

## THE SHARE\_AFRICA PROJECT - BEP (BLENDED EXECUTIVE PROGRAMMES)

### Background and Context: the IHEA Foundation

In 2019, six Italian universities – University of Bologna, University of Florence, Politecnico di Milano, University of Naples Federico II, University of Padua and Sapienza University of Rome – with the crucial support of the Ministry of Universities and Research, joined together aiming at contributing to facilitate and strengthen the collaboration and the integration between Italian and African higher education institutions with a special attention to transnational education approaches.

The effort culminated in the establishment of the IHEA Foundation – Italian Higher Education with Africa. IHEA Foundation calls for a reassessment of internationalization as an asset of science diplomacy by fostering the collaborations between Italian and African universities, also by means of strengthening the presence of Italian universities abroad, with the ultimate aim of contributing, in line with the essence of academic cooperation, to local and autonomous development

The IHEA Foundation was formally launched in October 2020 to promote an innovative and collaborative approach to transnational higher education across the African continent, from the Mediterranean region to Sub-Saharan Africa. The Foundation's transnational education strategy foresees the launch of an Italian transnational campus abroad awarding first, second and third level degrees, and other advanced training courses to be delivered in African countries jointly with local African universities and their staff members.

### Background and Context: The Frame of the SHARE\_Africa Project

Africa is today at the center of the debate in Italy, in Europe and in the world, and the continent's role will become increasingly strategic in the current era of global and urgent transitions. Within this context, there is room for maneuver to revive relations between Africa and Italy by means of a new paradigm of cooperation grounded in science, education & research. In line with the strategic objective of internationalization assigned by the National Recovery and Resilience Plan to the Italian academia and the EU vision on science diplomacy as an asset of international cooperation, the Science Hubs for Advanced Research & Education with Africa (SHARE\_Africa) project is designed based on the experience of the IHEA Foundation since its launching in October 2020. **Share AFRICA is funded under the call of the Ministry of University and Research: Transnational Education funded within the frame of the National Recovery and Resilience Plan.**

SHARE\_Africa is structured to empower peer-to-peer scientific cooperation between 6 Italian Universities (University of Bologna, University of Florence, University of Naples "Federico II", University of Padua, "Sapienza" University of Rome and Politecnico di Milano) and a number of African Higher Education Institutions. The track record of IHEA Foundation boasts a Specializing Master in Ethiopia (60 ECTS) and 5 Intensive Advanced Courses in Tunisia and Ethiopia targeting more than 130 young academicians in 2 years. The asset of the existing relationships and the current records of activities, combined with considerations strategic for Italy in terms of foreign affairs policy, international cooperation strategies, migration policies and industrial interest, led IHEA Foundation to identify the MENA Region and the Horn of Africa, with focal Hubs in Tunisia and Ethiopia, as the target regions. From the same analysis, Early Career Academicians are the target group since they are already part of the academic system, yet young enough to grantee the best exploitation of the projects' results along their career since they, being alumni of SHARE\_Africa will act as the Italy- Africa Education and Research Ambassadors.

The overall objective is to promote the birth of **Italo-African Science Hubs to sustain long-term cooperation in Education and Research** between the Italian and African Academic Systems by means of joint Education and Research Ambassadors while providing policy recommendation to empowering science diplomacy. Among its specific objectives, the SHARE project addresses the identification and implementation of 6 Blended Executive Programmes or BEP ("TNE-Advanced Skills").

## BEP: STRATEGIC ENERGY PLANNING AND INDUSTRIAL ECOLOGY FOR LOCAL SUSTAINABLE AND JUST DEVELOPMENT IN AN ERA OF GEOPOLITICAL UNCERTAINTIES

### Call for Application

#### THE SHARE AFRICA PROJECT FRAMEWORK

Among the many activities of the project, six Blended Executive Programs are envisaged. The training program will deal with topics that are referring to the six EU structural missions for the National Plan for Recovery and Resilience with a focus on the ecological and digital transition.

This is the whole list of the BEPs issued by the six Italian Universities involved in this project:

- *Cultural Heritage and Sustainable Tourism* (Università La Sapienza, Roma)
- *Sustainable Business for New Challenges* (Università degli Studi di Firenze)
- *Precision Agriculture and Sustainable Food* (Alma Mater Studiorum - Università di Bologna)
- *Innovative technologies for a sustainable water management* (Università degli Studi di Napoli Federico II)
- ***Strategic Energy Planning and Industrial Ecology for Local Sustainable and Just Development in an Era of Geopolitical Uncertainties*** (Politecnico di Milano)
- *One Health, Global Health, Planetary Health* (Università degli Studi di Padova)

The current document is the call for application for the BEP organized by Politecnico di Milano on **Strategic Energy Planning and Industrial Ecology for Local Sustainable and Just Development in an era of geopolitical uncertainties**

#### TRAINING PROGRAM DESCRIPTION

##### The International context

In the current era of great uncertainty and unpredictability, **science and research** may be considered as intercultural values, representing a sort of universal language to support international and intergenerational dialogue and to jointly solve the complex global challenges affecting our society. **At global level**, this consideration is embedded in the extraordinary call for university engagement followed by the launching of the **UN Agenda 2030 and the SDGs** and is also a key pillar in the **UNESCO Mid Term strategy 2022-2029**. **At EU level**, the EU commission launched in 2021 the Alliance for Science Diplomacy and activated early in 2024 the working groups that respond to the Global Service Facility of the DGRTD to promote new paradigms of international cooperation and science diplomacy. More specifically **capacity for science** is also central in the political dialogue on Science, Technology and Innovation between the EU Commission and the African Union. At Italian level, during the **Italian Presidency of the G7** the role of Science and international cooperation has taken space and it is remarkable that the Prime Minister has also launched the **Mattei Plan** as a strategic long term instrument to empower the peer-to-peer cooperation between Italy and Africa where education and research are pivotal as highlighted within the **NRRP calls for Transnational Education** by the Ministry of University and Research.

##### The Just Energy Transition in Africa

Within all of this plans and programme a key role is played by the **energy sector and the relevance of a just energy transition in Africa**. Indeed, if there is good news for the global energy transition this is not always the case for Africa. **The energy situation in Africa can be defined as a paradox**: the continent is rich in natural resources, but its ability to transform them into sustainable energy services for all is still limited. Africa consumes 6% of global energy but has a rapidly growing population and economy.

**Africa needs a reliable, affordable, and clean energy system to promote local socio-economic development** and meet the aspirations of the 2063 Agenda, which envisions a more prominent Africa on the global stage. At the same time, the world—and especially Europe, which is geographically closest—**needs Africa to embark on a sustainable energy transition to meet global 2030 Agenda and to**

**proper balance the energy trilemma.** Africa is growing rapidly both in population and in key economic sectors. Predictions suggest that between 2030 and 2050, Africa will have the second-highest economic growth rate after India. Africa will play an important geopolitical role internationally, as it is home to the **extraction of many critical raw materials**, such as platinum, cobalt, and manganese. These materials are essential for the energy transition in Europe. The middle class is growing, and governments want to create added value in their own countries. Additionally, 20% of the population is young, and the continent needs 18 million jobs annually, but currently, only 3 million jobs are created. Meanwhile, Europe will face a major workforce shortage by 2028. This scenario opens up significant opportunities for new collaborations between Europe and Africa, between Italy and Africa as well to act as a "facilitator" in the Africa's energy transition also to deepen the role of **Science, Education and Research in the sector** and to foster capacity for science in the sector.

### TRAINING PROGRAM STRUCTURE

The **BEP consists of 5 general modules, 3 specific modules and a project work.** From a general perspective, more than the 50% of the teaching will be delivered in person.

- the 5 general modules account for the **25%** of the load and will be online;
- the 3 specific modules account for the **60%** of the load and will be mostly in presence;
- the Project Work account for the **15%** of the load and will be conducted online with tutoring.

The training program starts in November 2025.

The **5 general modules** are selected among the MOOCs available; each one corresponds to an equivalent of 25 hours (6 hours of teaching and 19 *hours of individual study*):

- *Sustainable Development and the Challenge of Africa;*
- *Fundamentals of Geopolitics in Cooperation;*
- *Funding Opportunities and Research Proposal Preparation;*
- *Scientific publication: access to database, paper writing and valorization;*
- *Ethics of Research and Technology.*

The **3 specific modules** (around 72 hours of teaching, 238 hours of individual study) are:

- *Fundamentals of Energy: Sources, Carriers, and Technologies for the Energy Transition;*
- *Energy Accounting & Countries Balances: Geopolitics of Energy & Evidence-Based Energy Policies;*
- *Open-Source Tools for Simulating, Modeling, and Planning the Energy Transition.*

The BEP includes the assignment of a final **project work** during which students will apply the knowledge acquired from the modules. Specifically, they will conduct a modeling analysis and design a program for a new course or an update to an existing one in the energy sector. Students will be divided into working group and will be supported by senior tutor.

Attendance in in-person teaching activities is mandatory, and a minimum of 80% attendance is required for live online teaching activities. MOOCs can be followed on demand following the Direction instruction.

**This BEP has a specific threefold objective for the target audience:** (1) to increase participants' knowledge of the just energy transition and clarify implications for Africa; (2) to provide appropriate tools to study energy solutions with an open source and open data approach; (3) to strengthen partnerships and collaboration opportunities with the home universities (joint labs).

More in details the **learning outcome** are:

- Knowledge and understanding. The students will learn the trends of the global energy challenge and the methodological approach to the national energy balance. They will be exposed to the Africa Energy Challenge and will learn the basic of Energy Modelling.
- Applying knowledge and understanding. The student will be able to evaluate and design the energy

balance at the country level.

- Making judgements: the students will learn how to evaluate the energy economy of countries by using a proper set of indicators. They will be then able to perform scenario analysis
- Communication: the students will present their project work based on a given format, amount of time and audience

### ELIGIBLE PROFILES

The BEP is designed for:

- young talents with academic prospects: early-career lecturers, junior researchers at University or Research Centers, young professor;
- young officials from Ministries and/or local Energy Authorities.

The African countries involved in this program are: Algeria, Egypt, Ethiopia, Kenya, Morocco, Mozambique, Tanzania, Tunisia

### APPLICATION

Admission is by selection.

Bachelor or Master of Science degree in scientific or technological field is required. The list of mandatory documents is the following:

- Bachelor or Master of Science degree in scientific or technological field (not exclusively energy engineering);
- copy of a valid Passport;
- Curriculum Vitae, in English with personal contact (address, email, mobile-phone number, max 2 pages);
- Motivational letter, in English and prepared on purpose, highlighting the reasons for joining the training program, max 1 page);
- Support letter, in English and prepared on purpose, issued on headed paper and signed preferably by an institutional representative (Head of Unit or Department; Supervisor) of the home Institution/Authority/University (max 1 page).

A good knowledge of written and oral English is requested: the entire learning program will be held in English and the selection interview itself will be in English. If you have a Language Certification you can attach it to your application as an additional document.

For the Italian regulation, it is also essential to be willing to own a credit or prepaid card that allows international bank transfers (e.g. Revolut, Wise...) by the enrolment date.

Incomplete applications will be considered ineligible.

### ADMISSION STEPS

The BEP management team is located at the Politecnico di Milano Department of Energy – Specializing Master and Lifelong learning Office. The Scientific Committee will ensure a selection process based on equal opportunity without prejudice, regardless of gender, race, religion, age, pregnancy or any disability.

STEP 1 – Firstly, the BEP management team will evaluate each applicant's documentation with respect to the Call for application requirements. The selected applicants will access Step 2.

STEP 2 - The Scientific Committee will invite up to 40 candidates for a video interview. During the interview, the candidate will need to demonstrate:

- Capacity to clearly and accurately communicate in spoken and written English;
- Knowledge of Sustainable Development concept, 2030 Agenda and Agenda 2063;
- Communication, team-working skills;
- Multidisciplinary and cross-sectorial approach;
- Willingness to contribute to disseminate the knowledge to peer-professionals or younger students;



- Commitment to pursuing the training program and demonstrated relevance of the field of study for the development of the country, at regional scale and at planetary scale.

The output of the selection process will be a ranking list based on the evaluation of the above mentioned criteria: from 1 point (lowest) to 5 points (highest). The maximum overall grade will be 60 points. The minimum grade will be 36.

The ranking list will be sent by email at the end of the selection process (July 2025) and published on the course website [www.shareafrica.energia.polimi.it](http://www.shareafrica.energia.polimi.it)

A reserve list will be included in case of withdrawal of one or more of the selected applicants.

- Call publication and Submission opens: 04<sup>th</sup> July 2025
- Submission closes: 21<sup>th</sup> July 2025
- Results published: 28<sup>th</sup> July 2025
- Deadline to accept the position: 01<sup>st</sup> August 2025

### SCIENTIFIC COUNCIL

The Scientific Committee is composed by

- Prof. Riccardo Mereu, Politecnico di Milano
- Prof. Matteo Vincenzo Politecnico di Milano
- Prof. Emanuela Colombo, Politecnico di Milano
- Prof. Adolfo Palombo, Università di Napoli Federico II
- Prof. Domenico Borrello Università di Roma La Sapienza,
- Prof. Rosella Bardazzi, Università degli studi di Firenze

### FEE EXEMPTION AND FINANCIAL SUPPORT

The administrative costs of the training program are covered by the TNE Africa program: tuition fee, duty stamp, consumable and learning materials, travel and medical insurance, accommodation and lunch during the training on Campus at Politecnico di Milano. Through a credit or prepaid card that allows international bank transfers (e.g. Revolut, Wise...) the student will get reimbursement for these specific expenses: learning device, internet connection, VISA application; airport transfer/shuttle, dinner. The credit or prepaid card must be owned by each applicant by the time of the enrolment.

More details will be provided after the selection process will be concluded.

### INSURANCE AND VISA

The Visa procedures are entirely under the responsibility of each student. The accident insurance and liability insurance provided by the Politecnico di Milano can only cover incidents that occur during the training activities in presence.

For further information: website [www.shareafrica.energia.polimi.it](http://www.shareafrica.energia.polimi.it)

- email contact [shareafrica-deng@polimi.it](mailto:shareafrica-deng@polimi.it)

## ANNEX 1 – Ranking evaluation

Grading Rubric for Trainee Selection					
	1	2	3	4	5
CV (in English)	Poor	Fair	Good	Very good	Excellent
Motivation letter (in English and prepared on purpose)	Poor	Fair	Good	Very good	Excellent
Support letter (in English and prepared on purpose)	Poor	Fair	Good	Very good	Excellent
English (Speaking)	Speech is unclear, poor grammar usage, and, unable to communicate well	Speech is all in English, but had difficulty making sentences. Grammatically deficient and does show a large vocabulary	Decent English Skills, capable of communicating and getting ideas across, but lacks fluency, clarity, and a large range of vocabulary	Very good English skills, can communicate excellently, but lacks complete fluency and has a thick accent	Perfect English skills, vocabulary, and fluency
Demonstrated Commitment to Sustainable Development, Agenda 2030 and Agenda 2063	No knowledge of sustainable development	Aware of sustainable development and the Sustainable Development Goals (SDGs)	Taken or taking courses or training on sustainable development and the SDGs	Taken action (e.g. social impact initiatives) on sustainable development and the SDGs	Conducted or conducting research focused on integrating social, economic and environmental dimensions of sustainable development or at least some of the 17 SDGs
Communication and Team working skills	Scarce competence	Fair	Good	Excellent	Outstanding
Multidisciplinary and Cross-sectorial approach	Not interested in multidisciplinary and cross-sectorial education and research	Interested in multidisciplinary and cross-sectorial education and research	Taken or taking multidisciplinary and cross-sectorial courses	Conducted or conducting multidisciplinary and cross-sectorial research	Undergone or undergoing multidisciplinary and cross-sectorial degree programme(s)
Willingness to contribute to disseminate the knowledge to peer-professionals or younger students	Does not show any enthusiasm about disseminating to peer-professionals and students	Shows some interest, but does not discuss how or why they would disseminate peer-professionals and students	Gives a brief explanation and discussion regarding sharing experiences and knowledge, but without much enthusiasm	very interested in training undergraduate and high school students, giving examples of how and shows willingness	very motivated by the question and demonstrated detailed methods for training and sharing experiences
Commitment to pursuing the training program	No commitment	Fair	Good	Excellent	Outstanding

## Annex 2 – Application and Interview Assessment

### Interview Assessment Form

**Candidate's name:**

**Department:**

**Interview date:**

**Interview time:**

#### Step 1: Document Check (all in English)

- ☐ CV
- ☐ Motivation letter
- ☐ Support Letter
- ☐ Bachelor or Master Degree
- ☐ Valid Passport
- ☐ Candidates with special requirements
  - Female candidates who are, at the same time, responsible for housekeeping and/or children upbringing;
  - Candidates of any gender who have parenting responsibilities and are unable to provide themselves childcare during the planned in-presence activities;
  - Candidates who experience a physical disability which hinders their possibility to travel and/or take part in presence activities

#### Step 2: Presentation

**Question: Please discuss, in 5 minutes, your understanding of the role of multidisciplinary and cross-sectorial education, research and activity to foster just and sustainable transition**

Demonstrate appreciable knowledge (Yes/No)	Reasons and comments for decision and feedback

Based on the presentation, please comment on:

Presentation skills	
Effective Communication	
Any other comments of feedback	

#### Step 3: Interview

**1. Could you introduce yourself and your interest for the Application?**

Answer:

Comment:

**2. Could you introduce your background and the present research or activities?**

Answer:

Comment:

**3. Could you share your knowledge/background and experience about sustainable development?**

Answer:

Comment:

**4. What is your interest and experience in leveraging technology to impact policy?**

Answer:

Comment:

**5. What do you know about multidisciplinary and Cross-sectorial approach?**

Answer:

Comment:

**6. Do you have an interest in extending your knowledge beyond your field of study?**

Answer:

Comment:

**7. Why would you like to engage in disseminating this knowledge to peer-professionals or students and how?**

Answer:

Comment:



Assessment Template					
	1	2	3	4	5
CV (in English)					
Motivation letter (in English and prepared on purpose)					
Support letter (in English and prepared on purpose)					
Educational background					
TOTAL	...../30				
English (Speaking)					
Demonstrated Commitment to Sustainable Development, Agenda 2030 and Agenda 2063					
Communication and Team working skills					
Multidisciplinary and Cross-sectorial approach					
Willingness to contribute to disseminate the knowledge to peer-professionals or younger students					
Commitment to pursuing the training program					
TOTAL	...../30				
OVERALL GRADE	...../60				

Scientific Committee comments

\_\_\_\_\_  
Date, Signature of Scientific Committee President