



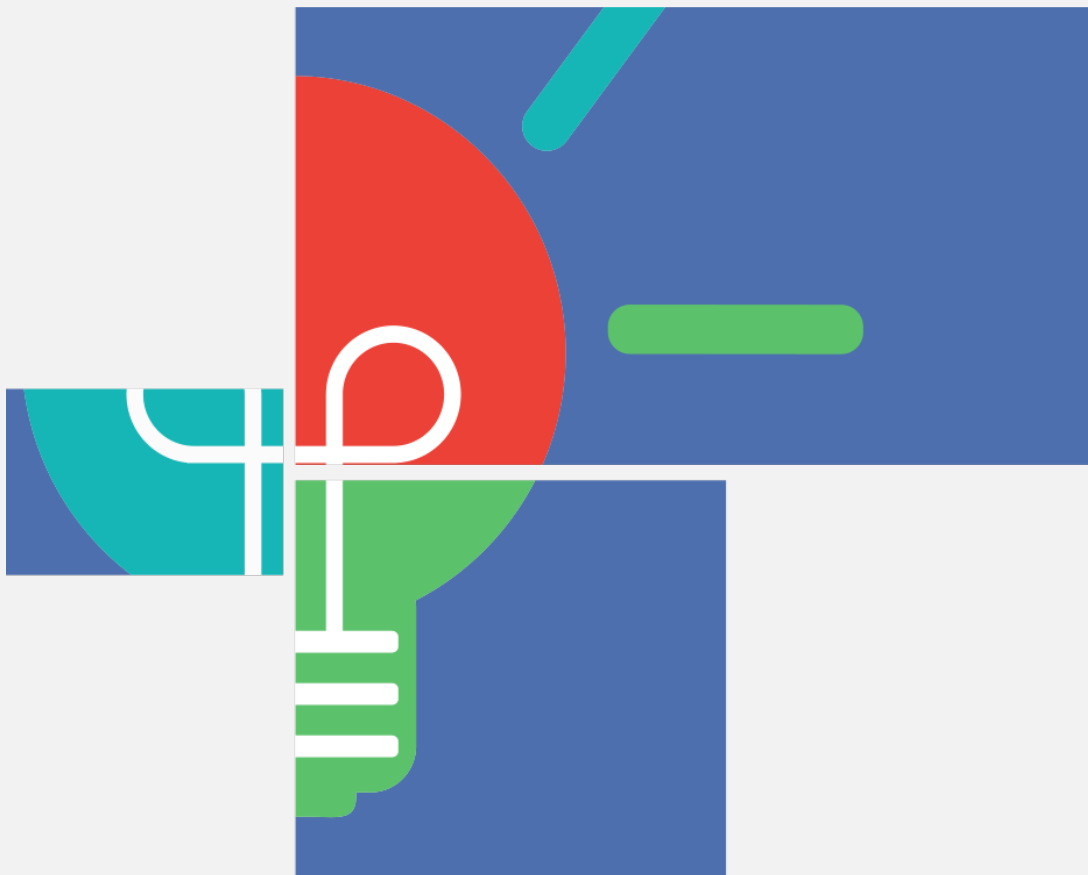
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Institutional Research Agenda

The research challenge for the future of Libya

September 2023



Document Information

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Abstract (for dissemination)	The Research Agenda has been developed purposely with the aim to present the cultural and specific scenery of every Libyan University, as an integrated research area.
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Foreword

The purpose of IBTIKAR Research Agenda is to outline the priority research areas that has to be developed, the objectives, the outcomes and desired impacts, the types of intervention and resources available and sector of intervention.

It is an exciting and ambitious endeavour involving 11 Libyan Universities and the University of Salento, together with UNIMED – Mediterranean Universities Union, that will streamline and coordinate the research to enable improvements to the efficient and effective use of resources, exploit synergies and avoid overlaps.

The Research Agenda can be considered a starting point, a part of a dynamic process that will lead to a continuous update of this agenda: the more it is cherished and shared, the more it will contribute to the enhancement of the general quality level of the training offer, to the improvement of the research activities in Libya. The Research Agenda aims at promote and favourite the cooperation between Libya Universities and the international partners and the future joint activities will implement this trajectory.

The understanding of the complex Libyan scenario with its changed political framework is fundamental in order to achieve significant advance in cooperation for innovation, because the Libyan Universities cannot remain at the margins of the Higher Education (HE) that throughout the world has undergone a deep change (1). This project aims to the theoretical and experimental characterization of an Action Plan and a White Paper for scientific support for the organization of exchange of good practices and extensive knowledge within the IBTIKAR Project. In particular, it focuses on a participatory modality to achieve the goals.

Where a struggle for knowledge is also a struggle for freedom, every synergistic effort of the partners involved in a project becomes incredibly charged with positive energy able of changing the state of things. The multifaceted and complex reality of things requires a moment of silence and bibliographic research in order to penetrate a new world that has so much to offer. Libyan universities have a large potential to improve both fundamental and applied research. High quality research aims at improving the quality of scientific production, the participation in national and international research funding opportunities and the excellence research of individuals through strategic actions and initiatives. With this awareness, the fact of writing an RA for the IBTIKAR project is a challenging and exciting task.

University of Salento

About IBTIKAR

IBTIKAR, promoting research and innovation environment in the Libyan higher Education System, aims to enhance the research capabilities of Libyan Higher Education Institutions and their capacity to produce and manage high-quality research, by increasing the competencies and skills of their academic and administrative staff. IBTIKAR is a national project involving 11 Libyan Higher Education Institutions willing to develop skills and capacity in research and innovation, and network with peer researchers internationally.

As a long-term objective, IBTIKAR aims to:

- Increase the production of joint high-quality research through a new class of thinkers able to cope with the local and global challenges, solving community problems and impacting on the socio-economic growth in Libya
- Enforce the role of Libyan universities and promote the quality and quantity of researches, so as to make a transition within the multidimensional targets of sustainability

IBTIKAR project implements different actions based on participative, collaborative and tailored approaches in which the knowledge is built with a multitude of techniques, useful to develop a comprehensive training and capacity building action for the Libyan Universities. Capacity building is performed through:

- Capacity building where European trainers train Libyan Partners on the basic skills (both soft skills and technical skills) required to effectively run research at their research centres.
- Vertical advanced visits to European universities.
- A Horizontal Capacity Building action, where Libyan academic and administrative staff from the more advanced Libyan Universities train the staff from other Libyan Universities.
- Local trainings to engage the overall educational community at Libyan universities.

Libyan staff will be able to share with their counterparts not only the knowledge acquired, but also their experience in managing and implementing research activities in the Libyan context. In fact, by training academic and administrative staff, each University can guarantee a high level of performance and efficiency, together with a high-quality standard of teaching and learning, on a long-term basis. Libyan research centres will be also equipped and properly furnished, from both the technological and human resources point of views.

Finally, IBTIKAR foresees the definition of a White Paper aiming at bringing the attention of decision-makers on the definition of a Libya National Research Agenda, which will support specialization strategies within universities, enforcing existing research centres and research units, supporting universities in research management and training in specific field of knowledge, as well as setting up proper infrastructures.



Project Partners

- UNIMED – Mediterranean Universities Union
- Bogazici University, BU
- University of Salento, UNISAL
- University of Trás-os-Montes and Alto Douro, UTAD
- University of Tripoli, UoT
- University of Benghazi, UoB
- Misurata University, MU
- Sebha University, SeU
- Sirte University, SU
- University of Zawia, ZU
- Elmergib University, EMU
- Alasmarya Islamic University, AIU
- Bani Waleed University, BWU
- University of Ajdabiya, UoA
- Libyan International Medical University, LIMU

Programme

Erasmus+, KA2 – Capacity building in the Field of higher education

Project Duration

Start Date: January 15, 2021

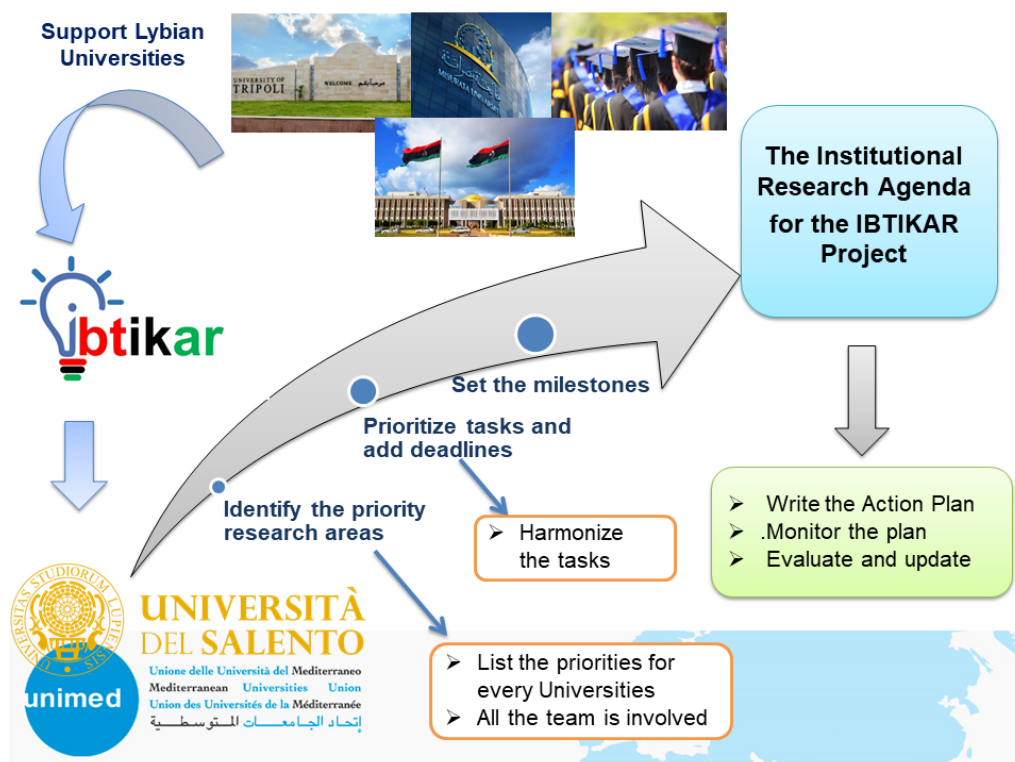
End Date: January 14, 2024

Abstract

Libyan universities have a large potential to improve both fundamental and applied research. High quality research aims at improving the quality of scientific production, the participation in national and international research funding opportunities and the excellence research of individuals through strategic actions and initiatives. Furthermore, scientific and technological research needs to grow within a multi-stakeholder perspective to strengthen public-private partnership and promote endogenous socio-economic development. Therefore, there is the need to design specific Institutional Research Agenda on the basis of the shared action that bring research to socio-economic stakeholders. Finally, it is fundamental to build a network with the international research community to enable the scientific growth of individuals and the whole academic structure.

The current document summarizes the institutional research priorities of Libyan universities and the identified strategic research objectives for each Libyan partner,

Executive Summary



Introduction

Background

Libyan cultural environmental is of exceptional importance. Scientific research is nowadays a necessity and a priority for Universities, which requires accelerating the establishment of procedures and foundations for it, in order to be requirement for every student in Libyan universities (2). The development of countries and achieve their goals and strength depends on what they accomplish and progress of scientific research (3).

It is clear that scientific research is the only way to bridge the gap that separates developing countries from the developed world: it can be considered a necessity that cannot be overstep for many Arab countries, including Libya. On the one side, and on the other side, Libyan researchers can maintain and strengthen their national achievements and preserve their identity and their entity only by having the corner of scientific research (4). In 2009 Tashani highlighted that there was a potential for improving the scientific research environment in Libya (5). One reason to be optimistic about the prospects of the future of science in Libya was the number of postgraduate students in all disciplines who are training in European and North American Universities. According to statistics of the Higher Education Authorities in Libya, there were approximately 3000 Libyan students enrolled in postgraduate studies in British universities alone and almost half of this number in North America (6). However, research output of Libyan universities' academic staff members is still very low (5).

Development experts believe that scientific research is the locomotive that drives society towards sustainable development (2), but there are difficulties that stand in the way of the use of electronic journals, which are technical difficulties, and that the individuals of the sample have a weakness in the skill of using the Internet as needed (7). Four major reasons (5) may explain the problems facing scientific research in Arab countries in general and in Libya in particular: brain drain; lack of funding; lack of scientific infrastructure and incompetent supportive staff, and teaching overload. In 2006 has been estimated that 54% of doctors, 26% of engineers and 17% of scientists graduating from Arab and African universities migrate to Europe, the United States of America (USA) and Canada, and half of African and Arab students studying abroad never return (8). In addition, scientific research is in most cases hindered by language barriers, influencing both the capacity to access a wide range of sources and the capacity to produce high-quality research which is accessible to others.

Higher Education now functions and in relation to its governance, in terms of decisions and strategic orientations while offering training, looking for a better adaptation to the demands of the job market and the emergence of new profiles introduced by the digital revolution. To face these challenges, solutions must be collective. The Libyan Universities must be helped to not remain at margins (1).

It is important to project a training for the graduate student on scientific research skills in what is related to all of his fields, as well as how to write, present and interpret results, proposals and recommendations, and what are the best ways to document references by adding a course for masters and doctorate students that specializes in the basics of scientific research and methods of writing it in the scientific way (2).

Efficient networking between the Libyan scientists abroad and the Libyan scientific institutions could benefit the research community in Libya and in the long run attract the migrated scientists to the potential scientific research opportunities that exist in the country. The new generation of Libyan researchers has a great role to play in keeping the link with the institutions they have trained in and developing an extensive network with other Libyan scientists. A bidirectional relationship between Libyan researchers working in Libya and those working elsewhere is beneficial to both parties (5).

The recently changed Libyan political framework, following the fall of Gaddafi's regime and the resultant end of the international embargo, lead the international community and UNIMED in primis to use the Erasmus+ Capacity Building program as a primary tool to explore possible collaboration paths with Libyan Universities. "Erasmus+ has represented a key to open the door for a fruitful cooperation, for fresh relationship with Libyan actors, for a better understanding the complex Libyan scenario. We therefore activated our university network, created stable and coherent channels of communication, established relationships with Libyan universities in order to jointly open the way for a long-lasting collaboration framework, with the only country of the southern shore of the Mediterranean that, at that time, was not yet part of the UNIMED network.", said the experts of UNIMED (1), in the same report it is highlighted that "The challenge is to pacify the country through knowledge, through the values of peace and harmony, through development and interregional dialogue. It is a matter of defining a national strategy for the Higher Education system, setting clear reachable objectives and tracing the means to be put in place for their realization. Without doubts, this can only be achieved, as the analysis shows, through successful cooperation with international partners, sharing experiences and participating actively in development programs implemented on a global scale. Libya has its place: all the potential and the commitment are there to successfully integrate and develop its universities".

The crucial characteristics of successful world class universities can be considered: leadership, government policy, funding, the ability to continually focus on a clear set of goals and institutional policies, development of a strong academic culture, and quality of the academic staff (9). From this point of view, the IBTIKAR Project can have a strategic role and it's important to cooperate for its success.

Libyan Universities

Libyan Universities are multidisciplinary institutions as they offer courses ranging from applied sciences to humanities (with a majority of humanities). The Libyan International Medical University, which is a totally private institution, appears as an exception as it is a University specialised in medicine. The Higher Education Institutions in Libya are more teaching than research oriented (Fig.1).

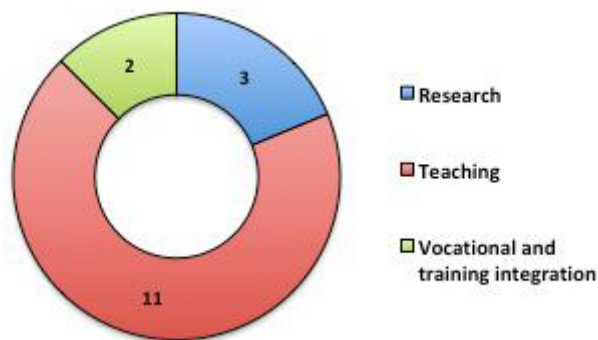


Figure 1 Question: "How would you describe the mission of your institutions?"
Elaboration of data and statistics from UNIMED survey, 2018

According to the statistics and data from the Ministry of Education, in August 2018 there were 231 faculties in public universities plus 8 Faculties accredited for private universities, for a total of 1.263 Academic degrees Bachelor courses 16 and 354 Academic degrees Master courses. Based on Article 107 of the Libyan Decision number 50119, the Libyan credit system is defined as follows: Unit credit: one hour of theoretical lesson or two hours of weekly practical activity during the specific or general educational terms provided. More than half of the total academic staff counted, teaching is mainly delivered by assistant lecturers (Fig.2).

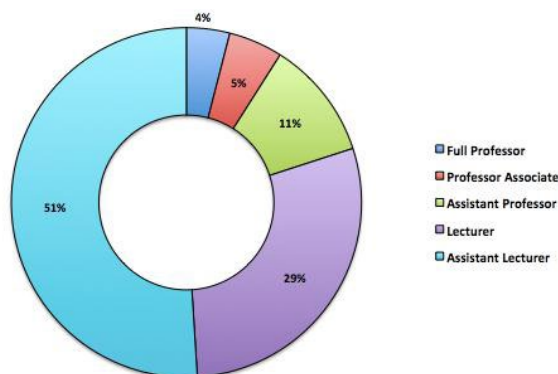


Figure 2 Libyan professors according to their academic position.
Elaboration of data and statistics from UNIMED survey, 2018

Libyan universities are stuck in achieving high quality levels in research due to many external and internal factors. Among the key internal factors, strengthening strategic research objectives and especially governance structures are prodromal to achieve high quality research. It is necessary to identify a set of strategic research objectives for Libyan universities that are in line with local socio-economic goals and coherent with the international context through a dedicated Action Plan, that has to be intended as a confirmation as a workplan to implement the training: defining agenda, defining training materials.

A training pathway has been identified for the Libyan partners as well as a White Paper for reforming research governance structures will be designed and submitted to relevant stakeholders. Actions to harmonize research into the overall university policy will be defined including organization charts, actions and design goals. In order to be sustainable, research strategies and governance structures will be harmonized with other institutional priorities and complementary actions will be identified.

The Research Vision

The Research Vision encompasses many significant topics that become emblematically representative of entire semantic fields to be analysed, deepened, metabolized, in order to achieve the objectives, set for us at the outset:

- Solving complex global challenges
- Empowering whole communities
- Strengthening of the reputation
- Creation of infrastructure, services and platforms
- Elaboration of a strategic plan
- Mapping the strengths
- Consulting with the research community
- Identifying the most critical challenges
- Identifying thematic areas that will form a framework for the University's continuing cross-disciplinary
- Make research efforts
- Ensuring that the research discoveries are translated into relevant real-world solutions
- Strengthen and expand key international partnerships with universities, enterprise, government and communities.

Purpose

Scientific and technological research needs to grow within a multi-stakeholder perspective to strengthen public-private partnership and promote endogenous socio-economic development. Therefore, it is needed to design specific Institutional Research Agenda on the basis of the shared action that bring research to socio-economic stakeholders. Finally, it is fundamental to build a network with the international research community to enable the scientific growth of individuals and the whole academic structure. University decision-makers, define (thanks to a bottom-up participatory approach) the institutional research agenda that will be validated and shared by all the participants.

The Research Agenda

A Research Agenda can be defined in many different ways. Such a document has the potential to set clear goals for a program, identify the involved, may include a number of targeted actions to reach the objectives. A Research Agenda defines your destination and identifies the supporting steps that will get you there. A Research Agenda can identify gaps and propose ways for advancing and influencing an academic field, discipline or area of study. A Research Agenda can help institution to orient toward both short- and long-term goals.

In the framework of the IBTIKAR project, the Research Agenda can be defined as follows:

A Research Agenda identifies research priorities which will lead to more successful research, outlining a clear framework for making decisions about future research activities (10).

The IBTIKAR Research Agenda has been developed purposely with the aim to present the cultural and specific scenery of every Libyan university, as an integrated research area. The outcome of the work is to identify some research priorities in every university and define a research vision. Libyan universities have been asked to assess their needs and to reflect on the key facets of their cultural identity and research strategy: the tangible, intangible and digital. The Research Agenda will help to identify, address and tackle the state of the art, the research challenges and possible actions for the future. The rationale is to improve the academic reality nowadays, but also to help the institutional and national future strategic growth.

The IBTIKAR Research Agenda aims to become a roadmap, defined by the universities themselves, aiming to identify strategic objectives, prioritize efforts, and a number of targeted actions to realize the research vision and improve scientific research. It is the first time that Libyan universities are asked to perform such a reflection, and to link the institutional strategic plan with the objectives of scientific research, in a scenario that starts from the single institution to go beyond and define a research arena for the country. The process has been challenging, and full of bumps. However, the value of the process is not only in the result. But also, in the participative and collaborative approach put in place by the Libyan universities. Each university set up a working group, composed by academics, researchers, as well as administrative staff, from the research centres, departments and the internationalisation office. In most cases, the Director of the research centre was involved, Heads of departments, and sometimes the Vice-President for scientific affairs. Meetings of the working group were held, to create a climate of debate and reflection. The members of the working groups discussed the task and set the goal, keeping open lines of communication to jointly define context and content.

Among the difficulties expressed by the Libyan universities: time management, due to the commitment of the members with lectures and administrative obligations; understanding what was really needed and how to reflect the actual situation of the university; the difficulties of having a committee representing all interests and scientific disciplines.



Identifying priorities

Every Libyan University participating in the IBTIKAR Project set up a consultation panel of individual experts representing different research fields and disciplines. Each Panel identified research areas, activities, gaps and needs across the key facets of tangible, intangible and digital cultural heritage. Starting from that, supported by UNIMED and the University of Salento, further consultation and expert analysis, each university identified the priority research areas, future requirements and what will be needed to reach the goal prefixed: promote research and strategic synergies, and create a Libyan research arena.

Priority Research Areas

The RA underlines that it is fundamental to develop scientific support for the organization of knowledge exchange and capacity building actions, in order to promote the academics and administrative staff activities of Libyan universities. The cooperation for innovation and the exchange of good practices are crucial, and present numerous opportunities and challenges for the people involved in the IBTIKAR Project. The RA also recognizes the importance of encouraging researchers to ask the core questions of what is important, to improve, to come across the gap that exist nowadays, and how to make choices. The priority research areas represent the research areas to be prioritized as part of the consultation. These have been grouped into themes which reflect the broader issues of the scientific research landscape.

Enabling Activities

The Libyan universities identified a number of priorities that have to be examined. The elements that are essential for the new research landscape to be successful include soft skills, capability and capacity, management strategies, knowledge sharing and research infrastructure.

Future Research requirements

It has to be provided a study for a structured, forward thinking assessment of the possible future research landscapes. It was guided by one underpinning belief: changes in technology, society, the environment and the economy will be seminal in shaping the future context for research. Furthermore, it has to be highlighted that engaging with experts with an extensive knowledge in a specific field, can a meaningful depiction of anticipated changes be created.

Delivery of the RA

The overwhelming need is for research to be truly integrative and provide opportunities to explore the innovation frontiers and promote synergies. Future research should involve collaboration and work across boundaries disciplinary, conceptual, theoretical, methodological and international.

The Capacity building action

Capacity building action is needed: it represents the core of the IBTIKAR project and a profound need of the Libyan Higher Education system. In the framework of IBTIKAR, training was performed at different levels, targeting both academic and administrative staff as essential components of the institutional research advancement. In general, it is necessary to enforce the capacities of both academic and administrative staff by providing a consistent training and capacity building action sharing knowledge. In IBTIKAR, the European Partners delivered training to Libyan Partners on the basic skills required to run research at multiple levels:

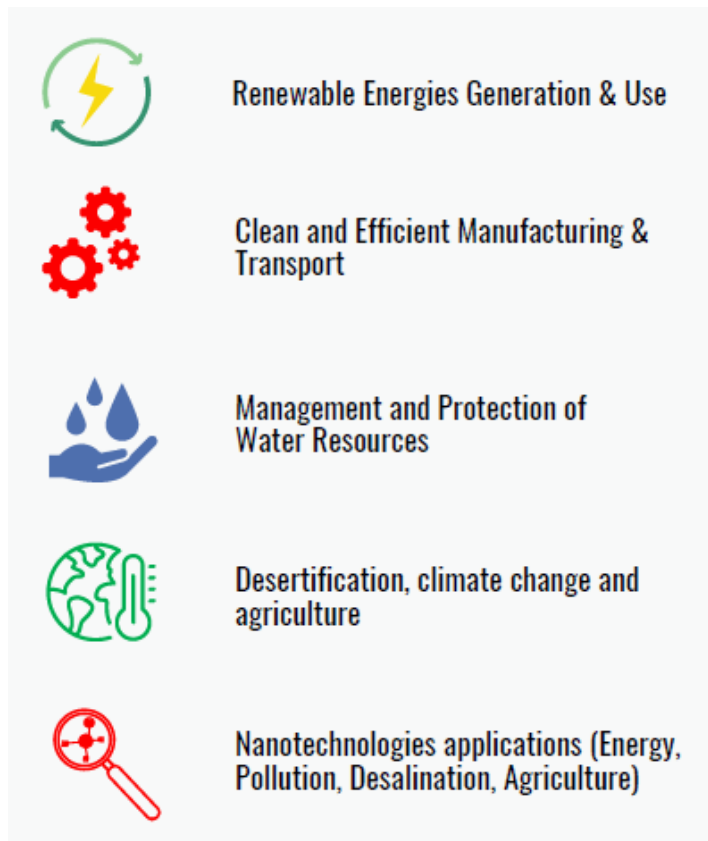
- Horizontal skills training (soft skills, ICT skills, Research Management, English Language, etc) for all the administrative and academic staff of the involved Libyan Universities;
- A Thematic training for administrative staff on European and International funding programmes and how to access them, i.e. proposal writing and networking;
- A Vertical thematic training on methods of conducting research, running labs, and research programs, with a focus on Environmental studies, Nanotechnology, Engineering, Chemistry, Water, etc.

Libyan Research Priorities

The Research Agenda (RA) is about presenting the state of the art concerning the Libyan research activities. It recognizes that different Libyan university cannot be seen as separate entities and thus the priorities identified in the RA cover (and aim to go beyond) the tangible, intangible, digital and cultural necessity of each single university. Following extensive consultation, some research priorities have been identified by each university.

Starting from a selection proposed by the University of Salento, to contextualize the analysis and define the boundaries of the Research Agenda, each institution defined its own research priorities, available in Annex I.

The list of proposed key areas is:



Then, each institution added priorities in line with their core vision, such as Cancer Research, Biomedical Research, Population Health Related problems, Economic and social development, Human Sciences, Subsea oil and gas leakages, Healthcare Administration and Management, and more.



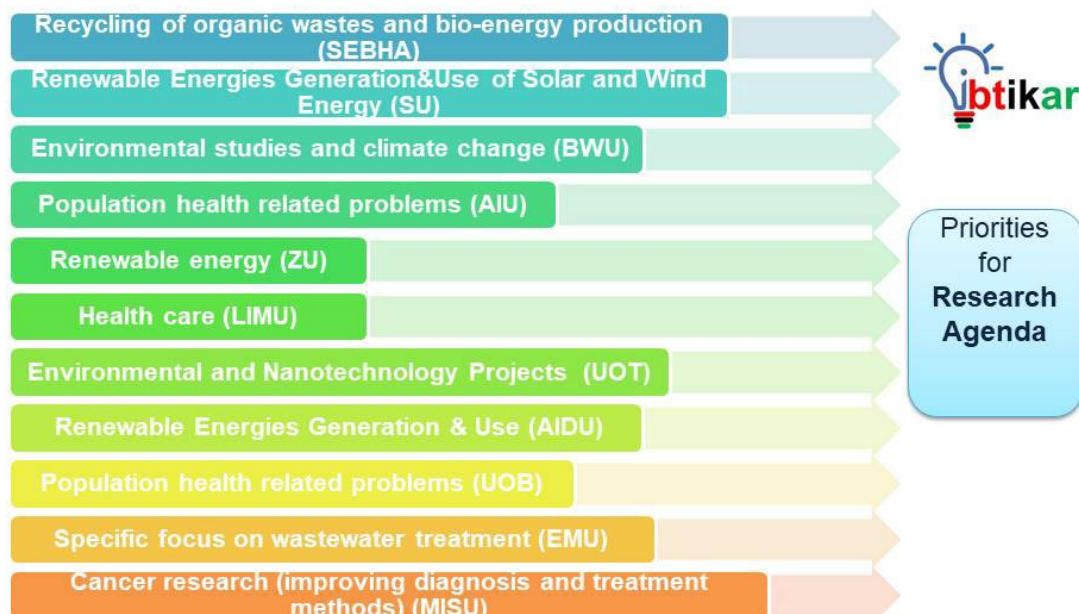
The first priorities of each institution are the following:

- ✓ Environmental and Nanotechnology Projects (UoT)
- ✓ Population health related problems (UOB)
- ✓ Cancer research (improving diagnosis and treatment methods) (MU)
- ✓ Recycling of organic wastes and bio-energy production (SeU)
- ✓ Renewable Energies Generation & Use of Solar and Wind Energy (SU)
- ✓ Renewable energy (ZU)
- ✓ Specific focus on wastewater treatment (EMU)
- ✓ Population health related problems (AIU)
- ✓ Environmental studies and climate change (BWU)
- ✓ Renewable Energies Generation & Use (UoA)
- ✓ Health care (LIMU)

Looking at the consortium as a whole:

- ✓ All universities (except for LIMU due to its own nature) selected Renewable Energies Generation & Use as a priority area of intervention
- ✓ Second most selected priority is Desertification, climate change and agriculture
- ✓ Third most selected priority is Management and Protection of Water Resources
- ✓ Other than the priorities mentioned

THE RESEARCH PRIORITIES



Main outcomes from the Research Agendas

There is genuine willingness to work together, to overcome the fragmentation of information on the state of research, to streamline national programmes to reduce duplication, to exploit synergies and to coordinate research in the cultural heritage arena. The RA also opens up opportunities to create partnerships with the private sector in various fields and other industries. With sufficient and sustained investment, it will be possible to implement this Agenda for the protection and enhancement of Libyan Universities.

The specific scenery of Libyan Universities that join the IBTIKAR project, is showed in the Research Agenda, highlighting excellences, needs and aspirations. It is clear that Libya has been experiencing political instability and conflict in recent years: this very difficult situation disrupts research activities and limits the availability of research funding and resources. The cooperation for innovation and the exchange of good practices are strategic and encourage researchers to ask the core questions of what is important to improve to come across the gap that exist nowadays and how to make choices. This document is only a starting point to assess the state of the art and to reflect on the cultural identity: tangible, intangible and digital.

Every Libyan university identified its own priority research areas, future requirements and what will be needed to reach the goal prefixed: promote research and strategic synergies. Renewable energies and climate change, sustainable development, nanotechnology, but also biotechnology and medicine are fields of great interest for Libyan Universities. The Research Agenda is useful to identify, address and tackle the research challenges not only to improve the academic reality, but also for help Libya's future economic growth and jobs. It is predicable to build a network with the international research community to enable the scientific growth of individuals and the whole academic structure.

University of Tripoli

The research groups at UoT covers wide areas of both applied sciences such as engineering, basic sciences, medical sciences, as well as humanities in their various disciplines. The University of Tripoli is envisioned to achieve scientific, cognitive and behavioural excellence in society for integrated and sustainable development. The University of Tripoli has a strategic plan for the years 2022-2026. A team of specialists participated in its preparation and formulation. It was approved by the University Council. Through its strategic plan, UoT seeks to introduce competitive educational programs at undergraduate and postgraduate levels in terms of focus on the required specializations and skills of graduates. UoT aspires to create a real partnership with advanced universities from the developed world and to transfer scientific research mechanisms and ways to achieve the welfare of our people.

University of Benghazi

The UOB strategic plan is 'to contribute to society development various sectors through the pursuit of education and learning at the international levels of excellence which enables students to apply the values, skills, and knowledge in human and applied sciences they have acquired in their future lives and careers'. Although UoB is struggling with several challenges of the current unstable situation of the country, it has a vision to achieve the academic excellence and to be one of the high ranked university in the Middle East/North Africa. The University of Benghazi focuses on the concept of sustainable development and its relationship to the surrounding environment, to face the emergence of many environmental problems, represented in air pollution and emissions resulting from various sources, and the emergence of the term climate change.

Misurata University

Misurata University promotes interdisciplinary research and clusters on key areas of societal and economic importance. MU tends to focus on bio and environmental sciences based on the current context and society needs: the concept of sustainable development and its relationship to the surrounding environment, the emergence of many environmental problems (air pollution and emissions resulting from various sources), the climate crisis. The city of Misurata has established itself as a prominent medical hub: it serves as a key medical destination in Libya, which has led to a surge in demand for medical service professionals. MU has invested in the development of its Bioresearch and Consultancy Centre and created the Medical Research and Consultation Centre. By further augmenting the centre with additional equipment, the university aims to enhance its capacity for sample analysis in both medical and bioresearch fields. Misurata University tends also to focus on bio and environmental sciences based on the current context and society needs.

Sebha University

Sebha University is a public university and its mission is to acquire leadership in education, scientific research, community service, and to encourage creativity and innovation. In particular, Sebha University aims to focus on the environmental sciences, for example, the topic of water management (to measure the level of salts in water and also to measure the nitrogen in soil samples as well as in agricultural products). It has to be highlighted that Sebha university is located in the south of Libya: 700 km far from Tripoli, 717 km from Bani Waled, and 600 km from Sirte. These very long distances make uneasy sharing the equipment with the other universities, since it is required transportation cost and accommodation cost. It is predictable that Sebha University will work with environmental sciences under the research agenda specified in the project plan and specific devices are needed to perform lab tests.

Sirte University

Sirte University emphasizes the promotion of sustainable development practices and support the development of a skilled and knowledgeable workforce. Owing to the current world energy crises of environmental pollution and global warming, the academic and industrial experts are focusing the attention on alternative energy resources, with the aim to become reference centre in the field of solar energy applications in the area of North Africa. Another research priority is the wind energy. The best appropriate technologies in renewable energy are identified according to the local conditions and capabilities. SU aims to build a fruitful exchange with the relevant partners for the internationalization of high education programs. It is predictable to get some support in terms of: modern-equipment (solar energy, wind energy), high training programs for staff and technics and informing for updating researches.

University of Zawia

The research vision of the University of Zawia is focused on advancing knowledge and addressing societal challenges through research and innovation. The University of Zawia has significant opportunities to contribute to scientific research in the fields of renewable energies and climate change, despite the presence of an oil refinery and a combined cycle power plant. By leveraging interdisciplinary collaboration, industry partnerships, government support, and real-world testing grounds, the university can advance sustainable solutions to combat climate change and promote a greener future for the region. However, challenges related to technological integration, funding, policy, industry cooperation, and public perception must be carefully addressed to maximize the impact of its research endeavours.

Elmergib University

Elmergib University prioritizes research projects that align with Libya's national development priorities and address key challenges facing the country and the region. The research vision includes a commitment to advancing knowledge and addressing key challenges facing Libya and the region. Some elements of the university research vision include: conducting high-quality research; addressing key challenges; fostering innovation; collaborating with stakeholders; training the next generation of researchers. EMU, like many Libyan universities, faces a number of challenges in achieving its research vision. Some of these challenges include: limited funding; limited infrastructure; brain drain; limited access to international research networks; political instability; limited collaboration with industry partners. A concerted effort from the university, government, and other stakeholders is required to invest in research infrastructure, attract and retain talented researchers, and build partnerships for sustainable development.

Alasmarya Islamic University

The AIU challenge is to pacify the country through knowledge, values of peace and harmony, development and interregional dialogue. AIU research interests include supporting research and human studies with the aim of strengthening social peace in the country and preserving religious identity during that period in which the country was going through political tensions, which led to wars. The AIU university research key areas can be summarized as: geology and climate change, human sciences, energy, electric engineering, health sciences, marine resources, information technology, economy and trade, psychology, and disabilities and special needs.

Bani Waleed University

Bani Waleed University works to support the infrastructure, research platforms and services and seeks to introduce the concept of good governance spreading principle of quality and institutional and programmatic accreting to its various faculties. BWU Research Priorities are Environment & Climate Change and Renewable Energy and Chemical science and through the Research and Consultation Centre to work on providing integrated laboratories and qualifying employees, as well as research platforms and establishing an electronic library with other local and international universities. It is predictable to work on enhancing the effectiveness of research and development by strengthening cooperation with other local and international research centres.

University of Ajdabiya

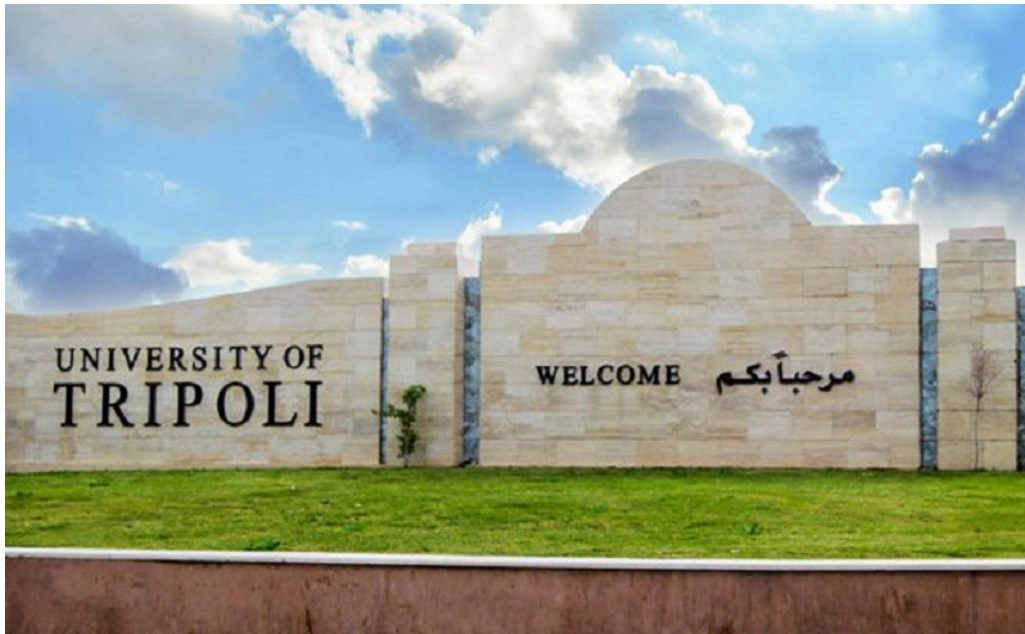
It has 5 research groups specialised in the 5 university's research priorities: renewable energies generation and use, clean and efficient manufacturing and transport, management and protection of water resources, desertification, climate change and agriculture, and nanotechnologies applications (energy, pollution, desalination, agriculture). The UoA Scientific Research and Consultation Centre seeks to establish and form a number of research groups for the mentioned topics.

Libyan International Medical University

LIMU adopts unique specialties or programs which are not available in any other university in the country. These programs are: Basic Medical Sciences, Doctor of Pharmacy (PharmD), Health Informatics and Mechatronics Engineering. LIMU aims at be considered a house of expertise that contributes to building a knowledgeable society and promoting sustainable development locally, regionally and internationally. LIMU focuses on a quality control lab for teaching Pharmacy students, performing analysis for students from other schools. This quality lab can be a nucleus for a larger one that can support the establishment of a drug industry in Libya. There is a need for a High-Performance Liquid Chromatography (HPLC) equipment at LIMU to support undergrad teaching, postgrad studies and research.

Libyan Research Agendas

University of Tripoli



The University of Tripoli (UoT) is one and the largest institution of Higher Education (HE) in Libya. It is the main local leader in university education, scientific research and knowledge development. It is located at the capital Tripoli, founded and established by Royal Decree on December 15, 1955. The UoT is envisioned to achieve scientific, cognitive and behavioural excellence in society for integrated and sustainable development. Through its strategic plan, the UoT seeks to introduce competitive educational programs at undergraduate and

postgraduate levels in terms of focus on the required specializations and skills of graduates. It works on linking these programs with market requirements and needs. This is being done with 35 research groups (RG) at the University which working under the umbrella of the Research & Consultation Centre (RCC). The UoT provides a stimulating environment for learning and scientific research including infrastructure, organizational, administrative, service and informational development. It constantly develops potentials of scientific production, supports research programs and encourages creativity, innovation and excellence in specific areas that serve local and international needs.

It is worth-mentioning that the UoT is scattered on 300-hectare land in six campuses in Tripoli. The UoT Comprises of a number of colleges covering many disciplines of HE including Science, Information Technology, Agriculture, Economics & Political Science, Engineering, Law, Medical Technology, Human Medicine, Nursing, Pharmacy, Physics, Dental & Oral Surgery, Languages, and Islamic Studies. According to the academic year 20121/2022, the total number of students exceeded 75,877, and the teaching staff is about 3,804 Professors.

The research groups at the University of Tripoli cover wide areas of both applied sciences such as engineering, basic sciences, medical sciences, as well as humanities in their various disciplines.

The University of Tripoli has a strategic plan for the years 2022-2026. A team of specialists participated in its preparation and formulation. It was approved by the University Council. It was also referred to the Ministry of Higher Education and Scientific Research to allocate its financial budget.

The University strategic goals can be summarized as follows:

- 1- Developing the university's infrastructure so that it is effective and has a prestigious level among regional and international universities.
- 2- Developing academic programs and focusing on programs that benefit the community and solving its various problems and preserving its environment.
- 3- High-level scientific research that has an impact on the development of knowledge at the national and regional levels.
- 4- Raising the level of the university rank to 2522, according to the global assessment of universities in 2026, and at the African level to 22, and at the Arab level to 15.
- 5- Establishing partnership between national, regional and international universities and national institutions such as the Commission Libyan Scientific Research.
- 6- Activating information technology in all university administration, centres, offices and colleges.
- 7- Activating the university's academic and audio-visual media and its role in defining the university's achievements and attracting students to join the university.

- 8- Supporting and enhancing the quality of the university and achieving local institutional and program accreditation.

We refer below to a sample of scientific papers published by university faculty members and those involved in research groups. It should be noted that this is a sample where all scientific papers are available on the official university website.

During the life of the university, which is nearly seventy years since its establishment, many distinguished students or/and professors made recognizable achievements, and here we refer to some of them:

Hamida Sager

She was born in 1978 in Tripoli, she gained a bachelor's degree from the Faculty of Arts at the University of Tripoli in 2000 and a master's from the Academy of Graduate Studies, Tripoli in 2005. She is currently doing a PhD in Fine Arts at the University of Rome. She has received many awards in local and international art festivals and fairs. In 2015 she was awarded the Golden Award for the Arts by the Mayor of Gubbio, Italy, as well as coming third place for the Caprese Michelangelo International Festival. In 2014, she also gained an award at the SPA Biennale of Contemporary Art, Belgium. Some of her works are held at public and private institutions in Libya.

Mohamed El-Gomati

Professor El-Gomati obtained his BSc degree in Physics and Mathematics from the University of Tripoli in 1970 and went on to study for his MSc in California and PhD from York. He became a Professor in Electronics at the University of York in 1997. His research interests are in Surface Science and Electron Optics with particular emphasis on the development of novel instrumentation for nanos-scale structure and analysis. He is the author and co-author of more than 200 articles and patents in these fields. Moreover, Professor Mohamed El-Gomati has recently appointed Chairman of the Foundation for Science Technology and Civilisation (FSTC), and has been made an OBE (Most Excellent Order of the British Empire) in the New Year's Honours List for 2012. Professor El-Gomati, a scientist and lecturer on science in the Islamic civilisation, has been a trustee and Vice-Chairman of FSTC for many years. He is an advisor to a number of UK Universities and charities and speaks on the contribution of Muslims in Science, Technology and Civilisation.

Faisal Khalil Al-Banani

He was born in the city of Benghazi in 1975, and obtained a Bachelor's degree in Architecture and Urban Planning from the University of Tripoli, and was honoured by the Ministry of Education on Flag Day for his academic excellence. In 1981, he obtained a master's degree in architecture from the Catholic University of America, where he continued until 1984 as a student of environmental and urban planning sciences under the supervision of some of the



most important intellectual leaders in architecture and city planning, including Peter Blake, Forest Wilson, and George Marco.

Haitham Muafa Haitem Muafa

He graduated from the Faculty of Human Medicine, University of Tripoli, in 2008, with a general grade (excellent). Then, moved to the United States of America in 2010 and obtained the American equivalent in the same year, with a percentage of 99%, which qualified him to work as a physician in internal medicine at Marshall University Hospital (West Virginia). He received the certificate of the best doctor at Marshall Hospital in June 2016, which qualified him to be awarded the Alpha Omega Alpha Award, which was established in 1902 and is awarded to distinguished people in their work in the United States of America.

Research Vision

We envision a supportive environment for all University of Tripoli scholars that enables transformative discoveries and innovation, produces new knowledge, and supports creative activities for the benefit of the State of Libya, the nation, and the world. We look forward to our university and thus our country to be among the first countries in scientific research. We hope to see a great development in the field of education at all levels in line with what is happening in the developed world. We seek to invest material and human resources in creating a real scientific research environment that will raise the ranking of our university among the world's advanced universities. We hope that our university's research will not be limited to purely academic research, but will be an important tributary of industrial development in our country, which will help to make a rapid shift at the economic and development levels. We aspire to create a real partnership with advanced universities from the developed world and to transfer scientific research mechanisms and ways to achieve the welfare of our people.

Focus Areas

The university provides undergraduate and postgraduate levels of study and awards the following degrees:

- Intermediate Certificate (Diploma)
- Bachelor's degree
- Licentiate's degree
- Master's degree
- Doctorate degree (PhD)

The University of Tripoli has 22 Faculties contains more than 182 departments of different specialties and shared among six campuses of the University. In order to achieve all these goals and to internationalize the university, ICO is committed and was assigned by the university to:

- Join the leading international university network
- Establish joint programs with other prestigious institutions



- Increase mobility numbers for staff and students
- Increase the number and visibility of international conferences organized and hosted by UOT
- Increase international research funds
- Internationalize the curriculum
- Increase international mobility programs for students and staff
- Establish summer schools
- Establish and maintain international projects
- Involve national and international students in projects
- Promote diversity
- Support networking with international communities
- Develop a website that raises the international profile of the university
- Involve managers from each unit for the implementation of internationalization
- Improve international language skills of staff
- Establish mechanisms for sharing good practices
- Participate in the improvement of UoT performance towards institutional excellence

The ICO of the University of Tripoli is still trying to achieve the university's strategic goals of internationalization. As an entry point for almost all international activities, the ICO tries to establish and build strong professional relationships with regional and international institutions to help improve the university. ICO organizes and manages the partnership for international cooperation projects in capacity building and promotes student and researcher mobility by strengthening cooperation, facilitating logistics and establishing agreements with national and international institutions. UoT through ICO is now engaged in a number of bilateral agreements and in some European projects in capacity building HE (within former Tempus, Erasmus Mundus and Erasmus+ programs). The university also has signed many Memorandum of Understanding (MOU) with international universities and organizations.

Further, the university sale the Research, Consulting and Training Centre (RCTC). The RCTC was established at the UOT as an advisory research body that depends in achieving its tasks on a dedicated technical cadre in addition to the UOT professors, engineers, technicians and laboratories. The RCC strives for cooperation, integration and interconnection with national institutions and various research centres to reach the most successful solutions and make the most of local expertise and ensuring a comprehensive renaissance. The fundamental responsibility of the RCTC's training department is to plan and coordinate training programs that will meet the needs of UOT and society in all fields of study with input from experts both inside and outside the institution, hence promoting the role of experts and specialists in UOT.

In order to meet the needs of society in a variety of areas, including information technology, sustainable development, strategic planning, quality assurance, management development, media and public relations, safety and security, the centre organizes training courses,



workshops, round tables, lectures, seminars, and many other activities. As an example, the RCTC held roughly 29 training courses, 29 workshops, 4 talks, and 1 conference in the previous year (2022).

The University of Tripoli has concluded a number of agreements with the following institutions. They include technology transfer, knowledge transfer, training and employment.

- National Centre for Disease Control
- Libyan Iron and Steel Company Misurata
- Libyan Oil Institute
- The Higher Committee for Childhood
- Arab Centre for Training and Maintenance
- Ministry of Agriculture, Livestock and Marine
- Libyan Authority for Scientific Research
- Municipality of Tripoli Centre
- The Public Authority for Water Resources
- Diabetes and Endocrinology Hospital
- Biotechnology Research Centre

Key actions

- The university seeks to contribute to solving the problems of society by providing research, consulting and training services in basic issues related to development, which allows the possibility of presenting appropriate models to solve these problems in distinguished scientific methods and with high professionalism.
- Determining the International Science Day for Peace and Sustainable Development on November 10th every year and highlighting the important role that scientific research plays in society.
- The establishment of a pharmaceutical consulting office and it is managed by faculty members with experience in the field of medicines, herbs and natural products who analyse all types of drugs, whether physical, chemical or bacterial analysis. Customs and control laboratory on Medicines, Food, Forensic Medicine, the Biotechnology Research Centre and the National Centre for Disease Control.
- Providing consultations to the Ministry of Agriculture, research centres and farmers in the field of agricultural pesticides and soil and water analysis. Training course in the field of pruning fruit trees. As well as a training course in the field of beekeeping.
- In order to achieve a sustainable strategy for interdisciplinary research, the University is enhancing the activities of the University Strategic Research Groups by backing a small group of interdisciplinary research leaders to develop four major distinctive research activities.
- The RCTC and the University of Tripoli have constituted research groups from the staff members at the university and in collaboration with other partner universities. These groups are the expertise in certain fields which offer consultation in their competent

areas. This step is aimed at increasing the research activities in different and various fields.

Key Areas

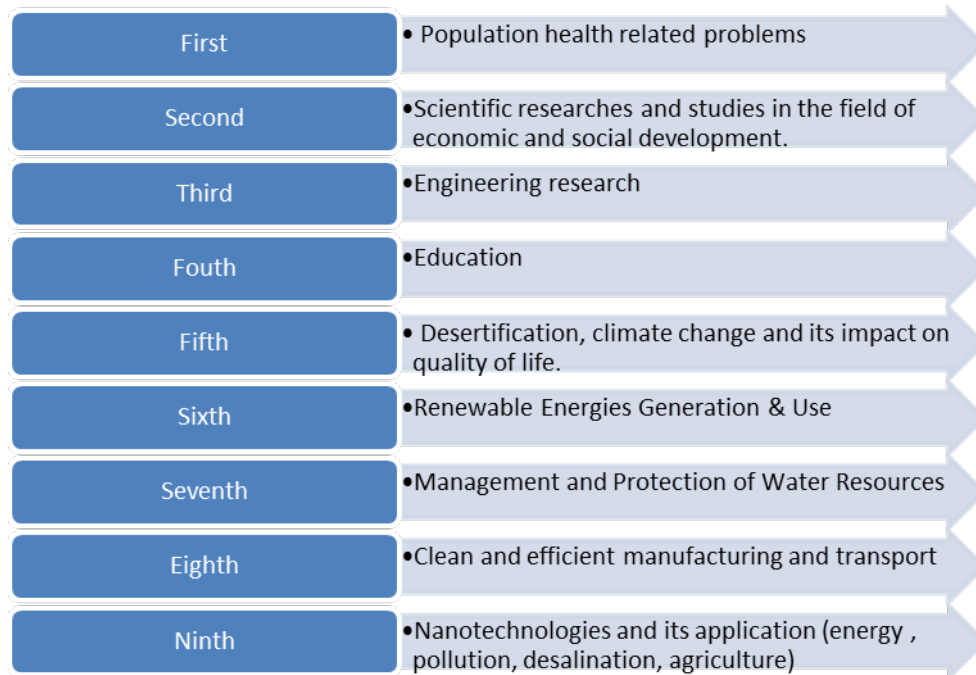
- AI and Data Science
- Health Science
- Energy
- Sustainable Development

Research priorities

- Environmental and Nano-technology Project.
- Research excellence
- Engineering Projects
- Medical Projects

University of Benghazi





The University of Benghazi (UoB) was founded as the first university in Libya on December 15, 1955 under the name of 'University of Libya'. The university is located in Benghazi city which the second largest one in Libya. Currently, UoB has 30 faculties in different disciplines and majorities (Economics, Arts, Media, Education, Medicine, Public Health, Info Technology, Sciences, Engineering, Pharmacy, Dentistry, Nursing, Law, Athletes and Agricultures). Most of them are located in the two main campuses in Benghazi city. However, UoB has 10 other campuses in different locations across Libyan eastern region (approximately 800,000 km.). The university also has 10 centers of research, media production, languages, medical services, info & IT, innovation, academic development, public administration, engineering consulting and legal studies.

UoB is the largest university in Libya with 73,419 undergraduate students, 3,000 graduate students, 2,000 academic staff members and 4,500 employees. The strategic plan of the university states its mission 'to contribute to society development various sectors through the pursuit of education and learning at the international levels of excellence which enables students to apply the values, skills, and knowledge in human and applied sciences they have acquired in their future lives and careers'. Although UoB is struggling with several challenges of the current unstable situation of the country, it has a vision to achieve the academic excellence and to be one of the high ranked university in the Middle East/North Africa.

Focus Areas

According to the strategic plan of UoB 2023 – 2027, the areas can be listed as follows:



- International accreditation of the academic programs.
- Renewable energy management
- Innovation and entrepreneurship
- Digital learning
- University's societal impact and developing the national cultural heritage

Key Areas

- Population health related problems (AMR in Libya: one health consortium)
- Scientific researches and studies in the field of economic and social development.
- Engineering research
- Education
- Desertification, climate change and its impact on quality of life.
- Renewable Energies Generation & Use
- Management and Protection of Water Resources
- Clean and efficient manufacturing and transport
- Nanotechnologies and its application (energy, pollution, desalination, agriculture)

Research priorities

- Population health related problems (AMR in Libya: one health consortium)
- Scientific researches and studies in the field of economic and social development.
- Engineering research
- Education
- Desertification, climate change and its impact on quality of life.
- Renewable Energies Generation & Use
- Management and Protection of Water Resources
- Clean and efficient manufacturing and transport
- Nanotechnologies and its application (energy, pollution, desalination, agriculture)

Description of the laboratory and its infrastructures

The research and consulting laboratory is one of the main central laboratories at the University of Benghazi, which performs physical and chemical analyses of various samples in soil, water and air. With the development of the concept of sustainable development and its relationship to the surrounding environment, the emergence of many environmental problems, represented in air pollution and emissions resulting from various sources, and the emergence of the term climate change. The economic, social and political problems it caused to many societies around the world. It was necessary to think about developing the laboratory by working in this direction to reduce pollution and evaluate it. For this reason, the presence of such devices is important to help in measurements and assessment of environmental impact. The laboratory works in these areas:



- Field of microbiology
- Field of chemistry
- Field of agriculture
- Medicine field
- Environment field

Misurata University



First	•Cancer research (improving diagnosis and treatment methods).
Second	•Bio and microbiology research.
Third	•Research on pesticides used in field of agriculture.
Fouth	•Nanotechnologies applications (Energy, Pollution, Desalination, Agriculture)
Fifth	•Management and Protection of Water Resources.
Sixth	•Renewable Energies Generation & Use

Misurata University is located in Misurata city, which is the third largest city in Libya and practically the biggest city in the middle region of Libya. Although the university was founded as a separate university in 2000, higher education in the region began long before that date. The department of minerals Engineering was established as part of Tripoli University in 1983 in Misurata. In 1984, the college of Basic Sciences was opened at Misurata as one of Tripoli University colleges Misurata campus, followed by the Faculty of Arts in 1991. In the academic year 1992-1993, the Economic Sciences Department opened as a branch of the Faculty of Economic Sciences at Sirte University Misurata Campus. In 1994, the Department of Law opened as a follower of the Faculty of Law at Sirte University. In 1997, the Faculty of Medicine was opened.

Based on the fact that different faculties had been already functional in the city, the Libyan Ministry of Higher Education established Misurata University as a separate Libyan university in 2000. The academic year 2000-2001 was the first academic year under the unified university in the city. Currently, the university has 20 faculties (including one in Abograin city and one in Thawrga city) and 152 disciplines with approximately 23000 undergraduate students and 1300 postgraduate students. The university offers more than 10 different postgraduate programs in various specialties such as Medicine, Microbiology, Chemistry, Engineering, Economic Sciences, Law, Education, IT and Art. Recently, the university initiated a PhD program in Microbiology.

To foster research within the university and overcome bureaucratic and financial obstacles, Misurata University has changed the status of its Research and Consultation Centre. In the new setting, seven research orientations are set to work under the Research and Consultation Center which are Biosciences research and consultation office, Social-Sciences research and consultation office, Engineering and Information Technologies research and consultation office, Environmental Research and Consulting Office, Economic Sciences Research and Consultation Office, Language and Heritage Research and Consultation Centre, and Medical Sciences Research and Consultation office. The university tends to focus on bio and environmental sciences based on the current context and society needs.

Research Vision

This part will present the research vision of Misurata University, addressing the challenges, the opportunities, and the steps that the university have already taken in the aim of strengthen the university's research capabilities, enhance its international reputation, and contribute to the development of the society.

Challenges

Political and Social Divisions

Misurata University acknowledges the impact of political and social divisions on the country that surely impacted the higher education sector. The university aims to perform as an



established neutral platform for dialogue, collaboration, and knowledge sharing that transcend political affiliations and fosters unity within the academic community.

International Experience Exchange

The university endeavours to establish partnerships with international universities and research institutions to facilitate faculty and student exchanges, joint research projects, and collaboration on curriculum development.

Resources and Access to Scientific Publications

To overcome the limitations of library resources, the university seeks partnerships with international libraries and research institutions. This step will allow our faculty and students to access a broader range of scientific publications. Additionally, the university plan to invest in digital resources and promote open access initiatives.

Funding for Scientific Research

Misurata University is committed to securing a dedicated budget for scientific research. The university will pursue collecting funding through mainly governmental budget, grants, partnerships with industry.

Unified University Campus

Misurata University is working towards the establishment of a unified campus that consolidates the academic and the administrative units. This will enhance collaboration among departments and facilitate interdisciplinary research.

Opportunities

Leveraging Faculty Expertise

Misurata University will capitalize on the diverse experiences and qualifications of its faculty members by promoting interdisciplinary research and establishing research clusters focused on key areas of societal and economic importance.

Strengthening Research Culture

With strong support from university management, the university will foster a research culture that values innovation, collaboration, and impact. This includes providing research training, mentorship, and recognition for outstanding achievements.

Meeting Market Needs

Misurata University will strive to become a trusted research advisory body, addressing the needs of the local and regional markets. The University will work closely with industrial and service institutions to develop research projects that improve products and services.

Collaborating with Postgraduate Programs

The university work to align its research priorities with the objectives of the postgraduate programs, providing funding opportunities and encouraging students to participate in cutting-edge research projects.

Building on Success: Research and Consultation Centre

Misurata University has successfully reestablished the Research and Consultation Center, providing a legal framework for our research activities. The center has already produced excellent research and consultancy work, demonstrating the potential for further success.

As we continue to address the challenges and harness the opportunities presented in this vision, we are confident that Misurata University will become a leading research institution that contributes significantly to our society and beyond.

Focus Areas

Misurata, a city in central Libya, has established itself as a prominent medical hub, attracting numerous individuals from across the nation for healthcare services. This situation has generated a substantial demand for professionals in the medical service sector. To address this need, the University of Misurata has prioritized the expansion of its Bioresearch and Consultancy Centre while concurrently establishing the Medical Research and Consultation Centre. The Bioresearch and Consultancy Centre is equipped with a variety of laboratories, including those for biotechnology, instrumental chemistry, chromatography, and microbiology. The Centre's technicians possess a diverse range of technical skills, with backgrounds in biology, genetics, and chemistry. By further augmenting the Centre with additional equipment, the university aims to enhance its capacity for sample analysis in both medical and bioresearch fields. In summary, the city of Misurata serves as a key medical destination in Libya, which has led to a surge in demand for medical service professionals. To address this need, the University of Misurata has invested in the development of its Bioresearch and Consultancy Centre and created the Medical Research and Consultation Centre. These efforts will help improve the abilities of technicians and expand the services offered in medical and bioresearch domains.

Key Areas

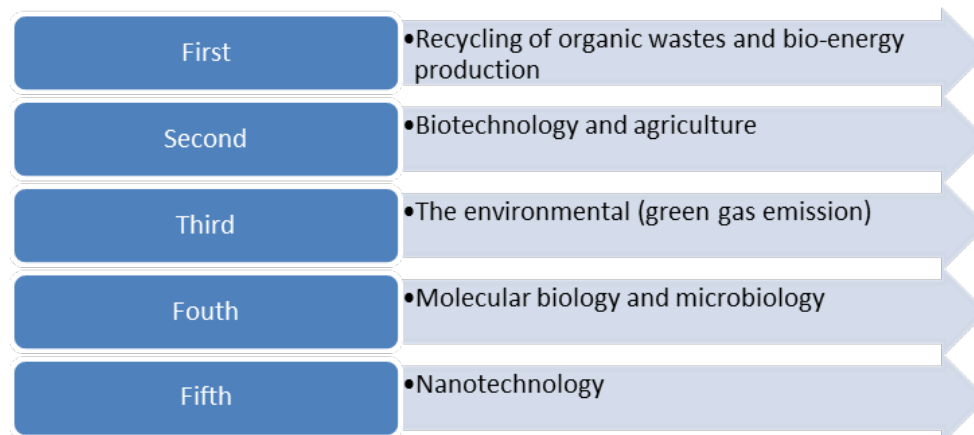
Seven major research orientations are set to work under Misurata university Research and Consultation Center which are:

- Biosciences research and consultation office
- Social-Sciences research and consultation office
- Engineering and Information Technologies research and consultation office
- Environmental Research and Consulting Office
- Economic Sciences Research and Consultation Office
- Language and Heritage Research and Consultation Office
- Medical Sciences Research and Consultation Office.

Research priorities

- Cancer research (improving diagnosis and treatment methods)
- Bio and microbiology research
- Research on pesticides used in field of agriculture
- Nanotechnologies applications (Energy, Pollution, Desalination, Agriculture)
- Management and Protection of Water Resources
- Renewable Energies Generation & Us

Sebha University



Sebha University is a public university and bears the name of the city where it was established. Its mission is to acquire leadership in education, scientific research, community service, and encourage the creativity and innovation. In 1976, the university was first affiliated to Tripoli University with only three departments. In 1983, the university was established as Sebha University and more faculties were created. Now the university has 18 faculties distributed in different regions of Sebha, Wadi Alajal and Ghat. It also includes the faculty of education in N'Djamena, Republic of Chad.

It has to be highlighted that Sebha University is located in south of Libya: 700 km far from Tripoli, 717 km from Bin Waled, and 600 km from Sirte: these very long distances make uneasy sharing the equipment with the other Universities, since it is required transportation cost and accommodation cost.

In total, the university has 11 faculties in campus, and 7 faculties outside the campus. Besides, Sebha University is including different centres such as:

1. Languages Centre
2. Research and Consultations Centre
3. Training and Development Centre
4. The Media Centre
5. Centre of Information and Documentation
6. Quality Assurance Office
7. Information Technology Centre
8. Society Service and Development Centre
9. Innovation and Entrepreneurship Centre
10. African Studies Centre

The academic degree granted by the university:

1. Bachelor's degree in human science.
2. Bachelor degree in applied science.
3. The Higher degree of Masters (MSc)
4. Doctorate of Philosophy degree (PhD)

Statistics of Sebha University:

- Number of employees: 3485 employees
- Number of teaching staff: 1290 with 2% international
- Number of departments and divisions: 168
- Libya innovation prizes for 2016-2018: 3 patents
- Number of postgraduate students: 669
- Number of postgraduate students - graduated: 651
- Number of Libyan students: 9063
- Number of non-Libyan students: 488

- Number of graduate students: 49143
- Number of non-Libyan graduate students: 1095
- Number of permanent faculty members: 1065
- Number of collaborating faculty members: 85
- Number of foreign faculty members: 14

Research priorities

- 1- Recycling of organic wastes and bio-energy production
- 2- Biotechnology and agriculture
- 3- The environmental (green gas emission)
- 4- Molecular biology and microbiology
- 5- Nanotechnology

Description of the laboratory and its infrastructures

The research and consultancy center was established in 2008 by the previous decision of the General People's Committee No. (22). RCC is officially responsible for executing researches and the provision of scientific consultations in a way that contributes to the development of society. The center has a multidisciplinary scientific laboratory (lab pictures shown above) in which the practical side of research approved by the scientific committee of the center is carried out in the following areas:

- Field of microbiology
- Field of chemistry
- Field of agriculture
- Medicine field
- Environment field

The devices indicated will be used in the topic of the environmental sciences, for example, the topic of water management; they can be used to measure the level of salts in water and also measuring nitrogen in soil samples as well as in agricultural products. It is predictable that Sebha University will work with environmental sciences under the research agenda specified in the project plan, so these devices (actually not present in the lab of research centre) are needed in performing the possible analyses in this field.

Sirte University

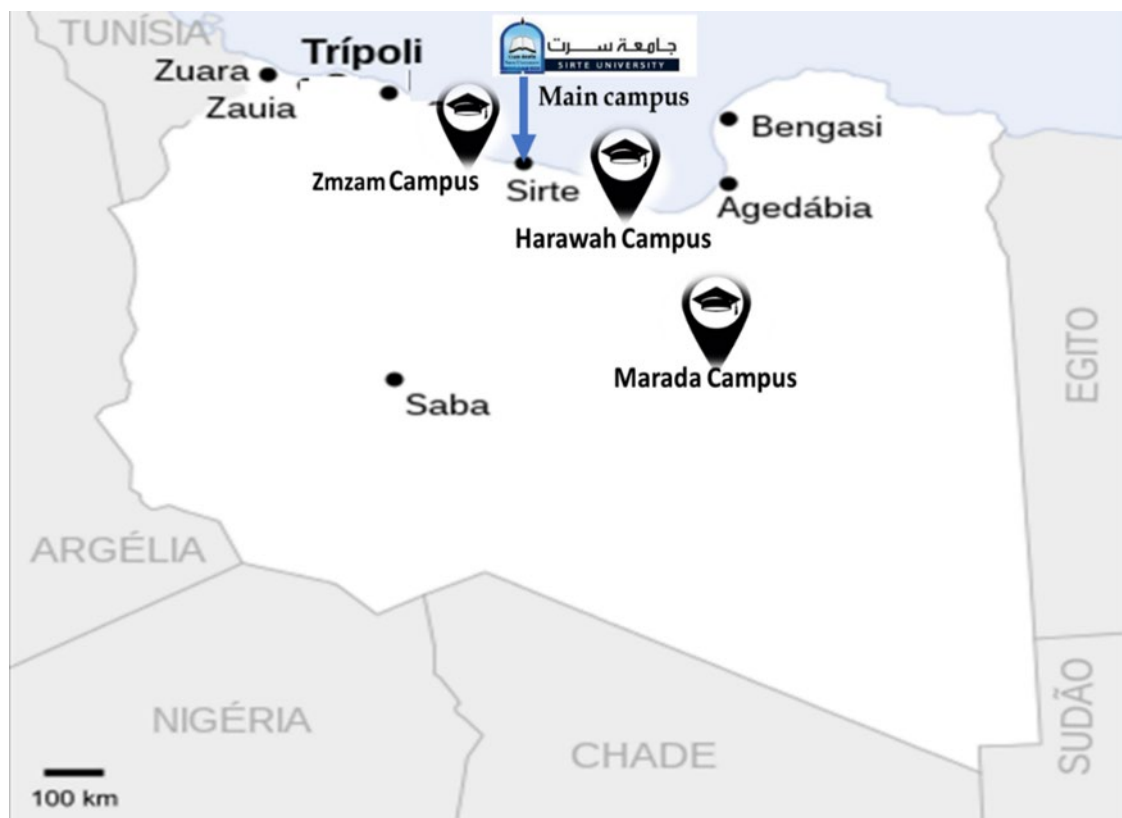


First	• Renewable Energies Generation&Use of Wind Energy
Second	•Renewable Energies Generation&Use of Solar Energy
Third	•Management and Protection of Water Resources
Fouth	• Improving research Desertification, climate change and agriculture
Fifth	•Medical Research

Sirte University, located in the city of Sirte, Libya, has a diverse research agenda that encompasses a range of fields and disciplines. The University is strongly committed to addressing local community needs and challenges through its research activities, while also contributing to the broader academic and scientific community. Additionally, the University emphasizes the promotion of sustainable development practices and support the development of a skilled and knowledgeable workforce. The Sirte university was established to be a beacon of science seeking to find cultural elites that are effective in society, and it has a firm conviction that education represents the basis for change in society because it represents the cornerstone in the process of acquiring skills, as well as building capacities and competencies for sustainable development of society and elevating it to the ranks of advanced societies and in deliberate steps, those in charge of it sought to develop academically in all humanities, medical and applied sciences

In 1989, the Libyan Ministry of Higher Education established the University as a branch of "Gariones University." Later, with decision No. 745 in 1991, the University became financially and administratively independent under the name "Attahaddi University," as per the higher education ministry's decision. The University's name was then changed to "Sirte University" with decision No. 149 in 2010. Since then, the University has consistently expanded and grown, emerging as one of Libya's premier scientific institutions.

The University is situated on Sirte bay, which is located in the middle of the northern coast of Libya. It is positioned between Tripoli and Benghazi, with each city being approximately 500 km away. Presently, the University comprises 14 facilities that are spread out across 7 campuses. The main campus, along with three other campuses, is situated in Sirte city. The remaining three campuses are located outside the city, with one being in the town of Zmzm, approximately 140 km to the west. The Harawah campus can be found in Harawah town, situated around 80 km to the east of the city, while the other campus is located in Marda town, which is approximately 350 km to the southeast of the city. The University has a faculty of 650 academic staff and 8000 of students.



University has established several research centres, including the Renewable Energy Research Centre, E-learning Centre, Agricultural Research Centre, Information and Communication Technology Research Centre, Human Development Office, Entrepreneurship and innovation Centre and Academic Centre for Future Studies. These centres are dedicated to conducting research in their specific fields and advancing the overall understanding of these subjects. Through collaboration with other research institutions and industry partners, they aim to promote innovation and support economic growth.

Research Vision

SU vision is based on the excellence and leadership in teaching, learning, scientific research, community service locally and regionally, and the pursuit of universality.

- Preparing outstanding scientific cadres capable of competing in the labour market
- Providing an educational environment and training programs that contribute to enriching scientific research related to the issues of the developmental society
- Encouraging and developing innovation and entrepreneurship programs are among the main tasks of the university.

The strategic plan of the University enables the main strategic goals namely to provide high quality educational programs in various fields of knowledge. And also support and develop scientific research to contribute to the development of society to achieve local accreditation of all educational programs, strive for universality while ensuring the provision of administrative services in accordance with quality standards, as well as human resources development.

Upgrading the university to become a research institution, a research Beacon, and an incubator for research and graduate students is one of the basics of the University's research vision.

The University's policy is in line with the strategic plan, which certainly corresponds to the (vision, mission and goals), and its strategy is proposed every four years, and the university works to implement its research activities according to a plan in line with the homeland. The scientific research agenda reflects the orientations of the university's faculty members in proportion to the financial, material and human resources of the University, and in line with its vision, mission and goals. In addition, in each faculty at the university there is a research and consulting department and the task of knowing the research priorities in various disciplines and organizing and following up research activities such as conferences, seminars and scientific workshops.

One of the strengths of the university and the advantages of the university is its geographical location and proximity to some industrial companies, especially those related to oil manufacturing operations. In this regard, some departments of the faculties at the University, for example, the Faculty of engineering, coordinate with production and industrial companies in solving various technical problems, taking data from them and studying them in a research framework. It is used as a case study and graduation research for students under the supervision

of staff members, companies and industrial facilities are the electricity company, power plants and industrial river water investment ,in addition to some oil companies near the city, such as Ras Lanuf oil manufacturing company.

In this context, the weaknesses of the research programs, there are some difficulties and problems facing the University and lies in the available possibilities for scientific research, which is represented in the lack of many devices and tools, without which there is a lack of addressing some research topics, due to the weakness in funding for research programs, which has to do with several factors. In addition, the university is a partner also in some projects supervised by the European Union.

Focus Areas

Introduction and Goals

Owing to the current world energy crises of environmental pollution and global warming, the academic and industrial experts are focusing their great attention on alternative energy resources. The current fossil energy resources are predicted to be depleted in the few coming decades due to the highly increased demand and non-sustainable nature of these resources. The extremely clean renewable energy seems to be the most important sustainable resources, where 13% of worldwide consumed energy is produced by renewable technologies. But, these recent resources still need more progress in research and development in order to be comparative with fossil energy. Solar energy is considered the most attractive source of unlimited huge energy. North Africa region has a plentiful solar energy, which reaches about 330 sunshine days all over the year. The world's interest in preserving the environment and the lives of human communities on earth is the most important Scientific and applied orientations towards which most studies and the costs of obtaining species Other energy that it uses in different areas of life, while other types of energy cause exhaust and toxic and harmful gases to humans. The renewable energy is a permanent and inexhaustible energy. and Uncomplicated technologies are used and can be manufactured locally, it is an important factor in environmental, social, and all fields, it is considered an environmentally friendly energy and does not cause any damage to it, provide many job opportunities for the unemployed and its cost is simple and low compared to some other types of energies.

Consequently, Sirte university researcher is focusing to be a building and development of solar energy applications in the area of North Africa. Due to the prospective connection of electric grid between the North Africa and European countries, Libya as a mid-site in North Africa region could be dedicated as the central country for power transportation. Accordingly, Sirte city, could be nominated as the most efficient site in Libya to be the nodal link between Africa and Europe, and also, a climate very suitable for providing renewable energy in terms of wind, sunlight and water, and with consumption energy sources such as fuel, the optimal option is to use clean energy and do not damage the environment.

In this regards, the solar energy applications are highly supported by Sirte university board in the field of energy applications, production and distribution. In our university: we look to open large horizon and new opportunities to make our academic program more valuable and more international especially in some hot topics such as renewable Energy, Environment. Also, in this way, projects it would be a good opportunity to take benefits from program countries expertise and qualifications as well as visiting their institutions using their labs facilities to produce some scientific work. Through this project, the Sirte university aims to build a fruitful exchange with the relevant partners for the internationalization of high education programs. This partnership would certainly be very enriching on various levels: improving international visibility, enhancing quality of education for both students and teaching staff, access to additional resources for educational and scholarly activities, raise the reputation and attractiveness of study courses at the international level.

Generating wind and solar is increasingly more competitive or cheaper than other forms of energy. That means switching to renewables. To bring clean electricity to renters and low-income communities, in addition to cost savings, renewable energy projects can also increase community resilience. Pairing renewable energy with storage or microgrids can reduce dependence on the grid in times of natural disaster. To achieve our clean energy and climate goals, cities will need to take to renewable energy procurement that combines the tangible benefits of local solar projects. electricity demand and enable a net zero-carbon electricity system. Successful implementation of local solar projects can be an effective first step to build momentum for other more ambitious renewable projects. The Renewables Accelerator is a key resource for cities already leading on renewable energy and those kickstarting their clean energy programs by setting up unified courses for future development of International Master degree of in the field of “innovation in green energy and entrepreneurship”, we will be able to offer a group of students a high level of education in a relevant and promising field. Indeed.

Cooperation and Exchange of Experiences and Cultures

In its continuous endeavour to spread knowledge and communicate with its local and international surroundings, the University of Sirte has sought since its establishment to establish partnerships and twinning with many regional and international universities, where it is currently supervised and followed up by the University's International Cooperation Office. The following some detail contains the agreements signed between the Sirte university and other universities, the some detail of which is an agreement below cooperation goes well agreements between colleges in Sirte university and industry and Centres Research to integration to partner and merge with institutions that would be a strategic Fit for the future (e.g., petroleum companies, electrical companies and solar energy centres that often result in increment Research execute sound research programs and supports students' graduation projects. And maybe offer summer training to our students. based on that we take, for example, the integrated shared among Local cooperation with solar energy centre in Tajoura Libya 2013. and Strong linkages with e.g., petroleum companies, electrical companies) and also, we have cooperated with internal and external universities for example, universities Tunisia,

universities Jordan, universities Italy and universities others. In addition, Within the EniMed project such as th'e "Enerbrain" project, the MSc in Renewable and Sustainable Energy is designed with a multi-level approach in capacity building; which follows Enerbrain's strategic education agenda

Sirte University is focusing to be a building and development of solar energy applications

One of the most prominent advantages of solar thermal energy is its low negative impacts on the environment and its reluctance to use solar thermal energy. The production of polluting emissions or the safety threat that often accompanies normal generation techniques. It hardly comes out Polluted is a little smoke or noise during operation. Investing in solar energy can be a real alternative in some areas that are characterized by sunny weather most of the time of the year, and some countries have already begun to produce clean electric energy from solar panels, including Libya. The University of Sirte has a good infrastructure in the field of solar energy where the installation of Meteorological station for recording redaction energy (ambient temperature solar radiation (Beam, Global and Diffuser) 2013. As well as has Varieties of laboratories, one of its kind laboratories in Libya (e.g. Thermodynamic lab. Heat Transfer lab. and unit of solar energy).

Development of Solar Energy Applications

One of the most prominent advantages of solar thermal energy is its low negative impacts on the environment and its reluctance to use solar thermal energy. The production of polluting emissions or the safety threat that often accompanies normal generation techniques. It hardly comes out Polluted is a little smoke or noise during operation. Investing in solar energy can be a real alternative in some areas that are characterized by sunny weather most of the time of the year, and some countries have already begun to produce clean electric energy from solar panels, including Libya. The University of Sirte has a good infrastructure in the field of solar energy where the installation of Meteorological station for recording redaction energy (ambient temperature solar radiation (Beam, Global and Diffuser) 2013. As well as has Varieties of laboratories, one of its kind laboratories in Libya (e.g. Thermodynamic lab. Heat Transfer lab. and unit of solar energy).

Previous Research Projects in Solar Energy Applications

Based on information regarding every aspect of the projects execution, and operation, for concentrating radiation, and receivers for generating electricity and heat generation from solar thermal energy, which were carried out by the researchers and students at the Faculty of Engineering at Sirte University, including: water heating system fabrication using various methods of concentrating of solar radiation, Water heating system theoretical study for Ibn Sina General Hospital using solar energy technology (2012), Design and fabrication of Solar Concentrator (parabolic dish) Equivalent for Steam Generation (2014) ,Network plan design to provide laboratories building of engineering faulty by a power using solar energy technology (2017) ,Theoretical study of hydropower system in electricity generation (2018),Solar concentrator basin design and fabrication, Estimation of Electric Power Generation in Libya

Using Processing Technology of Wind Energy (Sirte Case study), Design and Fabrication and Pilot Testing of Vertical Axis Wind Turbines (2019) and double (Parabolic trough) solar water distillation condenser.(2020) Researches continued later in this direction with interest in renewable energies, and there were valuable scientific research papers that were published in peer-reviewed journals.

Students Recruitment, Staff Recruitment

Graduates, Student and Staff were Recruitment enabled with opportunities to engage in the workforce and/or to assist, coordinate and lead teams in research groups. The Sirte University values education and believes that students bring new ideas, new energy and new skills to the workforce. The Sirte University Strong linkages with industry (e.g. petroleum companies, electrical companies and solar energy centers) Maybe can be employment of students takes place through these companies that near to Sirte city which work experience directly related to the student's academic field of study. to benefit from the academic, social, and cultural developments that from a diverse campus committed Our employees are also eligible for an extensive and competitive total benefits package, which includes offering employees and their eligible dependents 60% tuition assistance for courses taken at the Sirte University.

Future Research Requirements

The best appropriate technologies in renewable energy are identified according to the local conditions and capabilities. The university can play these roles through its highly qualified local scientific expertise which can participate in finding optimal objective solutions in this field. Existence of an appropriate mechanism to achieve a high degree of interaction, for broader cooperation to face with climate change, soaring energy prices and concerns about security of supply, renewable energy sources such as wind and solar power seem an obvious way forward. Establishing a technical committee to develop future plans to activate and benefit from university research in the field of renewable energies and put them into practice. If we could replace fossil fuels with abundant renewable energy, we would cut energy prices, reduce emissions and lower the future risks of climate change, including the impact on food production. University would like to get some support to achieve the application of renewable energy technology such as: Modern-equipment (solar energy, wind energy), High training programs for staff and technics and Informing for updating researches.

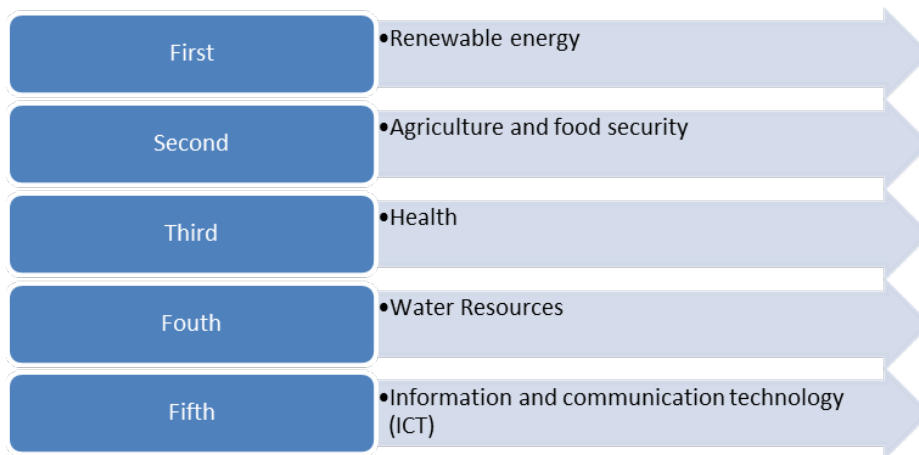
Key Areas

- Changes to water resources can have a big influence on our world
- Renewables are a global tendency
- Climate change is already affected human health and also have a significant impact on ecosystems and organisms
- Renewable energy less air and water pollution, to lower greenhouse gas emissions
- Renewable energy within everyone's reach. And it gave it the ability to developers
- Renewable energy is the guarantee of a climate safe world.

Research priorities

1. Renewable Energies Generation & Use
 - 1.1 Wind Energy
 - 1.2. Solar Energy
2. Management and Protection of Water Resources.
3. Desertification, climate change and agriculture.
4. Medical research

University of Zawia



The University of Zawia (ZU) is one of the Libya Public Universities. It was established in 1988 based on the decision of the General People's Committee (formerly) No. (135). It is a member of the Association of Arab Universities, the Association of African Universities, and the Association of Islamic Universities. The university includes 27 faculties distributed in the cities of: Al-Zawiya, Al-Ajailat, Zuwarah, including majors in arts, teacher preparation, physical education, law, economics, science, veterinary and agricultural sciences, engineering, human medicine, dentistry, pharmacy, medical technology, public health, and information technology.

The university, with its administrations and faculties, is currently based on modern educational buildings and facilities in the Campus University, which is located six kilometres south of the city of Zawiya, and it sits on about one hundred hectares. The number of faculty members at the university is about 2400 faculty members. The number of employees is about 2700 employees and technicians.

ZU has 10 main centres:

- Research and Scientific Studies Centre.
- Foreign Languages Centre.
- Entrepreneurship and Innovation Centre.
- E-learning centre.
- Computer and information centre.
- Human Resources Development and Training Centre.
- Libyan National Centre for Medical Research.
- North African Centre for Serums and Vaccines Research.
- Centre for Social Research and Advanced Studies.
- Advanced Centre for Plant Research and Complementary Medicine
- University of Zawia – ICO Team – Research Agenda 3
- University Philosophy

The university adopts a philosophy based on directing all academic, administrative, and financial capabilities to the continuous development and improvement of quality of services provided by the university, which includes:

- Educational services provided to students in order to reach the highest levels of excellence and the ability to compete in the labor market, whether at the level of undergraduate studies (Bachelor's degrees) or postgraduate studies (Master's and PhD degrees).
- Conducting scientific research of high quality in both humanity and applied sciences based on the actual needs of Libyan societies and capable of solving their problems and advancing it in the paths of progress and prosperity.

Vision

Achieving scientific, cognitive and behavioral excellence of society for integrated and sustainable development.

Mission

Contributing to society through the pursuit of education and research at the highest international levels of excellence

Themes and goals

- Providing educational programs in various fields according to local and international quality standards.
- Raising the level of scientific research.
- Enhancing the role of the university in community service.
- Providing a suitable environment and improving the level of services.
- Developing continuous policies and programs to qualify and develop the university's human cadres.
- Linking the university's outputs with the requirements of the labour market.
- Supporting and activating joint cooperation between the university and local, regional and international institutions.

Research priorities

The report then goes on to discuss the research priority areas that the University of Zawia is currently focusing on, which include renewable energy, agriculture and food security, health, water resources, and information and communication technology. Each of these areas is briefly described, along with some of the specific research goals within each area, also identifies some opportunities and challenges for research at the University of Zawia. The opportunities include collaborations with local industries, local relevance of research, policy influence, international collaborations especially with the existence of the IBTIKAR project, which will enhance support for scientific research, and funding opportunities. The challenges identified include technological integration, data availability, infrastructure constraints, regulatory framework, funding constraints, and industry cooperation.

The university's research vision is focused on advancing knowledge and addressing societal challenges through research and innovation. Some of the priority research areas that the University of Zawia is currently focusing on include:

1- Renewable energy

The university is working on developing sustainable energy solutions, including solar and wind power, to reduce Libya's dependence on fossil fuels and help mitigate the effects of climate change.

2- Agriculture and food security

The university is conducting research to improve crop yields and develop more efficient and sustainable farming practices in Libya, with the goal of enhancing food security in the country.

3- Health

The university's medical faculty is conducting research on various health issues facing Libya, including infectious diseases, cancer, and chronic illnesses. The goal is to develop new treatments and therapies that can improve the health outcomes of Libyan citizens.

4- Water resources

The university is conducting research on water resources and management in Libya, with the aim of developing sustainable water management practices that can help address the country's water scarcity issues.

5- Information and communication technology (ICT)

The university is working on developing new ICT solutions and applications that can improve various aspects of Libyan society, including education, healthcare, and governance.

Overall, the University of Zawia is committed to conducting research that can have a positive impact on Libyan society and contribute to the development of the country.

Opportunities on Research

Applied Research

The presence of Libya's largest oil refinery, combined cycle power plant and oil export port in Zawia City provides unique opportunities for applied research as shown in fig(1,2). The University of Zawia can collaborate with these industrial facilities to explore innovative ways of integrating renewable energy technologies into their operations. This could include studying the feasibility of renewable energy co-generation or using waste heat from the refinery to power renewable energy systems.



Fig. (1). Picture of the Zawia refinery site in Libya



Fig. (2). Picture of the Zawia Combined Cycle Power Plant (ZCCPP)

Local Relevance

The Zawia energy landscape and the challenges posed by the presence of traditional fossil fuel-based facilities, make renewable energy research highly relevant at the local level. The university can focus its research on solutions that directly address the region's energy needs, ensuring that findings have practical applications and impact in the area.

Policy Influence

The University of Zawia research on renewable energies and climate change can play a crucial role in shaping energy and environmental policies in Libya. The evidence-based research can provide policymakers with valuable insights to design effective strategies for transitioning to renewable energy sources and mitigating climate change impacts.

International Collaborations

With increasing global awareness and initiatives in renewable energy and climate change, the University of Zawia can attract collaborations with international research institutions and organizations. These partnerships can bring expertise, funding, and access to cutting-edge technologies to further enhance the university's research capabilities.

Funding Opportunities

As the global focus on renewable energy and climate change intensifies, there are growing opportunities for research funding in these fields. The university can develop research on tap into various national and international funding programs to support its research initiatives and infrastructure development.

Challenges on Research

Technological Integration

Integrating renewable energy technologies into an energy landscape dominated by conventional fossil fuel-based facilities can be challenging. The University of Zawia will face obstacles in finding efficient and economically viable ways to harmonize renewable energy systems with the existing infrastructure.

Data Availability

Comprehensive and reliable data on Zawia's energy consumption patterns, emissions, and environmental impacts may be limited. Conducting accurate climate change modeling and impact assessment could be hindered by data gaps, making it essential to establish partnerships and collaborations to access relevant data sources.

Infrastructure Constraints

The transition to renewable energies may require significant changes in infrastructure and energy storage capabilities. Developing a robust grid system to accommodate intermittent renewable energy sources and implementing energy storage solutions can be complex and resource-intensive.

Regulatory Framework

The regulatory framework and policies in Libya may not be fully conducive to promoting renewable energy adoption. The University of Zawia may face challenges in developments of research and navigating bureaucratic hurdles and advocating for supportive policies that incentivize renewable energy investment and deployment.

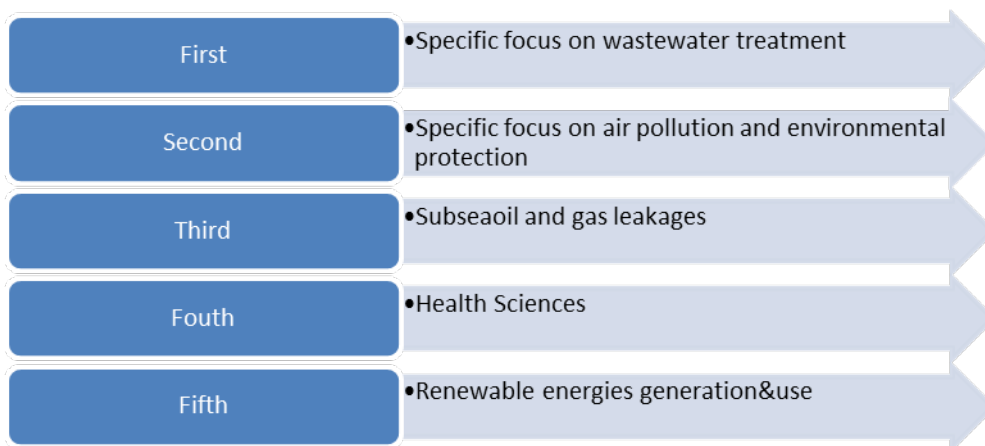
Funding Constraints

While there are funding opportunities available for renewable energy research, securing consistent and substantial funding may remain a challenge. The university will need to actively seek funding from diverse sources to sustain its research efforts and compete with other research institutions in the field.

Industry Cooperation

Encouraging collaboration and cooperation between university researcher and existing oil refinery and combined cycle power plant operators may be challenging. There may be resistance to adopt renewable energy solutions due to concerns about economic viability and potential disruptions to existing operations.

Elmergib University



Elmergib University headquarters is located in the city of Al-Khums, and its faculties are distributed among the following cities: Al-Khums, Masslata, Qasr Al-Khayyar, Al-Qara Bolli. Previously, Elmergib University has been given several names. The first one was (Intifada) in 1991, then (Nasser) in 1992, and finally Elmergib. The resolution No. (77) for the year 2001 A.D. was issued to modify the name of the university to become Elmergib University, located in the city of Al-Khums. All faculties, branches, fixed and movable assets of the previous university have been transferred to Elmergib University. Elmergib University had, according to a 2020 Unimed report, over 14 thousand registered students, including over two hundred foreign students. Students are distributed into 22 faculties across various locations, covering the fields

of engineering, medicine, arts, sciences, economics, education, archaeology and tourism, pharmacology, law, public health, information technology, languages, Sharia sciences, physical education, dentistry, Medical Technology. The language of instruction is Arabic, but the university offers courses taught in English in the fields of medicine, engineering, basic sciences, information technology, and medical technology. The University is a member of the United Nations Academic Impact initiative since June 2019. It is a member of the Arab Universities Union Since June 17th , 2004 and the Federation of the Universities of the Islamic World. It is a member of the UNIMED – Mediterranean Universities Union, since June 26th, 2018. The university has signed many agreements with many academic and research institutions at the Arab and international levels. The university has also obtained an institutional identification code. PIC No 914580215 in November 15th, 2018 to enable the university to participate in projects supported by the European Union. Today, the university is one of the main universities in Libya.

Admission requirements

Students are admitted to study in Elmergib University in condition that they have obtained the general or specialised high school diploma, in its scientific and literary sections.

Language of study

Arabic and English.

Academic study system

The University adopts the open term system consisting of two semesters and the annual academic system. Academic degrees granted by the university:

- Licence's degree (BA)
- Bachelor's degree (BSC)
- Master's degree (Engineering, Applied and Humanities Sciences)
- PhD in the humanities

Unions and professional associations at the university

- Teaching Staff members Syndicate
- Employees Syndicate
- Students Union

International agreements signed by the university

- Agreement with the University of Trieste - Italy (2018).
- Scientific Cooperation Agreement with Khazar University - Azerbaijan (2010).
- Agreement with the University of Palermo - Italy (2009).
- Academic Cooperation Agreement with the University Degli Studi Mediterranea, Italy (2009).



- Academic and Cultural Cooperation Agreement with Benha University - Egypt (2008).
- An Agreement with Al-Cadhi Ayyad University in Morocco (2005).
- Academic Cooperation Agreement with the University of Asmara - Eritrea (2004).
- Academic, Cultural and Academic Cooperation Agreement with (Myonigji) University South Korea (2002).
- Academic Cooperation Agreement with the University of Al-Jezira – Sudan (1991).
- Cooperation agreement with the University of Sfax - Tunisia
- Memorandum of Understanding with Expertise France – for entrepreneurship at the university (2020).
- A partnership agreement with the Italian Link campus to activate the Libya Up project for capacity building funded by the European Union (2020).
- A partnership agreement with the Italian University of Genova to activate a project WHEEL for Capacity Building Funded by the European Union (2019)
- Academic Cooperation Agreement with Istanbul Aydin University Turkey –(2020)
- Academic Cooperation Agreement with Democritus University of Thrace (DUTH) - Greece. (2022)
- Academic Cooperation Agreement, Aristotle University of Thessaloniki – AUTH, Greece.

Statistics and numbers

Undergraduate Students

Gender	Number	Percentage %
Female	7160	50.60
Male	6991	49.40
Total	14151	100

Postgraduate Students

Gender	Number	Percentage %
Female	254	37.52
Male	423	62.48
Total	677	100

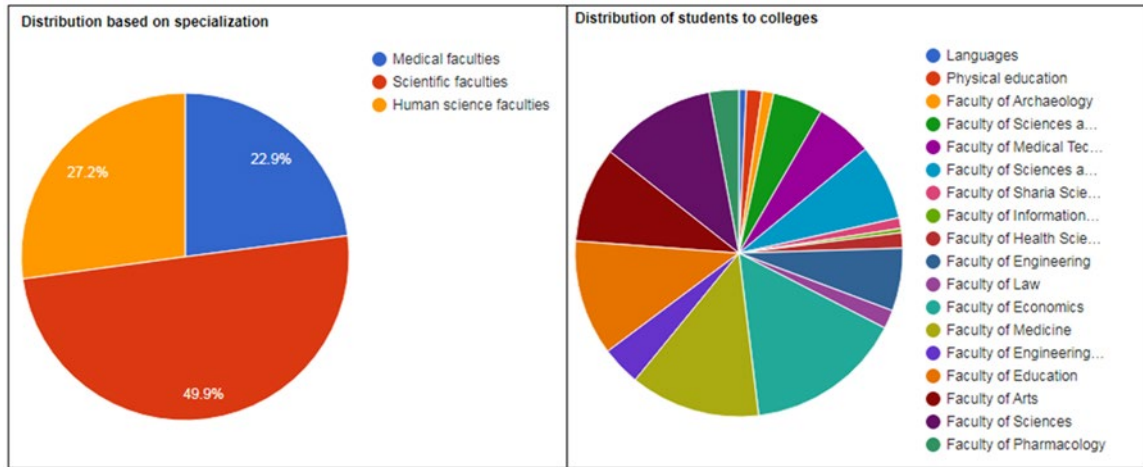


Figure 1: Distribution of students.

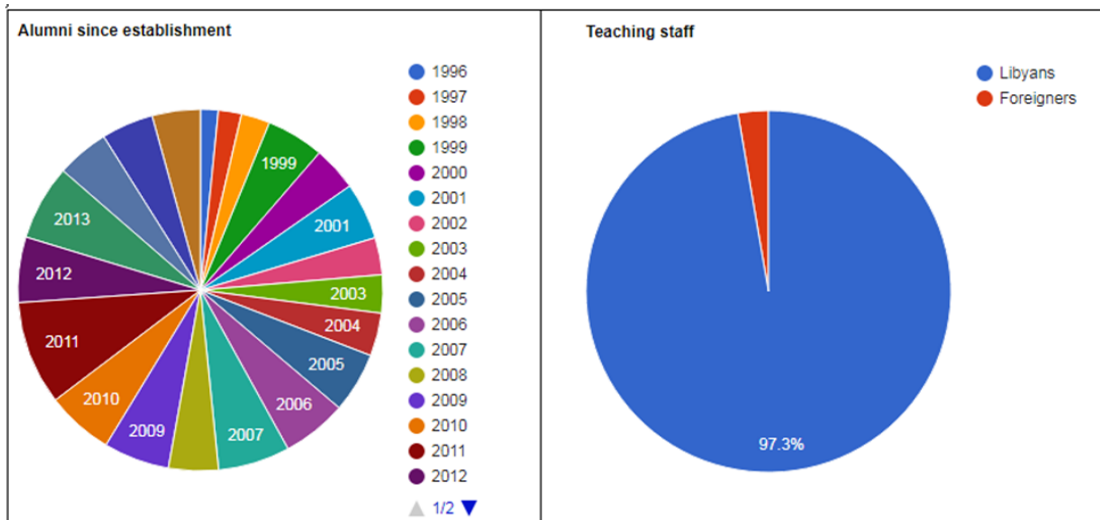


Figure 2: Alumni and teaching staff Numbers.

Elmergib University's Journals

- Elmergib Journal of Electrical and Electronic Engineering
- Lebda Medical Journal
- Afaqeqtesadia Journal
- Altarbawey Journal
- Al-qala Journal
- Sharia and Legal Sciences Journal
- Journal of Human and Applied Sciences
- Journal of Physical Education
- Lebtis Magna Journal
- Academic Journal of Sharia Sciences

Emergib University's Conferences

- The First Conference for Engineering Sciences and Technology (CEST 2018)
- The First Economic Conference on Investment and Development in Al-Khoms (ECIDIKO2017)
- The International Conference for Economics of Technological Revolution (ICETR 2018)
- The Third Conference for Engineering Sciences and Technology (CEST3 2020)

Past research projects

Some examples of research projects conducted by scholars at Elmergib University:

1. Investigation of the impact of climate change on water resources in Libya: This study aimed to assess the impacts of climate change on water resources in Libya and to identify measures to mitigate the effects of climate change on water availability. The study was conducted by a team of researchers from Elmergib University's Department of Civil Engineering.
2. Development of a solar-powered desalination system: Researchers from Elmergib University's Department of Mechanical Engineering designed and developed a solar-powered desalination system that uses a parabolic trough collector to produce steam, which is then used to power a desalination unit. The system is designed to produce fresh water from seawater in a sustainable and cost-effective manner.
3. Investigation of the factors influencing farmers' adoption of sustainable agricultural practices in Libya: This study aimed to identify the factors that influence farmers' adoption of sustainable agricultural practices in Libya. The research was conducted by a team of scholars from Elmergib University's Olive Tree Research Center.
4. Assessment of the prevalence of diabetes and associated risk factors in Libya: Researchers from Elmergib University's Medical School conducted a study to assess the prevalence of diabetes and associated risk factors among adults in Libya. The study found a high prevalence of diabetes among the study population and identified several risk factors, including obesity, physical inactivity, and family history of diabetes.

Current research projects

Areas of current research projects at Elmergib University include:

1. Renewable energy: Elmergib University's Department of Electrical Engineering is focused on renewable energy research, including solar and wind energy systems, energy storage technologies, and smart grids.
2. Water resources management: Elmergib University's Department of Civil Engineering is working on projects related to sustainable water resources management, including water treatment, desalination, and reuse, as well as the impact of climate change on water availability in Libya.

3. Agricultural development: Elmergib University's Department of Agricultural Engineering is researching ways to improve agricultural productivity and sustainability in Libya, with a focus on innovative farming practices, reducing water usage, and enhancing crop yields.
4. Health sciences: Elmergib University's Medical School is engaged in research to improve healthcare outcomes in Libya, including studies on infectious diseases, maternal and child health, and healthcare access and utilization.
5. Computer science and artificial intelligence: Elmergib University's Department of Computer Science is conducting research on artificial intelligence and machine learning, including applications in natural language processing, data analysis, and computer vision.

Future research projects

Elmergib University's future research plans may include:

1. Climate change adaptation and mitigation: Libya is expected to be highly vulnerable to the impacts of climate change, including increased temperatures, water scarcity, and more frequent extreme weather events. Elmergib University may conduct research on ways to adapt to these impacts and reduce greenhouse gas emissions through renewable energy, energy efficiency, and other means.
2. Food security and sustainable agriculture: Libya is highly dependent on food imports, and food security is a major challenge. Elmergib University may conduct research on ways to increase domestic food production sustainably, including through the promotion of agroecology, sustainable land use, and food processing and preservation techniques.
3. Water resources management: Water resources are scarce in Libya, and the country faces significant challenges in managing and conserving these resources. Elmergib University may conduct research on water resource management, including water treatment, desalination, and reuse technologies, as well as sustainable water use practices in agriculture and urban areas.
4. Artificial intelligence and computer science: The field of artificial intelligence is rapidly advancing, and its potential applications are vast and diverse. Elmergib University may conduct research on the development and application of AI technologies in areas such as natural language processing, computer vision, and data analysis.
5. Health sciences: Elmergib University's Medical School may conduct research on improving healthcare access and outcomes in Libya, including studying the prevalence and treatment of diseases, developing innovative healthcare delivery models, and addressing health disparities in rural and underserved areas.

Research priorities internal decision-making processes

The university typically prioritizes its research projects based on a number of factors, including:

National and regional development goals



Elmergib University prioritizes research projects that align with Libya's national development priorities and address key challenges facing the country and the region.

Faculty expertise and interests

Elmergib University prioritizes research projects that leverage the expertise and interests of its faculty members, as well as those that align with the university's academic programs and strategic objectives.

Funding availability

Elmergib University prioritizes research projects that have secured funding from government agencies, international organizations, or private sector partners.

Collaborations and partnerships

Elmergib University prioritizes research projects that involve collaborations with other universities, research institutions, or industry partners, as well as those that support knowledge exchange and capacity building.

Potential impact and relevance

Elmergib University prioritizes research projects that have the potential to generate significant impact and contribute to knowledge advancement in their respective fields, as well as those that are relevant to local, national, and global audiences.

These are just a few factors that Elmergib University consider when prioritizing its research projects. The actual decision-making process involve a range of stakeholders, including faculty members, university administration, government officials, and funding agencies.

Examples of recently published papers by scholars

1. " Reduction of Fuel Consumption Using HHO Cell on Gasoline Engine " by Benur Maatug et al. (2022). Paper description "Hydrogen as clean energy will certainly allow a significant reduction in the problems associated with pollution. Hydrogen is a source of future energy because it represents one of the forms of energy that is less polluting to the environment. In this paper, the main objectives of this research are to increase the efficiency of the gasoline engine using an HHO generator by decreasing fuel consumption and CO2 emissions. It was designed hydrogen fuel cell and attached to a motor Hyundai Sonata 2009 with 2000cc. According to the results, integrating a HHO cell into the engine, it was reduced fuel consumption for a motor vehicle in the city by up to 31.4%, and 32.9% for the combined drive between the city and highways. The use of cut-outs showed no increase in ampere consumption and no increase in temperature on the HHO cell".

2. " Environmental Stability Evaluation of Aluminium Doped Zinc Oxide (AZO) Transparent Electrodes Deposited at Low Temperature for Solar cells " by Khairi Muftah Abusabee et al. (2022). Paper description "the degradation of transparent electrodes' electrical conductivity under environmental conditions is considered as a major failure mode for solar cells' long-term efficiency. In this paper, AZO thin films were subjected to the International Electrotechnical Commission (IEC) 61646 test to examine their environmental stability and suitability as front electrodes for solar cells. To explore the interplay between AZO deposition parameters and environmental stability, AZO films were deposited by radio frequency magnetron sputtering at different parameters and without external heating".

3. " Seed priming of bread wheat varieties with growth regulators and nutrients improves salt stress tolerance particularly for the local genotype " by Mohamed Ali Saed Fahej et al. (2023). Paper description "Salt stress is a main factor limiting the production and productivity of wheat in arid and semi-arid zones. The objectives of this study were to compare the salt tolerance of a selected bread wheat (*Triticum aestivum* L.) genotype, 'Bohoot 210' and Libyan local variety 'Krassie' and to evaluate the effect of plant growth regulators and nutritional elements on emergence and seedling growth at the germination stage under salt stress conditions".

4. "Pilot-scale comparison of non-coated and activated carbon-coated cosmoball for removal of organic matter and nutrients from municipal wastewater" by Khaled Shahot et al. (2021). Paper description "the performance of activated carbon-coated cosmoball against non-coated cosmoball regarding organic matter and nutrients removal at different loadings in a biofilm process was investigated. The pilot-scale reactor was successfully designed, constructed and installed at the hostel 10 wastewater treatment plant to facilitate the pumping of a continuous flow from the equalisation tank to the reactor".

5. "Analysis of Some Bottled Drinking Water Samples Available in Alkoms City" by Badria A Salem et al. (2021). Paper description "With the increase in the daily use of bottled water, routine chemical investigation has become a priority, in terms of chemical composition, packaging and even label information. This study examines some of the chemical and physical aspects of commercial bottled water in AlKoms city. In general, the levels of the examined parameters were in the acceptable range according to the Libyan and WHO limits except for calcium concentration".

Research Vision

Elmergib University's research vision is based on the university's academic programs and research activities; the research vision includes a commitment to advancing knowledge and addressing key challenges facing Libya and the region. Some elements of the university research vision include:

Conducting high-quality research



Elmergib University prioritize conducting research of the highest quality, with a focus on generating new insights and advancing knowledge in their respective fields.

Addressing key challenges

Elmergib University prioritize research that addresses key challenges facing Libya and the region, including issues related to energy, water resources, healthcare, agriculture, and climate change.

Fostering innovation

Elmergib University prioritize fostering innovation, with a focus on developing and implementing new technologies, approaches, and solutions that can help to address the challenges facing Libya and the region.

Collaborating with stakeholders

Elmergib University may prioritize collaborating with stakeholders from academia, industry, government, and civil society, with a focus on promoting knowledge exchange, capacity building, and partnerships for sustainable development.

Training the next generation of researchers

Elmergib University prioritize training the next generation of researchers and innovators, with a focus on equipping them with the skills, knowledge, and attitudes needed to address the challenges facing Libya and the region.

Challenges

Elmergib University, like many Libyan universities, faces a number of challenges in achieving its research vision. Some of these challenges include:

Limited funding

Adequate funding is critical for conducting high-quality research. Elmergib University faces challenges in securing sufficient funding from government agencies, international organizations, and private sector partners to support its research activities.

Limited infrastructures

Elmergib University face challenges in accessing state-of-the-art research facilities, equipment, and technologies, which could limit the scope and quality of its research activities.

Brain drain

Libya has been experiencing a significant brain drain, with many skilled professionals and researchers leaving the country in search of better opportunities. This could limit the availability of qualified faculty members and researchers at Elmergib University.



Limited access to international research networks

Elmergib University faces challenges in accessing international research networks, which could limit opportunities for collaboration and knowledge exchange with researchers from other countries.

Political instability

Libya has been experiencing political instability and conflict in recent years, which disrupt research activities and limit the availability of research funding and resources.

Limited collaboration with industry partners

Elmergib University faces challenges in building partnerships with industry partners, which limit opportunities for knowledge exchange and commercialization of research outcomes.

Addressing these challenges will require a concerted effort from the university, government, and other stakeholders to invest in research infrastructure, attract and retain talented researchers, and build partnerships for sustainable development.

Proposal for a new research infrastructure

Some suggestions for a new research infrastructure that Elmergib University could consider:

1. High-performance computing (HPC) infrastructure: Elmergib University could consider investing in HPC infrastructure to support computational research across multiple disciplines, including artificial intelligence, materials science, and bioinformatics. This could include clusters of powerful computing nodes, high-speed networking, and storage systems.
2. Sustainable energy research and testing facility: Given the importance of renewable energy research in Libya, Elmergib University could consider building a sustainable energy research and testing facility, which could include solar panels, wind turbines, and energy storage systems. This facility could be used for research, training, and demonstration purposes, and could help to advance knowledge and innovation in sustainable energy technologies.
3. Advanced imaging and microscopy facility: Elmergib University could consider investing in an advanced imaging and microscopy facility to support research in materials science, biology, and other fields. This facility could include advanced microscopes, sample preparation equipment, and software for data analysis.
4. Biotechnology research facility: Elmergib University could consider building a biotechnology research facility, which could include laboratories for genetic engineering, cell culture, and protein purification. This facility could support research in areas such as biomedicine, agriculture, and environmental science.
5. Water resources research and testing facility: Given the importance of water resources management in Libya, Elmergib University could consider building a water resources research and testing facility, which could include laboratory and field-testing equipment for water

quality analysis, water treatment, and desalination. This facility could support research on sustainable water management practices and help to address water scarcity and quality issues in Libya.

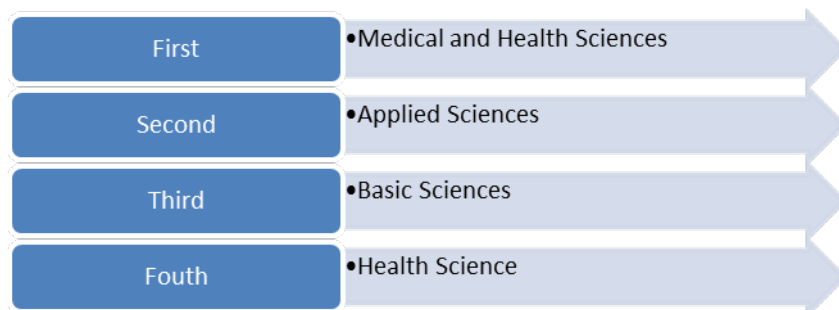
Proposal for funding opportunities

There are several potential funding opportunities for Elmergib University to support the development of new research infrastructure. These may include:

1. Government funding: Elmergib University could seek funding from government agencies, such as the Ministry of Higher Education and Scientific Research, to support the development of new research infrastructure. The government may offer grants, loans, or other forms of financial assistance to support such initiatives.
2. International funding: Elmergib University could explore opportunities to secure funding from international organizations, such as the World Bank, the United Nations Development Programme (UNDP), or the European Union. These organizations may offer grants, loans, or other forms of financial assistance to support research infrastructure development in developing countries.
3. Private sector funding: Elmergib University could seek funding from private sector partners, including corporations, foundations, and philanthropic organizations. Private sector partners may be interested in supporting research infrastructure development as part of their corporate social responsibility initiatives or as a means of promoting innovation and economic development.
4. Collaborative funding: Elmergib University could seek funding through collaborative initiatives with other universities, research institutions, or industry partners. Collaborative funding initiatives may involve joint research proposals, shared ownership of research infrastructure, or joint applications for funding from government or international organizations.
5. Crowd funding: Elmergib University could explore crowd funding as a means of raising funds for new research infrastructure. Crowd funding platforms such as Kickstarter or GoFundMe could be used to raise awareness and solicit donations from individuals and organizations interested in supporting research infrastructure development in Libya.

The funding opportunities will depend on a range of factors, including the specific research infrastructure needs, the availability of funding sources, and the university's capacity to develop and manage research infrastructure projects

Alasmarya Islamic University



Alasmarya Islamic University (AIU) is a Libyan public higher education institution located at the centre of Zliten City, 165 km east of the capital city Tripoli. It was founded and established by the governmental decree (No. 257) in September 1995, under the name of Alasmarya University for Islamic Sciences and what is now known as Alasmarya Islamic University (AIU). It is a distinguished university in the field of higher education and scientific research in human and applied sciences where the study at this university is free of charge for Libyans and other nationalities students. AIU vision is to contribute actively to the promotion of social peace and the creation of sustainable national development.

The AIU comprises 22 faculties, where students can study in different scientific disciplines such as: human sciences (arts, languages, and law) and applied sciences (engineering, economy, IT, medicine, marines etc). Also, the AIU has 6 main centres:

- Research and Scientific Studies Centre.
- Foreign Languages Centre.
- Leadership and Innovation Centre.
- Disabilities Inclusive Education and Integration Office
- E-learning Office
- Marine Training Centre

University Philosophy

The university adopts a philosophy based on directing all academic, administrative, and financial capabilities to the continuous development and improvement of quality of services provided by the university, which includes:

- Educational services provided to students in order to reach the highest levels of excellence and the ability to compete in the labour market, whether at the level of undergraduate studies (Bachelor's degrees) or postgraduate studies (Master's and PhD degrees).
- Conducting scientific research of high quality in both humanity and applied sciences based on the actual needs of Libyan societies and capable of solving their problems and advancing it in the paths of progress and prosperity.

Governing values of the University

The main values governing the university are:

- Meritocracy and moderation: The university seeks to consolidate the values of moderation in accordance with teaching of Islamic religion, authentic Libyan customs, traditions and norms, and common human values.
- Quality and excellence: The university is committed to quality standards according to the program of the National Center for Quality Assurance in Libya, seeking to develop educational and research processes.
- Integrity and transparency: The university is keen to promote the values of transparency in all administrative procedures, leadership practices and decision-making, and affirms its commitment to the values of justice and integrity.
- Continuous development: The university emphasizes the tendency towards continuous improvement and development by keeping abreast of the latest developments in the administrative and academic field.
- Collaboration: The university seeks to collaborate with universities, research centres, local and international institutions and academic bodies, which represents additions to the university and enhances its position.

Vision

A distinguished Islamic university in the field of higher education and scientific research in the humanities and applied sciences that contribute effectively to the promotion of social peace and the creation of sustainable national development.

Mission

Alasmarya Islamic University (AIU) seeks to prepare distinguished cadres, keeping pace with the requirements of the modern era, meeting the country's developmental needs, and contributing to community services through quality in education and excellence in scientific research, preserving its uniqueness in combining tradition and modernity.

Themes and goals

- Quality assurance: Excellence in the application of comprehensive quality systems at the university in order to reach advanced levels in local and international classifications.
- University governance: Seriousness and commitment in practicing university governance standards of fairness, transparency, and accountability to raise quality level of administrative apparatus.
- Academic programs: Developing and establishing high quality academic programs at the university to meet the needs of Libyan communities and in line with the university's mission by preparing high-quality and scientifically qualified cadres and keep pace with requirements of the modern era.
- Students: Preparing distinguished graduates capable of innovation and competition in the labor market, combining scientific solidity, technical mastery and cultural awareness, committed to Islamic values.
- Human resources: Evaluation and continuous development of academic, technical, and administrative staff and supporting them with qualified expertise to achieve the university's mission and goals in light of the internal and external environmental changes.
- Scientific research and innovation: Supporting scientific research and encouraging innovation in selected research fields compatible with society's needs and future aspirations.
- Infrastructure and technology: Developing a strong infrastructure to keep pace with the aspirations of the university.
- Partnership and collaboration: Enhancing collaboration and partnership with local and international institutions and organizations in fields of education, training, scientific research, and community service.
- Community service: Strengthening and documenting communication between the university and the local community.
- Media highlighting and mental image for the university: Achieving effective media communication for the university with its members and the local community; to

highlight its activities, publicize its role, and improve its image in the local and regional milieu.

Research Vision

The Alasmarya Islamic University has a research vision which can be summarized as:

- Achieving scientific research priorities by employing scientific research in solving community problems and national development.
- Establishing and developing research centres and laboratories, and providing modern technologies necessary to develop and support innovation and creativity in the field of scientific research.
- Enhancing teaching and research collaborations with other local and regional universities.

Identifying research topics

The challenge is to pacify the country through knowledge, values of peace and harmony, development and interregional dialogue. It is a matter of defining a national strategy for a higher education system, setting clear reachable objectives and tracing the means to be put in place for their realization (UNIMED, 2020). In confirmation of this and according to what was stated in the university's vision for 2019-2023, the Alasmarya Islamic University, due to its remoteness and deep influence in society, research interests included supporting research and human studies with the aim of strengthening social peace in the country and preserving religious identity during that period in which the country was going through political tensions, which led to wars.

The research interests were as follows:

- Human Science
- Basic Science
- Engineering and IT Sciences
- Health Science

As a result of the remarkable recovery in the country and the orientation towards development through government support and the Ministry of Higher Education and Scientific Research, significant adjustments have been made recently to the research priorities at the university by working to support conducting research in areas of interest to the development of the society and the environment, particularly applied sciences (i.e. environment, medicine, engineering, and IT).

Research key areas

The university research key areas can be summarized as: geology and climate change, human sciences, energy, electric engineering, health sciences, marine resources, information technology, economy and trade, psychology, and disabilities and special needs.

Research priorities

The university's research priority has been geared toward the investigation and analysis of some important issues, as well as the creation of remedies and solutions via scientific research. The research priorities of the AIU include:

- Given the numerous issues that the surrounding environment faces and caused by industrial and natural issues such as the relationship between factory emissions and humans directly through inhalation of gases or indirectly through the impact of vegetation covered with polluted gases and dusts and subsequent diseases such as cancer which reached to 700 cases.
- The pollution of drinking water sources especially since the coastal water level became closer to the ground surface, making it vulnerable to pollution through black wells in neighbourhoods that do not have a drainage infrastructure.
- A study of the use of renewable energy in vital places by developing plans to supply hospitals and service facilities.

With regards to the university's research efforts in the applied, medical, and health sectors, it is noted that the number of scientific citations in these fields has climbed to the scientific researcher Google Scholar.

Reference:

https://scholar.google.co.uk/citations?hl=en&view_op=search_authors&mauthors=Alasmarya+Islamic+University&btnG=

Accordingly, the main research priorities reformulated as:

- Medical and Health Sciences
- Applied Sciences
- Human Sciences

Scientific Equipment/Instrument

Laboratories at all faculties and research centers at AIU need to be updated and provided with new devices and equipment. Since the university does not have the ability to provide all laboratories with new devices and equipment, it is suggested to establish a laboratory center contains laboratories with up to date technology to serve all faculty members and students at the AIU.

Bani Waleed University



First	•Environmental studies and climate change.
Second	•Agriculture and desertification control.
Third	•Managing and protecting water resources.
Fouth	•Renewable energies (Solar energy in particular).

Bani Waleed University is a public Libyan university, founded in 1992 as the Faculty of Education (Sirte University), a number of faculties were added in the following years as parts of Almergib, Misurata, and Azzaitouna Universities until 2015 when it was renamed to be Bani Waleed University according to the decision of the Council of Ministers No. (193).

The University has 9 faculties and 71 departments include:

1. Faculty of Engineering, four departments.
2. Faculty of Agriculture, seven departments.
3. Faculty of Science, seven departments.
4. Faculty of Economy, eight departments.
5. Faculty of Law, two departments.
6. Faculty of Medical Technology, four departments.
7. Faculty of Arts, eleven departments.
8. Faculty of Education, nineteen departments.
9. Faculty of Sharia Sciences, four departments.

List of Centres and offices of the University

Bani Waleed University has different centres and offices include:

1. Innovation and Entrepreneurship centre.
2. Information Technology centre.
3. Research and Consultations Centre
4. Centre of Information and Documentation.
5. Training and Development Centre.
6. Quality Assurance Office.
7. International Cooperation Office.
8. Women's Support and Empowerment Office.
9. The Media Centre.

Research Vision

- Providing high-quality education and expert-solutions to societal problems.
- Interconnectedness of science, technology and design
- Training outstanding researchers and giving parity of esteem to discovery, application, knowledge transfer and impact.
- Attract, develop and nurture the careers of excellent researchers and become the location of choice for staff at all career stages.
- Promote multidisciplinary research and education in arts, languages, commerce, social sciences, basic sciences and applied areas of sciences.
- Enhance the research capabilities of the university by engaging faculty in research that integrates the education of a diverse population of students.
- Encourage and support socially relevant and need based research coupled with human values.
- Provide a rich intellectual environment for collaborative research among faculty and students from various departments.
- Develop research and educational collaborations with larger community, including industry, minority serving colleges and university, other universities and institutions of higher learning.

Focus Areas

- Work to support the infrastructure, research platforms and services. Through the Research and Consultation Centre to work on providing integrated laboratories and qualifying employees, as well as research platforms and establishing an electronic library with other local and international universities. The University of Bani Waleed works on enhancing the effectiveness of research and development by strengthening cooperation with other local and international research centre.
- Local and international networks, industrial clusters/districts.

- Better Governance & Policy. Bani Weed University seeks to introduce the concept of good governance spreading principle of quality and institutional and programmatic accreting to its various faculties. Also working on link all its administrative offices in all faculties by technical work for purpose of improving its work policy.
- Student Recruitment, Staff Recruitment. The university's work is not restricted to educating and qualifying students, but it also depends on involving them in work and stimulating the economy.

Key Areas

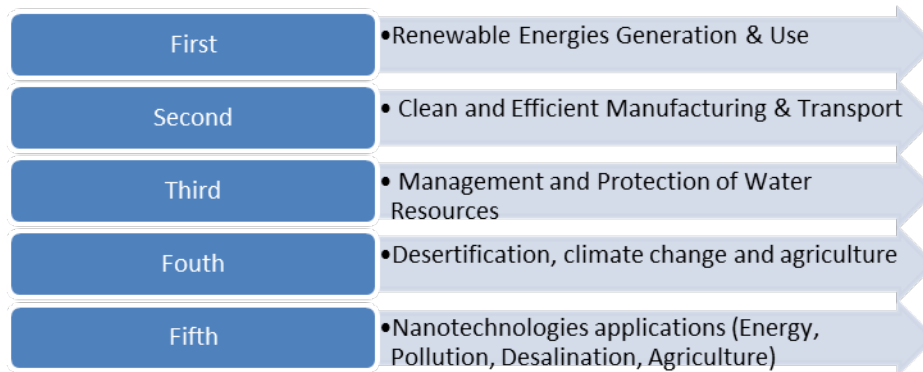
1. Environment & Climate Change
2. Renewable Energy, Chemical science
3. Computer Science
4. Engineering
5. Economics
6. Agriculture
7. Language
8. Biological science

Research priorities

1. Environmental studies and climate change
2. Agriculture and desertification control
3. Managing and protecting water resources
4. Renewable energies (Solar energy in particular)

University of Ajdabiya





The University of Ajdabya is one of the public universities located in the city of Ajdabya, It was established in 2000 with its 9 faculties and 48 working departments. The University of Ajdabiya has over 15000 undergraduate students and 900 teaching staff. It has to be highlighted that its location is unique: it is situated in the middle of Libya, 960 kms to the east of the capital, Tripoli, on the southern coastline of the Mediterranean.

There are about 5 research groups specialised in Renewable Energies Generation & Use, Clean and Efficient Manufacturing & Transport, Management and Protection of Water Resources, Desertification, climate change and agriculture, and Nanotechnologies applications (Energy, Pollution, Desalination, Agriculture).

Research priorities

The research priorities for the coming years are:

1. Renewable Energies Generation & Use
2. Clean and Efficient Manufacturing & Transport
3. Management and Protection of Water Resources
4. Desertification, climate change and agriculture
5. Nanotechnologies applications (Energy, Pollution, Desalination, Agriculture)

In this context, the Scientific Research and Consultation Centre seeks to establish and form a number of research groups for the mentioned topics.

Description of the laboratory and its infrastructures

- The appropriate infrastructure for this equipment is available in the Faculty of Engineering, specifically in the laboratories of the Department of Renewable Energies, which will provide a suitable environment for researchers at the university to benefit from this equipment.



- The Department of Mechanical Engineering at the university has a selection of laboratory staff who have experience in their field and will operate the proposed equipment.
- The proposed equipment will support researchers at the university to develop their scientific research in the field of renewable energies and solar energy, which is one of the priorities of the university's scientific research.
- The cooperation in equipment can be carried out with the University of Benghazi due to its proximity to University of Ajdabya.

Libyan International Medical University



First	• Medical and Biomedical Research
Second	• Information Technology
Third	• Business Management
Fouth	• Healthcare Administration and Management
Fifth	• Education and Larning

Libyan International Medical University (LIMU) was established on 2007 as the first private national university in the field of medical education. LIMU is located in the heart of Benghazi city; the 2nd biggest city in Libya that is located in the eastern region of Libya. Since its establishment, LIMU has made great effort to maintain academic excellence and quality of its programs' performance and outputs while working according to international standards.

Number of currently enrolled students at LIMU is 2364 and total number of graduates is 832. LIMU has 7 Faculties (Medicine, Dentistry, Pharmacy, Applied Medical Sciences, Information Technology, Business Administration and Engineering) which adopt 35 academic department and 18th program. LIMU adopts unique specialties or programs which are not available in any other university in the country. These programs are: Basic Medical Sciences, Doctor of Pharmacy (PharmD), Health Informatics and Mechatronics Engineering. All LIMU programs are implemented using active learning strategies including problem-based learning, team-based learning and inquiry-based learning.

Research at LIMU

LIMU administration is very keen to promote and support scientific research, creativity and innovation. LIMU researchers may work independently or in temporary groups for a specific time till production of one or more publications. That is why publications at LIMU remains somehow discrete and can't be grouped under specific research priorities for the university. In addition, currently there are no formal research groups at LIMU, but this is one of the very near future plans to be set at LIMU by Vice President for Research & Consultation and to be implemented via LIMU Research and Consulting Centre (RCC). The last is working via a Scientific Committee which is headed by the head of the centre and committee members are representatives of all faculties. LIMU recognizes its role in community outreach and social accountability. LIMU offers scholarships to financially support distinguished students.

With the support of LIMU business process project team, research and consulting centre processes were defined at all levels and documented. Research policies at LIMU were defined, approved by Vice President for Research & Consultation and to be approved by university council.

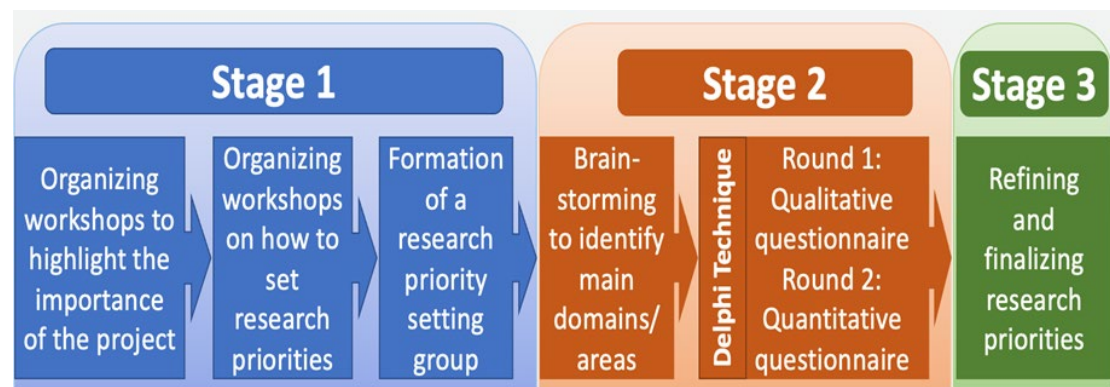
Research Priorities

1. Research priority setting policy
2. Research Ethics Policy
3. Scientific research funding policy
4. The policy of supporting and financing translation and authoring works
5. Publishing support policy
6. The policy of supporting and financing research projects
7. Research motivation policy
8. Supporting participation in local and international scientific conferences
9. Communicating with employers and graduates in the field of scientific research

10. Research Cooperation Policy
11. The policy of benefiting from the results of distinguished students' research
12. Policy for the use of research assets
13. Research Integrity Policy
14. Scholarly citation policy
15. Academic Freedom Policy
16. Intellectual Property Policy
17. Publishing in LIMU journal policy

LIMU research strategic objectives are attained via a group of projects that are set in accordance with the university strategic goals and objectives. Progress of action plan can be measured using key performance indicators that can be tracked by LIMU higher authority via LIMU Strategic Planning Internal System that has been established and developed by LIMU IT team.

Process of defining research priorities at LIMU can be overviewed via the following diagram:



Research Vision

To become a house of expertise that contributes to building a knowledgeable society and promoting sustainable development locally, regionally and internationally.

Main Key Elements of LIMU Research Vision

1. Excellent research (publications in high-ranked journals)
2. Serves community and labor market (solve problems)
3. Collaboration (National & International)

Values

- Honesty
- Integrity
- Respect
- Credibility

- Transparency
- Objectivity
- Academic freedom

Principles

- Directing research efforts towards benefiting the community.
- Non-interference and influence in the conduct and results of scientific research.
- Providing consultations that do not contradict the values and customs of society.
- Respect intellectual property rights.
- Teamwork.
- Independence

Research Mission

Producing scientific knowledge affecting society, by supporting integrated, discreet scientific research, and providing scientific consultations and training courses, to contribute to the progress and advancement of human kind.

Research Objectives

1. Production and localization of knowledge in society, through research teams that are able to direct their scientific efforts towards serving humanity.
2. Building meaningful integrative knowledge by employing and directing research efforts.
3. Contribute to the development of human capital through research, consulting and training.
4. Building bridges of scientific cooperation with the local, regional and international communities.

Research Goals

1. Double the number of high-quality research produced annually.
2. Building value-added research and advisory teams.
3. Building confidence in the consultations provided by the university.
4. Annually doubling the number of beneficiaries of the training courses.

Research and Consulting Centre (RCC)

RCC Vision

An excellent centre for research and advisory services.

RCC Mission

Providing excellent research and advisory services that contribute to the development of the community, through university expertise and outside specialties



RCC Goals & Objective

1. Establishing stable rules and systems for scientific research at the university.
2. Direct scientific research in accordance with the development and service of the community.
3. Maintain projects' schedule in accordance with the university approved scientific research priorities.
4. Providing Consultancy for public and private sector.
5. Supporting specific students research projects at the university.
6. support publication scientific research result.
7. Preparing and participating in scientific conferences and symposia to contribute to community awareness.
8. Linking the university with the community and the labor market.
9. Expanding partnerships and cooperation with local, regional and international institutions.
10. Attracting sources of funding available locally, regionally and internationally.

LIMU is keen to sign agreements and memorandums of understanding with both local and international institutions, in order to support collaboration in the fields of education and research. <https://aric.limu.edu.ly/international-agreements/>

Impact to Society

- Postgraduate studies in specific specialties which are not available in the whole eastern region of Libya
- Establishing a Drug industry in the country and its relation to national medication security

Challenges

- Budget (for equipment – manpower – access to scientific journals ... etc.)
- Continuum flow of chemicals and operational materials
- Collaboration with local institutions and general society's view of the importance of research

Focus Areas

All research proposals at LIMU should be submitted via LIMU Research Portal, so that they can receive both ethical and scientific approval and fund as well, if applicable.

<https://research.limu.edu.ly/research-portal/>

RCC provides a group of training and development programs for researchers either face-to-face or using different distance learning tools including MOODLE which is the learning management system at LIMU.

<https://portal.limu.edu.ly/course/index.php?categoryid=538>



Publications at LIMU are affiliated to different Faculties, as shown via the following link:

<https://research.limu.edu.ly/faculties-publications/>

Research awards are given to distinguished researchers in a celebration held during the LIMU annual scientific day.

<https://research.limu.edu.ly/limu-scientific-days/>

LIMUJ is a peer review journal that is supported by the university and provides a space for publication for researchers from Libya and from all over the world.

<https://www.thieme-connect.com/products/ejournals/journal/10.1055/s-00053243>

Annual estimated budget for research is approved by University Council based on the estimated profit for each specific year. This budget is used mainly to support; research, publishing, training, registration in conferences and travel & accommodation. Noting that there are no available external resources for funding research at LIMU. No governmental support by any mean to LIMU.

There is a focus at LIMU towards developing a quality control lab in order to be used for teaching Pharmacy students, performing analysis for students from other schools at LIMU and also this quality control lab is aimed to be a nucleus for a larger one that can support the establishment of drug industry in Libya.

There is a need for a High-Performance Liquid Chromatography (HPLC) equipment at LIMU to support undergrad teaching, postgrad studies and research. Availability of such equipment will be a big move for LIMU towards postgraduate studies, research and industry.

Key Areas

1. Medical and biomedical research
2. Information technology
3. Business management
4. Healthcare administration and management
5. Education and learning

Research priorities

1. Medical and Biomedical Research
 - Clinical pharmacy
 - Pharmacoepidemiology
 - Pharmacovigilance
 - Pharmacoeconomics
 - Non-Communicable diseases

- Mental health
- Child health
- Oral health
- Nutrition and health
- Dental profession
- Digital dentistry
- Sport dentistry
- Forensic dentistry
- Regenerative dentistry
- Non-surgical facial esthetics (n-se) and esthetic dentistry
- Special need dentistry
- Dental implantology
- 2. Information Technology
 - Computer Sciences and Artificial Intelligence
 - Computer Networks and Telecommunications
 - Cybersecurity and privacy protection
 - Cloud computing
 - Internet of Things
 - Software Engineering and its Applications
 - Business Processes and organizations
 - Data Sciences
- 3. Business Management
 - Finance and Banking
 - Marketing Management
 - Business administration
 - Project management
 - Economics
 - Political sciences
- 4. Healthcare Administration and Management
 - Health Informatics, bioinformatics and e-Health
 - Health service and quality assurance
 - Crises management
- 5. Education and Learning
 - Programs and curricula
 - Teaching and learning methods
 - Assessment methods
 - E-Technology

References

- (1) UNIMED, Libya Restart, A journey Analysis, UNIMED, Rome, 2020
- (2) Mohamad, A. G. M. M., Ibrahim, A. M., Wilson, N. Y., Taher, & Subhi, R. (2020). Scientific Publishing for Students in Libyan Universities from Perspectives of Faculty Members and Postgraduate Students. International Journal of Academic Research in Business and Social Sciences, 10(6), 21–35.
- (3) Muhaisen, A. A. (2011). Personal and non-personal obstacles to scientific research as perceived by faculty members in Palestinian universities in Gaza. The first scientific conference: scientific research concepts, ethics, employment 10-11 May 2011. Islamic University of Gaza. PP 385- 435.
- (4) Abdullah, A., & Shamas, S. M. (2010). Obstacles of scientific research in the faculties of education from the point of view Faculty Members (Field study - College of Education in Salalah as a model). Damascus University Journal. Vol 26(1-2). PP 17-59.
- (5) Tashani, Oa. "The scientific research in libya: the role of the new generation of researchers." The Libyan journal of medicine vol. 4,4 129-30. 1 Dec. 2009, doi:10.4176/090716
- (6) The Higher Education Bulletin. 2009. 2:11
http://www.higheredu.gov.ly/component/option,com_docman/itemid,/task,doc_download/gid,87/ accessed on 30/06/2009.
- (7) Amer, A. A. (2018). The attitudes of the research professors towards publishing their scientific researches on the Internet, Faculty of Arts, University of Sabratah, as a model. Journal of the faculty of aladab. Issue 25. the first part. PP 120-146.
- (8) Nature 441, 1027 (29 June 2006) doi: 10.1038/4411027a. Published online 28 June 2006. [PubMed] [CrossRef] [Google Scholar]
- (9) Altbach P., Salmi J. The Road to Academic Excellence: the Making of World, Class Research Universities. Directions in Development, World Bank, Washington D.C., 2011
- (10) Graziani M., (4 December 2018), The importance of a Research Agenda.

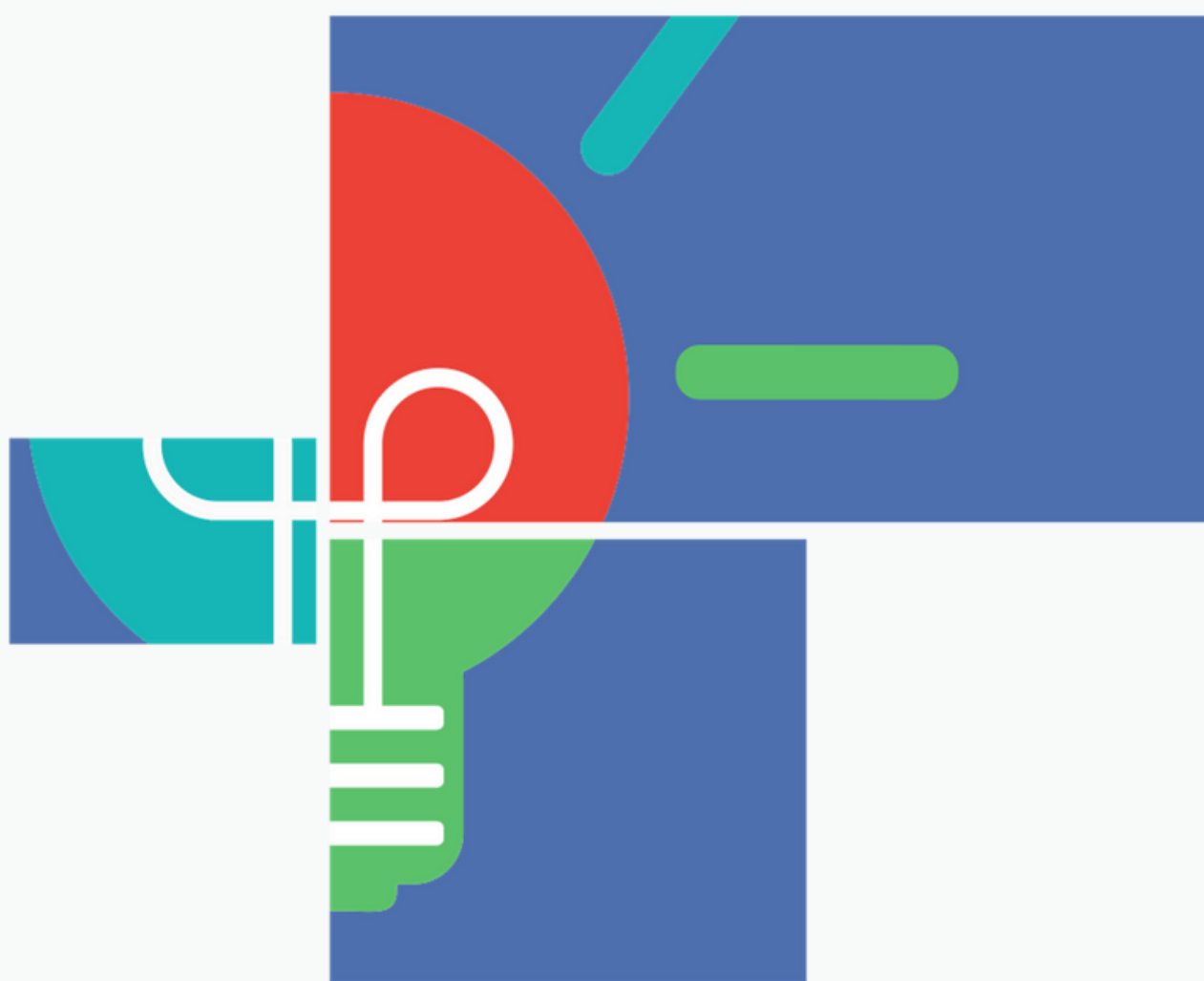
Annex I

Research Priorities of Libyan universities





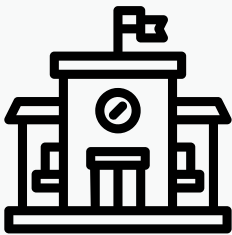
Research Priorities of Libyan universities 2022-2023



Key data reported in the infographics



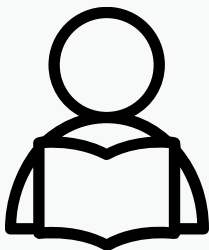
Date of establishment of the university



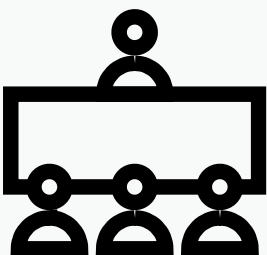
Number of faculties



Number of research centers



Number of PHD students

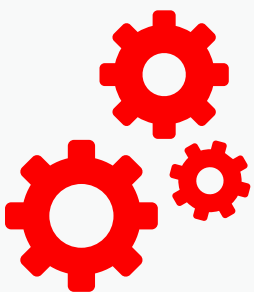


Number of students and administrative staff in the research centers

Research priorities defined in the framework of the project IBTIKAR



Renewable Energies Generation & Use



**Clean and Efficient Manufacturing &
Transport**



**Management and Protection of
Water Resources**



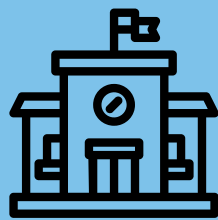
**Desertification, climate change and
agriculture**



**Nanotechnologies applications (Energy,
Pollution, Desalination, Agriculture)**



1957



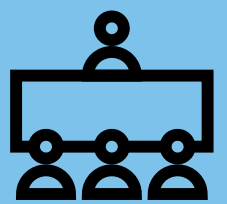
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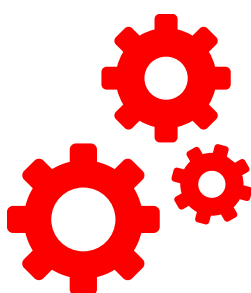
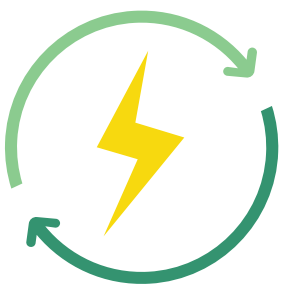


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9 + 9

Research priorities selected by the University



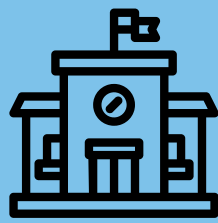
Specific focus on
Drug Dispensing safety
and Practice



Specific focus on
Environmental
Nanotechnology



2055



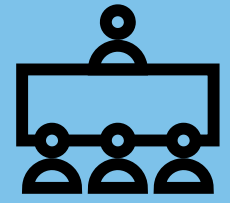
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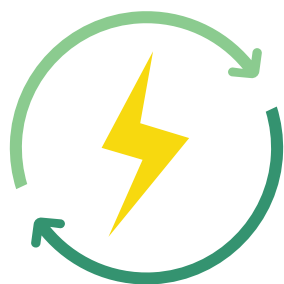


500



1176 + 15

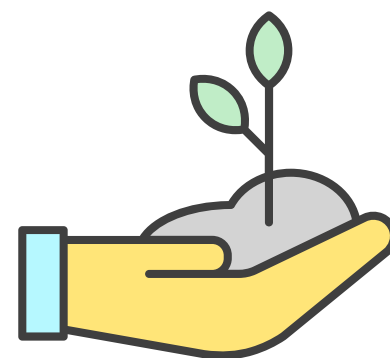
Research priorities selected by the University



Additional priorities



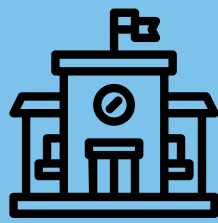
Cancer Research.
Biomedical Research.



Research on pesticides.



1955



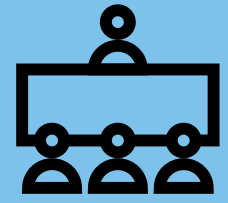
23



9

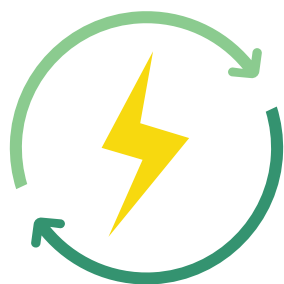


236



41 + 27

Research priorities selected by the University



Additional priorities



Population Health
Related problems.



Economic and social
development.
Law and Justice.



1983



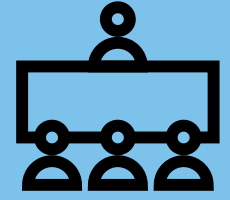
9



1

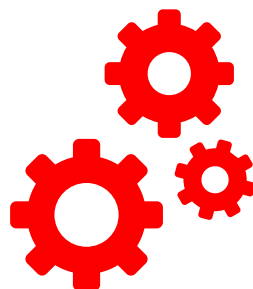
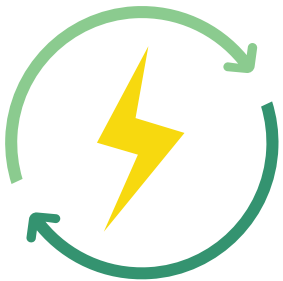


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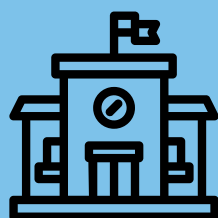
6 + 22

Research priorities selected by the University





1988



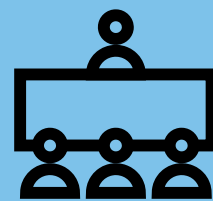
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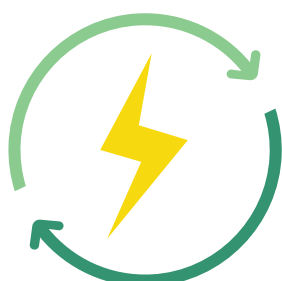


230



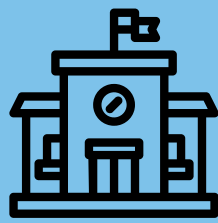
14 + 15

Research priorities selected by the University





1995



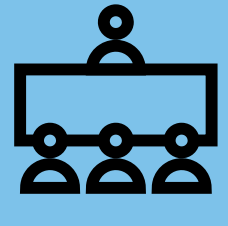
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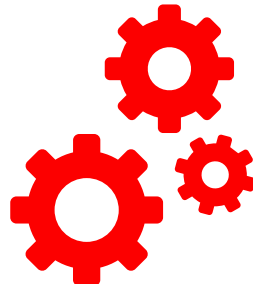
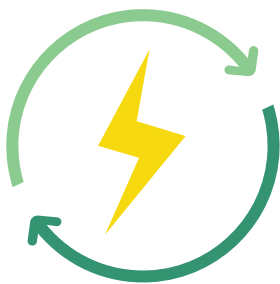


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21 + 11

Research priorities selected by the University



Additional priorities



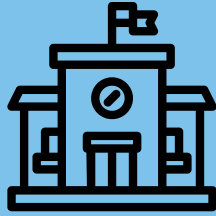
Public
Health.



Human
Sciences.



1991



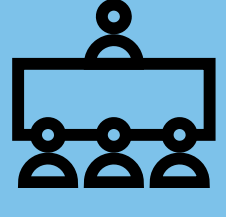
22



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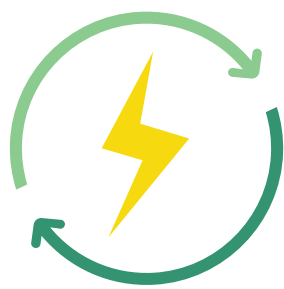


20



2 + 7

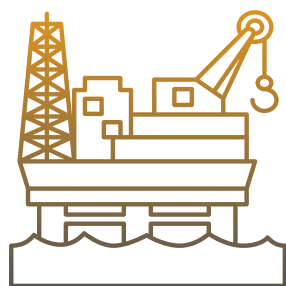
Research priorities selected by the University



Specific focus on
wastewater treatment.

Specific focus on air
pollution and
environmental protection.

Additional priorities



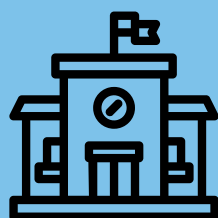
Subsea oil and
gas leakages.



Health
Sciences.



2015



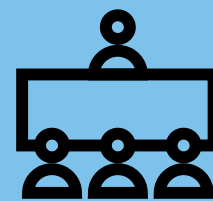
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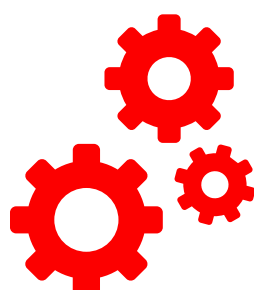
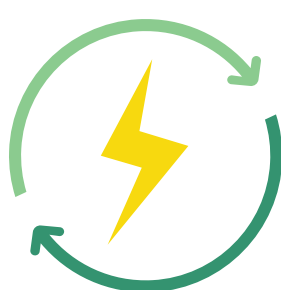


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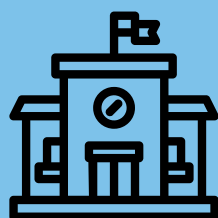
13 + 14

Research priorities selected by the University





2000



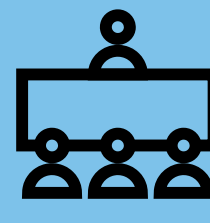
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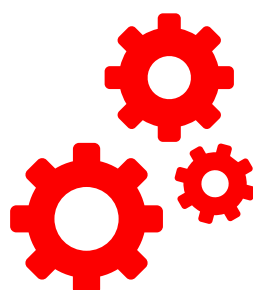
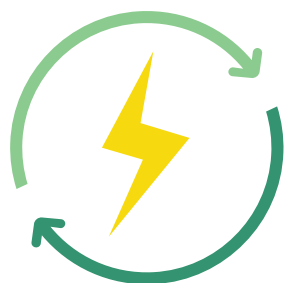


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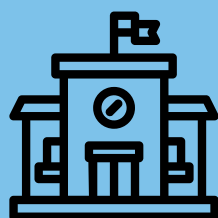
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Research priorities selected by the University





1989



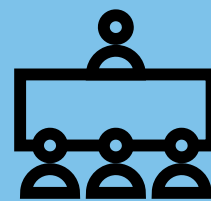
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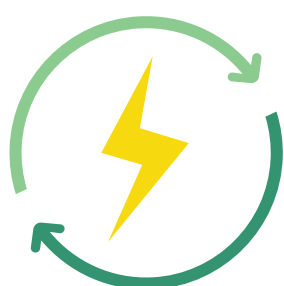


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2 + 4

Research priorities selected by the University



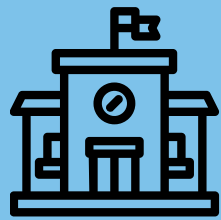
Additional priority



Medical Research.



2007



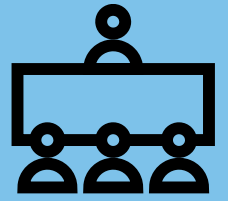
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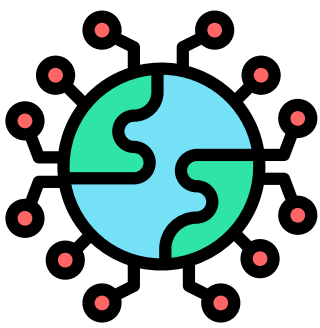


0



1 + 1

Research priorities



Information
Technology.



Business
Management.



Education
and Learning.



Medical Research.



Healthcare
Administration and
Management.



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