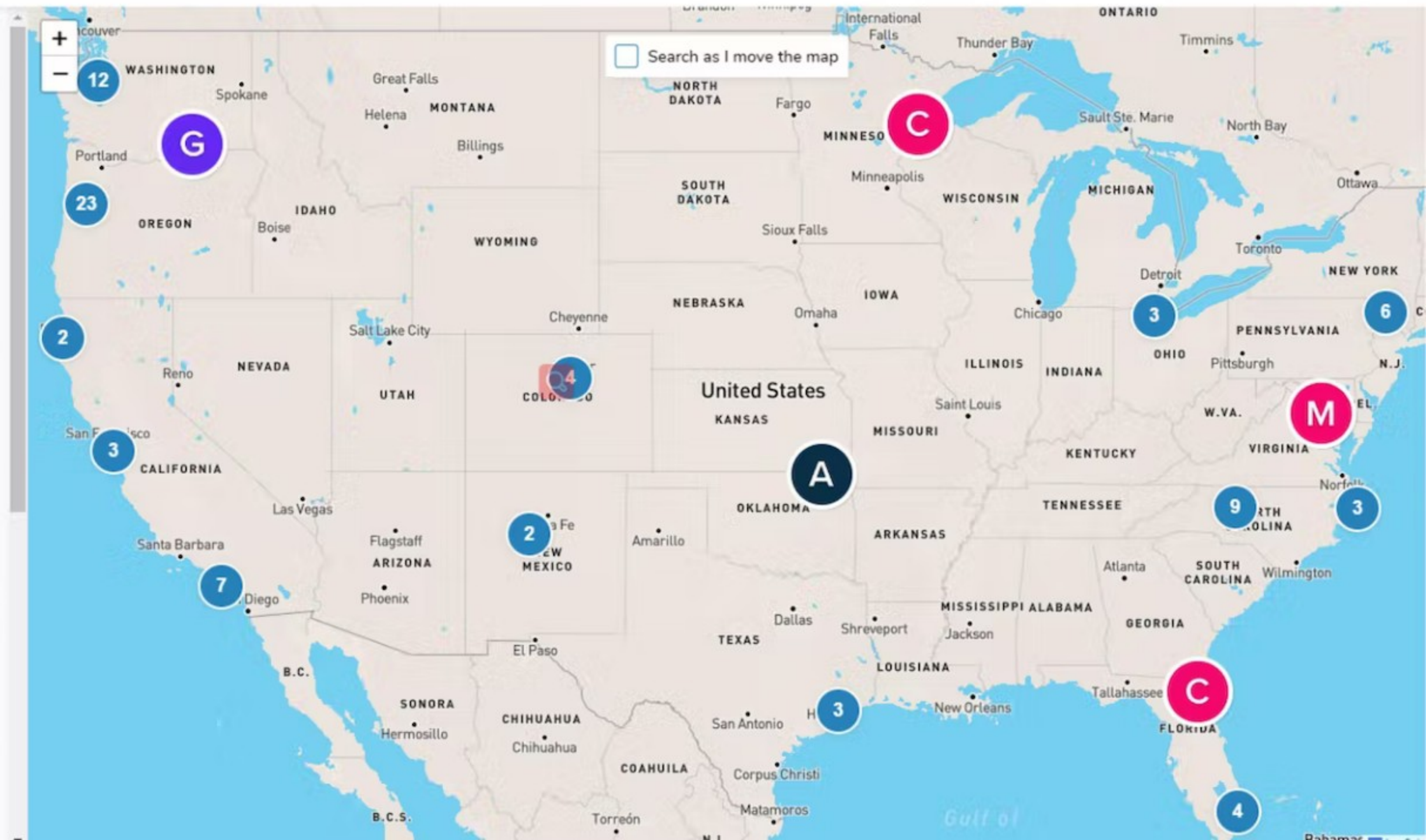
Search for people

Search by location

Users (111)

Show map: Sort by: Recently active

- | | |
|--|---|
| 
Jia Mi
Active today · Blacksburg, VA, United States | 
Samantha Quinn
Active today · Philomath, OR, United States |
| 
Michael Kelly
Active today · Berkeley, CA, United States | 
Sharon Kramer
Active today · Arcata, CA, United States |
| 
Brenda Langley
Active today · Corvallis, OR, United States | 
Arielle Cardinal
Active today · Golden, CO, United States |
| 
Brock Rosenthal
Active today · San Diego, CA, United States | 
James VanZwieten
Active today · Boca Raton, FL, United States |
| 
Arindam Banerjee
Active this week · United States | 
Brian Rosenberg
Active this week · Seattle, WA, United States |
| 
Roland Ovbiebo
Active this week · Nigeria | 
Aaron Franco
Active this week · Beaverton, OR, United States |

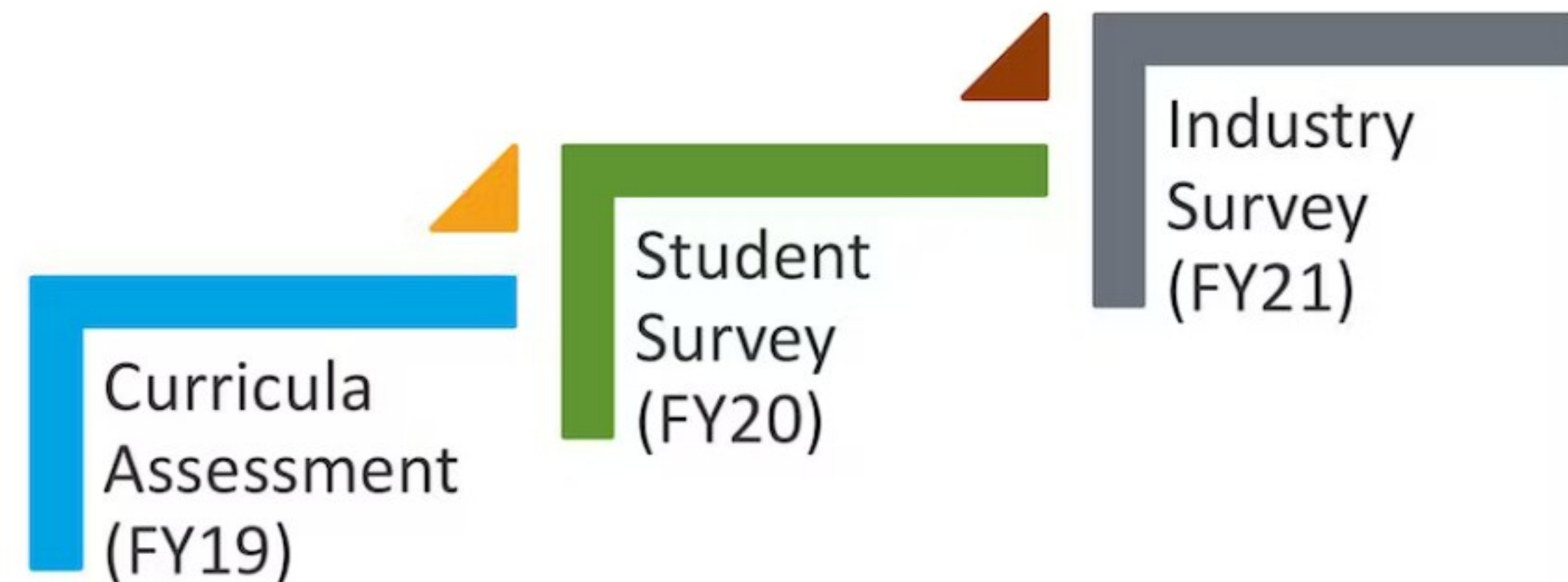


Stakeholder Engagement Informed WPTO's Marine Energy Workforce Development Strategy

Feedback received from the marine energy industry, academia, and students have informed all aspects of WPTO's STEM and workforce development portfolio.

WPTO and NREL have collected feedback through:

- Surveys with industry, academia, and students
- A marine energy [curricula](#) assessment
- Several stakeholder workshops, such as a half day workshop at 2019 Waterpower Week, a workshop with educators and staff from the NEED Project, and several webinars on specific aspects of the water power STEM and workforce portfolio



Summary of Marine Energy Findings from Academic, Student, and Industry Stakeholder Engagement

MARINE ENERGY CURRICULA ASSESSMENT

Develop an understanding of existing educational programs and curricula available for marine energy in U.S. postsecondary schools.
Data reflect findings from schools who responded to the survey and do not represent the views of all U.S. schools.

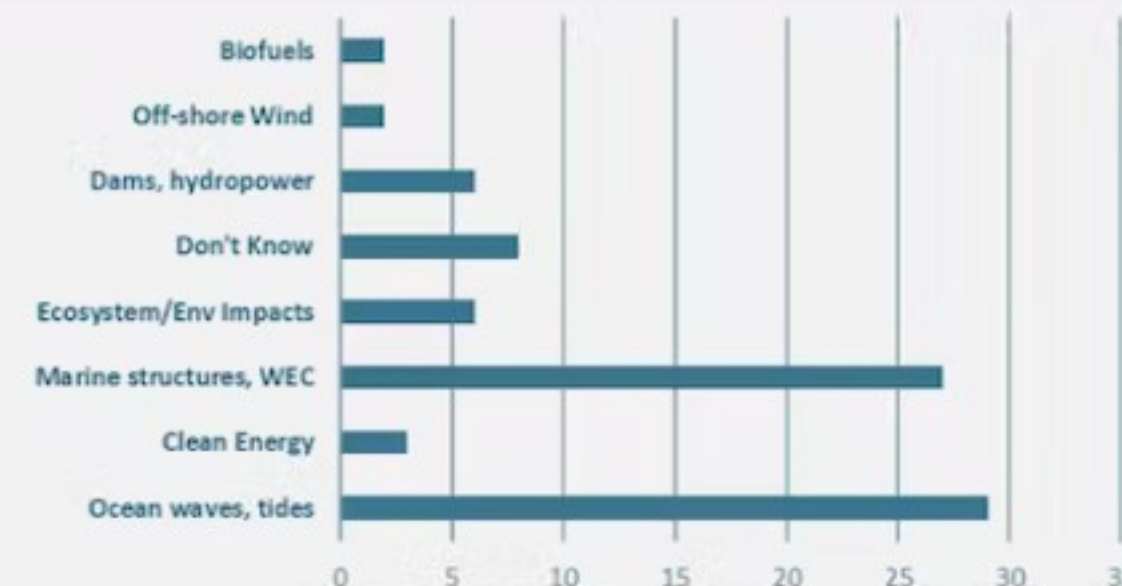
- 19% of surveyed schools have a marine energy major, 38% offer a marine energy specialization
- 16% of surveyed schools don't have marine energy courses, 35% include it as part of another energy course
- 48% of surveyed schools offer practical applications in coursework
- 57% of surveyed schools see increased interest in renewable energy and marine energy
- Funding is a challenge for 86% of schools surveyed
- Lack of industry jobs is a factor discouraging students from marine energy degrees
- Maritime academies are experiencing increased demand for their facilities to support marine energy research

MARINE ENERGY STUDENT SURVEY

Develop an understanding of student awareness and perceptions of the marine energy industry
Data reflect findings from students who responded to the survey and do not represent the views of all students.

- Students expressed strong interest in learning more about marine energy, seen as a new and developing renewable energy source
- Students are mainly learning about marine energy in college, many have no idea where to learn more about it
- Students associate marine energy with oceans/waves but have limited understanding of the industry and technologies
- Students need more information on jobs/skills and projected job growth of the industry to consider marine energy careers

When you think about marine energy what comes to mind?



MARINE ENERGY INDUSTRY SURVEY

Develop an understanding of student preparedness and recruiting challenges for marine energy jobs
Data reflect findings from industry members who responded to the survey and do not represent the views of the entire U.S. marine energy industry.

- Employers say 83% of student hires have limited to no knowledge of marine energy
- 77% of student hires have relevant skills and abilities when entering the workforce
- Student hires have limited to no hands-on experience
- Students lack understanding of electrical grid, system operations, and environmental issues
- Industry faces competition with other industries, lack of experience and familiarity with marine energy as recruiting challenges

STRENGTHEN WORKFORCE PIPELINE

The industry suggested students need more relevant work experiences, more industry engagement in academia, and increased hands-on learning and marine energy coursework

WPTO's Water Power Workforce Development Programs and Resources

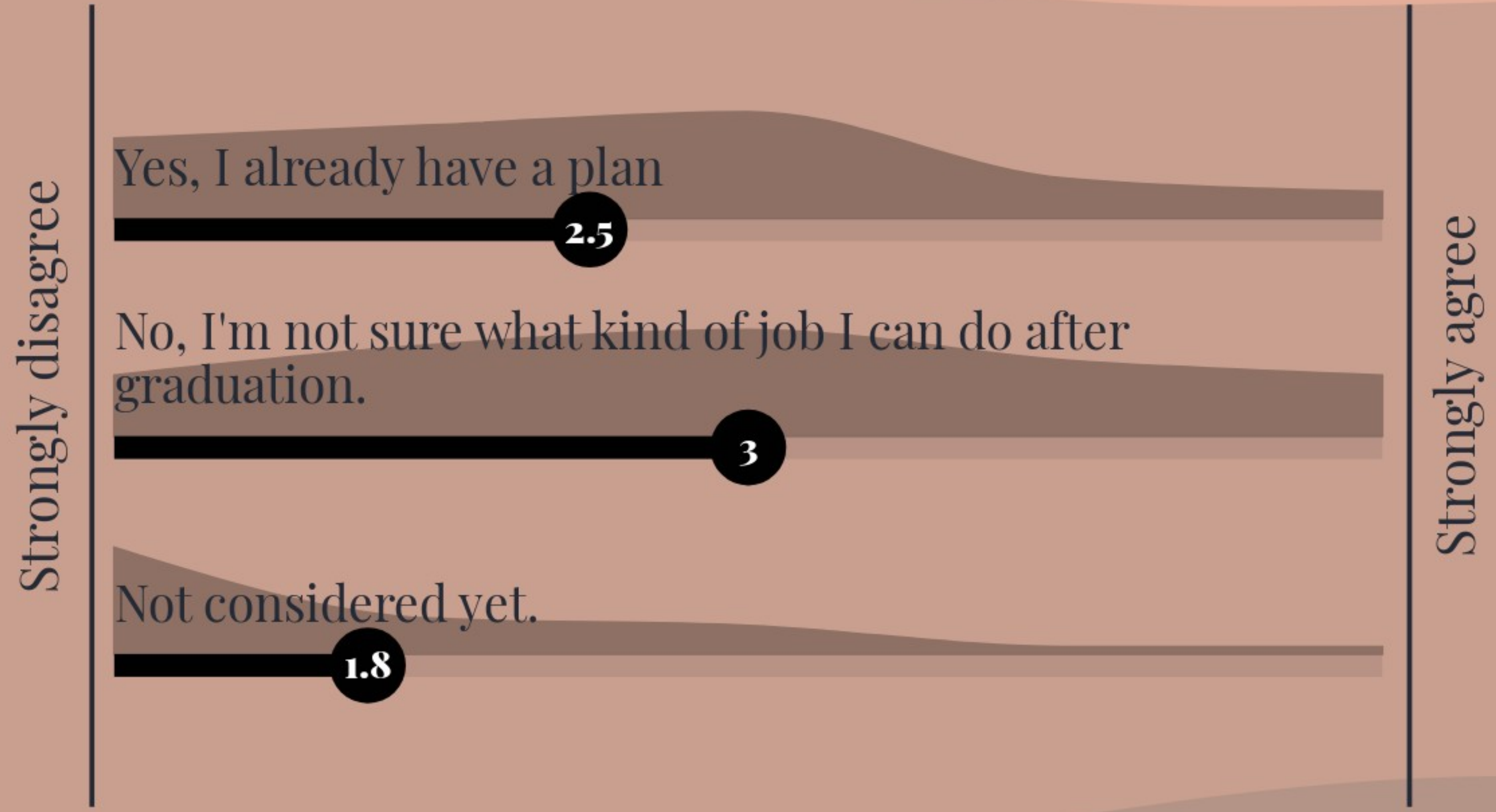


MECC stats: After completion of the 2023 [Marine Energy Collegiate Competition \(MECC\)](#), we estimate the competition will have engaged 650-700 students from 54 educational institutions, including 16 Minority Serving Institutions (MSIs).



Mechanism	Target audiences	Reach/impact
Marine Energy Graduate Student Research Program	<ul style="list-style-type: none"> U.S. graduate students pursuing marine energy research The next application will be released in September 2022 and will be open to both doctoral and master's students. 	A few but deeply
Clean Energy Innovators Fellowship	<ul style="list-style-type: none"> Recent graduates (bachelor's, master's, and doctoral graduates) Early career energy professionals 	A few but deeply
Marine Energy and Hydropower Collegiate Competitions	<ul style="list-style-type: none"> Undergrad students Community college students Trade school students Graduate students Professors and faculty 	100+ students and professors across many disciplines annually
Online STEM Portals for Marine Energy and Hydropower	<ul style="list-style-type: none"> K-12 students K-12 educators Post-secondary students Post-secondary educators 	Many

Do you have a clear career path after graduation?



What brings you to marine renewable energy?

it's awesome

Wanting to make a positive difference on the planet

Great work environment

I live by the ocean and our planet is dying. .

Interesting design challenge

Hoping for positive environmental and social impact

The ability to develop new technology that helps the environment

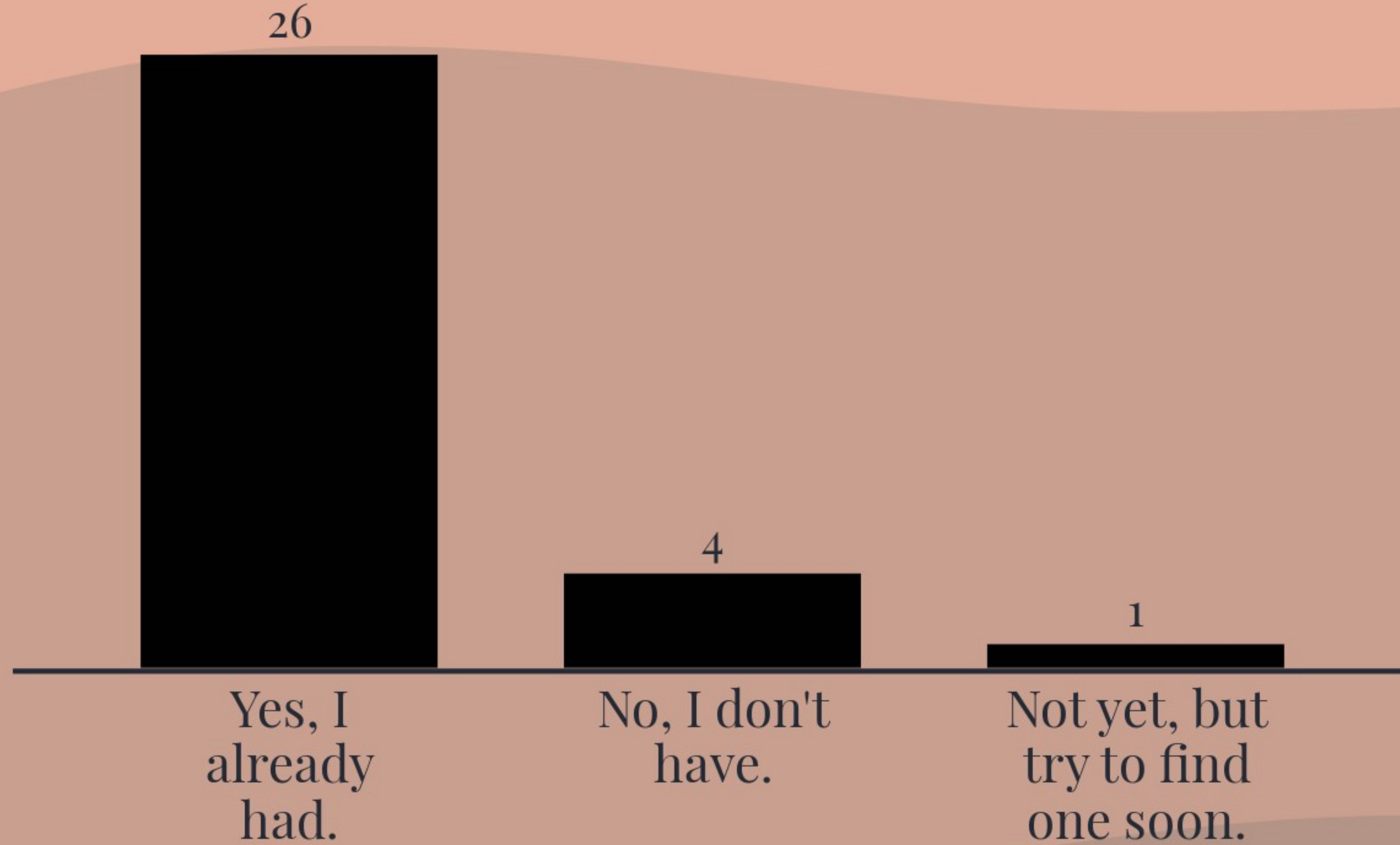
Fascinating challenges

Funding was available at the time!

What brings you to marine renewable energy?

Oceanography background with an interest in renewable energy and engineering

Do you have internship experience?



What's the most important skills for career development?

Learning

networking

Networking

Critical thinking

networking

Social skills

Teamwork/communication

Feeling comfortable asking questions

Listening

What's the most important skills for career development?

Communication skills

Initiative

Growth mindset

Self management/self starter

Communication skills

Project management

Know your limit

Creativity

What kind of training/skills you think are important but you didn't get enough during collage?

Coding

Networking

Preventing burnout

Using field instruments

Writing journal papers

Machining

Sales and Marketing

Technical reading

Proposal writing

What kind of training/skills you think are important but you didn't get enough during collage?

Soft skills

Visual communication

Code/version management

Grant writing

Creativity

Pedagogy's

The importance of science communication to general public

Telling a story in few words. Stop writing long emails, if you can't communicate in bullet points, then you are not communicating effectively.

Multitasking

What kind of training/skills you think are important but you didn't get enough during collage?

Public speaking

Code efficiency

How stakeholder engagement works

At the current status, what is the most important part for marine renewable energy?

