Regional Expert Consultation Workshop on Forest Education in the Near East and North Africa

Summary report

24 February 2021

Creation of a Global Forest Education Platform and Launch of a Joint Initiative under the Aegis of the Collaborative Partnership on Forests
Regional Expert Consultation
Workshop on Forest Education
in the Near East and North Africa

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Preface

This is a consolidated report of the Near East and North Africa regional experts consultation workshops held at national and regional level. The national-level consultation workshops were carried out for Algeria, Jordan, Morocco, Sudan and Syria in December 2020 to bridge the information gaps. National coordinators were appointed to facilitate the meetings based on guidelines and directives from FAO and AOAD experts, to deliver the national reports and present the outcome in the regional consultative meeting. Following the findings from the national consultative meetings, the regional consultation took place on 24 February 2021.
### Abbreviations and Acronyms

<table>
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<th>Description</th>
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<tr>
<td>AOAD</td>
<td>Arab Organization for Agricultural Development</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FRA</td>
<td>Forests Resource Assessment</td>
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<td>FTE</td>
<td>Full-Time Equivalent</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>GLF</td>
<td>Global Landscape Forum</td>
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<td>PhD</td>
<td>Doctor of Philosophy</td>
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<td>IFSA</td>
<td>International Forestry Student’s Association</td>
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<td>IUFRO</td>
<td>International Union of Forest Research Organizations</td>
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<td>ITTO</td>
<td>International Tropical Timber Organization</td>
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<td>NENA</td>
<td>Near East and North Africa</td>
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<td>NCMs</td>
<td>National Consultative Meetings</td>
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<td>NWFP</td>
<td>Non-Wood Forest Products</td>
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<td>OWL</td>
<td>Other Wooded Lands</td>
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<td>SDGs</td>
<td>Sustainable Development Goals</td>
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<td>TOFs</td>
<td>Trees Outside Forests</td>
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<td>TVET</td>
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Chapter I: Summary of Regional Consultation
Overview

The virtual regional consultation for the Near East and North Africa (NENA) region was held on 24 February 2021 between twelve noon until five in the evening, Mecca Al-Mukarramah time (Annex 1). Seventy-five participants representing fourteen countries and a number of organizations participated in the meeting (Annex 2). The program included an opening session and two working sessions:

Opening session

The opening session was chaired by His Excellency Professor Ibrahim Adam Ahmed Al-Dakhiri, Director General of the Arab Organization for Agricultural Development, who welcomed the participants and delivered a speech on behalf of the Arab Organization for Agricultural Development, saluting the main partners and the main regional partners for this initiative. He offered sincere greetings and thanks to the Food and Agriculture Organization of the United Nations, which cooperated with the Arab Organization in preparing the study at the level of the Near East and North Africa region, and to the German government that undertook the funding of the study. He also thanked the member states of the region that cooperated with the Arab Organization in preparing the study, experts and students in the region who participated in the consultative meetings and filled out questionnaires). This was followed by welcoming remarks by Mr. Mika Rekola on behalf of the Food and Agriculture Organization of the United Nations.

In the opening session, the regional report on forest education in the Near East and North Africa region, which had been sent electronically to all participants several days before this regional consultation was reviewed. Followed by a presentation of a number of questions in order to lead the consultation towards what is required to verify the relevance and authenticity of the report presented to them.

The first working session

The two working sessions were chaired by Professor Karar Abadi (who holds a BA in Agriculture from the University of Khartoum, Sudan, and a Masters and PhD in Agricultural Economics from the University of Wisconsin, USA. He worked as a former president of Omdurman National University in the Republic of Sudan and a former chairman of the board of directors of the Gezira project in Sudan and the chairman of the board of directors of the National Forests Corporation in Sudan, currently an Agricultural Economy advisor of the Arab Organization for Agricultural Development). The first working session included a review of the five national consultative reports previously carried out in Algeria, Morocco, Syria, Sudan and Jordan. Then the discussion was opened for the rest of the countries to make their contribution.

Second working session

The second working session began with a reminder of the objective of the consultation and the questions that were previously presented in the opening session in order to lead the participants towards the desired goal of the consultation. Accordingly, the discussion was opened, based on the summary of the regional report and the questions previously stated to determine the measures that could be taken to promote forest education in the region. The questions were as follows:
1. Do the results mentioned in the report accurately represented the reality of forest education in the region?
2. Do you agree with the report's recommendations?
3. Do you agree with the report's conclusions? Please explain your answer.
4. What are the biggest challenges facing forest education in the region?
5. Do you think that the report addressed these challenges and gaps in its approach and scope?
6. Is there anything critically missing in the regional report?
7. Does forest education today address the challenges and concerns of the twenty-first century and the modern era? If not, what are the deficiencies?
8. Given the current path of forestry education in the region, what state will it be in Forest Education Foundation in the span of ten years? How will forest education look after ten years? What are your expectations for forest education in the long run?
9. Does forest education in the region need to be expanded to accommodate all expectations for technical forest management and broader environmental management? How could be done?
10. What are the most important changes that should be made to improve forestry education?
11. What concrete measures can be taken to improve forestry education in your region and by whom (government agencies, private sector, NGOs, regional institutions, or international organizations).
12. What are the main initiatives and actors working to improve forest education in the region?
13. What role can continuing education play in completing formal education?
14. The study showed that technical education in the region does not exist, with some exceptions or discontinuation. How accurate is the information and what are the reasons in your opinion?

**Regional Consultation Outcomes**

The participants emphasized that the report represents the reality of forestry education in the Near East and North Africa region, and presented several proposals and suggestions, which needed to be undertaken at different levels.

**Government responsibility**

- Supporting technical education efforts in the field of forestry by re-establishing the intermediate diploma in the countries in which it was phased out and establishing it in the countries where it was not present. Motivating students who enrol in the programme and in forest education schools as well, by granting them financial subsidies or salaries, as well as improving the conditions of service after graduation so that they do not have to bridge the diploma degree to the Bachelor’s degree as is the case now.
- Forest education should start from the primary and then secondary level, with the selection of specialized teachers for this purpose, and including examples in the curriculum from the local environmental realities of the countries of the region.
• Revising curricula periodically in accordance to the scientific developments and the ages of the pupils in these two levels, with the introduction of topics on natural vegetation cover and the importance of forests sequentially across all classes.

• Activating classroom and extra-curricular activities (field) through field visits directed to forests and forest sites, and participating in some activities such as planting and afforestation, and including special programmes in radio and television programs about forests, their importance, the risks they are exposed to and the implications of these risks.

• Involving specialists in the fields of forests and the environment within the primary school writing committees

• Reconsidering forest legislation to keep pace with changes and developments, and protecting, maintaining and developing forests at the level of field practice, education and research.

• Activating the Law of the Agricultural Professional Council for the purpose of organizing the forestry profession and ensuring that its graduates are absorbed in managing its activities in the public and private sectors.

Primary and secondary schools responsibility

• Holding periodic educational exhibitions in which students and teachers participate in introducing forests, trees and the environment, in cooperation with the authorities concerned with forests. Establishment of school tree gardens and clubs of forest and tree friends in schools to devote the voluntary and committed side in this field.

Responsibility for technical and technical education

• Intensifying training and practical applications, organizing camps and exchanging visits with agencies related to forestry in cooperation with local forest officials

• Holding exhibitions annually, producing films, and creating websites that support technical forest education.

Responsibility of universities and colleges

• Developing and updating curricula periodically in line with current requirements and keeping pace with future changes to prepare the required future forester (new breed). Focusing on the practical and training side of students to equip them with the skills of using modern devices related to forests in cooperation with specialized work teams in local forest departments

• Dedicating the concept of educational forest tourism and qualifying environmental guides for this purpose.

• Establishing digital networks and securing the necessary means and software for the interaction of specialists, participants and students, in a way that expands the scope of forest education offering and opens the way for joint student research, artificial intelligence programs and exchange of experiences.

• Promoting the idea of periodic scientific dialogues between the parties responsible for forestry in the country and among students and providing opportunities for the possibility of launching joint
forest projects that contribute to achieving sustainable development goals for forests. Linking students with their colleges or universities and expanding the traditional concept of forest to include the concept of city forests, universities and colleges

- Encouraging the holding of scientific conferences in which finalist and postgraduate students participate in forest research and study of cases and problems presented using modern scientific methods.
- Highlighting the achievements of the national forest science figures and including them in forest education materials.
- Encouraging scientific research in the field of forest economics and valuing non-timber forest goods and their environmental services, to highlight the contributions of forests to the countries' gross national income and highlight their role in securing livelihoods and food security to enhance the image of forests in the minds of decision-makers and then give them the political, and financial support they deserve.
- Strengthening and supporting the role of forest extension/counselling in order to be able to absorb the results of research, approved technologies and information flow and deliver them to the recipient.
- Reviewing curricula periodically with the introduction of some new materials such as ecology of mangrove cultivation, environmental disasters, entrepreneurship and alternative energies.
- Teacher training

Responsibility of international and regional organizations

- Organizing consultative meeting limited advice by the Arab Organization for Agricultural Development in collaboration with the Food and Agriculture Organization of the United Nations, with the aim of preparing a specialized study on the future of forests (practice, research and education) in the region to meet the needs of societies, countries and the planet.
- Adopting pioneering projects in a number of countries to address deficiencies in the reality of forestry education in the region.
- The Arab Organization for Agricultural Development "The House of Arab Experience" adopts the implementation of a study on the contribution of the forest sector to national income in the region.
- Inclusion of grants provided by the Arab Organization for Agricultural Development (the Syrian Ministry of Agriculture) to students who have obtained a high school (the scientific branch) and not being limited to the agricultural professional secondary campaign for admission to the Arab Technical Institute for Agriculture and Fisheries (the Arab Institute for Forests and Pastures previously) to expand the circle of qualified holders of a certificate. The only institute specialized in forestry, environment and biodiversity.
- Recommending to the Arab Organization for Agricultural Development to consider changing the name of the Arab Technical Institute for Agriculture and Fisheries to its previous name (the Arab Institute for Forests and Pastures), raising its academic level, increasing its material capabilities, developing its curricula and its educational environment, to become a higher institute capable of graduating technicians and engineers.
- Establishing other parallel institutes at the regional level to graduate technicians and professionals in the field of forestry.
• Recommendation of the Arab Organization for Agricultural Development and the Food and Agriculture Organization of the United Nations to lead an initiative to establish technical institutes at the regional level to expand the circle of qualified forestry workers.

• Teaching non-traditional forests in local communities:
  o There are handicrafts based on wood and non-wood forest products, all of which contribute to securing livelihoods and the well-being of society and individuals, such as wood sawing industries, carpentry and furniture manufacture, wooden poles and construction, bio-energy, firewood and charcoal, handicrafts such as fin making, processing and manufacturing of non-wood products such as natural gums and products and nutritional and pharmaceutical.
Chapter II: Summary of National Consultative Meetings
Curriculum, resources and development

Education in the Near East and North Africa region consists of primary and secondary education and higher education, which includes technical and university educational levels.

In primary education: the taught programs have a limited view of forests and the environment and touch on superficial concepts in environmental issues and even a complete absence of forest concepts, which is a prominent weakness in this educational level. At the secondary level, precise scientific concepts expand in subjects. However, even subjects related to forestry fields (natural sciences in particular) do not contain any educational or applied curricula in the field of forest sciences. Thus, it can be said that education related to forests in the primary and secondary education stage is modest and needs to be reviewed and developed, and there is an urgent need to introduce titles and sequential topics through the classes of this stage related to forests and the environment.

It should be noted that technical education in the field of forestry is not highly respected by society in the region, which led students to refrain from joining it. In Sudan there is no technical education for forests, which left a clear mark on the technical management of forests. In Syria, there is at least an agricultural vocational secondary school in every region of the Syrian Arab Republic, and there is nothing in it that covers forests and the environment except for two courses: ornamental plants, forestry and natural resources. There is one institute specialized in graduating forest technicians with distinguished experiences, (The Arab Technical Institute for Agriculture and Fisheries - previously it was called the Arab Institute for Forest and Pastures). This institute is considered the most important institute specialized in forestry education in the Near East, and it is affiliated with the Arab Organization for Agricultural Development. Its students graduate with two majors: forests, environment and biodiversity.

As for university education, the different levels of forestry sciences are taught diploma, bachelor's, master's and doctorate degrees. Before establishing higher scientific institutions, students were sent to outside the region, such as Europe, America, and some Asian countries to study forest sciences to obtain various degrees. Since its independence, Algeria has placed training in the field of forestry among its priorities, and after the establishment of the Technical Institute of Agriculture, the specialty of applied forestry engineering was included. A university education or training in forestry is very acceptable in Algeria, as specializations related to forests, environment, and biodiversity in particular are featured in many university programs. The study of forests differs in the region from one country to another. Even in Sudan, there are some differences in the number of school years between two to five years. In Syria, the study extends for two years for forestry sciences (fourth and fifth years).

Gaps in basic, secondary and higher education:
- Not to address the concepts of forestry with a more comprehensive view within the curriculum paragraphs, especially in successive grades, especially in the second cycle (preparatory).
- There is a shortage of specialized staff, which is limited to graduates of Faculties of Education.
- The lack of financial resources to implement events, activities and field trips that consecrate the love of nature and create a generation aware of the importance of forests and their role in life on Earth.
- Lack of modern laboratories, devices, and technologies that keep pace with modern technological advances, and training students on them in the field of forest sciences.
- Lack or lack of effective participation in afforestation and planting for students.
- Not focusing on forestry subjects in a sequential manner within the grades of secondary education.
- The absence of school gardens and their role in introducing students to types Gaps and gaps in university education (technical and university).
- Lack of linking theoretical knowledge with practical and applied knowledge.
- The lack of material resources allocated to the field side (very important) to devote the contents of theoretical sciences (lectures), which dominated the practical applied side.
- The labour market that does not encourage young people due to the lack of demand for this sector, which requires great effort and knowledge for very modest wages.
- The absence of a program that guarantees the continuous qualification of specialists in forestry in order to raise their capabilities and keep them abreast of developments in the forestry process through courses and periodic dispatches internally and externally.

**Traditional or local and non-traditional forest education**

The importance of directing the role of forests to the groups of rural communities to preserve the local forest wealth and direct its exploitation in accordance with the goals of sustainable local development is highlighted. Accordingly, education in the field of forestry must be the subject of great concern for all age groups, with the assurance that today's children are the consumers of tomorrow. We need to reach these children’s minds with an effective and purposeful forest education. In areas where there are forests, forests are taught to young generations in an informal manner, as children and boys learn a lot about the different tree species prevalent in the area: their local names, their uses, the quality of their wood, their non-wood products (if any), the uses in folk medicine in addition to the benefits. As for as non-traditional forest education, including community education for forestry counselling, a major role in reaching citizens with information about the importance of environmental, economic and social forests.

In Algeria, it is worth noting that a memorandum of understanding and agreement between the Ministry of Environment and Renewable Energies and the Ministry of National Education was formulated in 2002 to introduce the concepts and principles of environmental and forestry education and awareness into national education programs regarding the promotion of education, environmental formation and sustainable development in schools. The final agreement was signed on 29 March 2019. It suggests a kind of optimism for a greater inclusion of forest education curricula in future teachers’ programs and workshops. According to this report, about 800 National Societies active in the fields of environment and forests were counted, including 500 new societies under Law 12-06 relating to Associations. In Morocco, traditional local education is available on two levels, the first relates to technical education and the second to higher education. The links between forest formation, primary and secondary education can only be observed within the framework of educational activities related to life and land sciences offered in primary, middle and secondary schools.
Production and processing of wood and non-wood products

This is one of the most important fields of forest use. In the local communities in the region, there are handicrafts of agricultural equipment in addition to the equipment for personal use from forest wood. Women and children also collect non-wood products for domestic consumption and trade, such as fruits of Ziziphus, Balanites and Adansonia. Wood products in Algeria are among the priorities of the public and private sectors, although the use of forest wood is not included in the development programs. This is due to a national policy aimed in particular at protecting forests from wood investments for fear that this wealth will disappear if it is opened for exploitation. The current concepts, especially those related to non-wood products, have added a kind of consensus between investors and forest-dwellers, after making sure of the value of the products associated with forests, which have become in monetary a real added value that exceeds the monetary value of wood. Forests also remain rich in very profitable resources, such as various types of mushrooms, aromatic plants, natural seeds that can be sold, plant varieties suitable for consumption, fibres for traditional industries, flowers producing natural colours without addressing the large gains that can be obtained if some of the picturesque forests are prepared and opened to ecological tourism. Observing the environmental balance, which can bring many incomes for the benefit of the local population without compromising the balances, but rather improving and expanding them.

Employment and skills

There is a seasonal (temporary) employment of workers from villages adjacent to the forests according to the work requirements in each season, some work in the cultivation of forest seed / seedlings, others work in mitigation operations and others work in logging after completing the forest cycle. In Sudan, as for the employment of qualified cadres (forestry professionals with degrees), employment has long been suspended due to economic policies, and this has resulted in the presence of large numbers of graduates without employment. This situation has cast a shadow over higher education in the field of forestry and caused students' reluctance to apply to study forestry, and this also applies to the study of other agricultural sciences, due to the lack of employment opportunities.

Supply and demand for multisectoral employment in forests

Forests are a source of employment and income catalysing economic activity by creating job opportunities in various sectors that can positively affect the resources of the national economy. Information about supply and demand varies from country to country in the region. For example, in Morocco, demand is much more than supply, with a difference of 30% for engineers and 54% for technicians, due to the presence of only two forest training institutions (ITREF and ENFI). This situation led to the employment of non-forest graduates in forestry jobs. In Sudan the supply of qualified human cadres is much more than the demand in the forest sector and professions related to the forest sector, such as wildlife and various environmental fields, because there are ten colleges with different names that study forest science and with no annual employment of graduates for economic reasons in the country. The number of graduates from the College
of Forestry, University of Khartoum only, between 1994 and 2018 is 888 graduates, of whom 502 are females and 386 are male (Academic Office - College of Forestry, University of Khartoum).

Technology and digitization in forestry education

It can be said that forest education programs are rich in modern training that is followed and in line with global digital educational curricula, such as the use of new satellite images to fight fires according to annual plans. These underline mechanisms for preventing natural disasters in accordance with accurate technological extracts, which are currently being implemented in university educational programs and some forest departments specialized in Follow-up and planning of prevention mechanisms and rapid intervention in urgent cases. In many countries, the application of this qualitative technological leap has not gone beyond the vicinity of universities and scientific laboratories to become among the resources of effective development plans. There has been an almost complete absence of digital technology in the field despite the large number of programs in forest education related to areas and forest resources. The technology used in teaching forests is considered an intermediate technology, whereas in some forest sciences it uses modern and advanced technology (as in remote sensing) despite the lack of equipment. Technology sometimes uses modern applications to communicate between students and their professors. The focus on using these apps increased during this year 2020 after the outbreak of the covid-19 pandemic. In the Maghreb, there are obstacles, as access to information in general is one of the most important difficulties that students face. There is a lack of a program and an organized structure to ensure regular access to international scientific documents, especially those published in paid journals. Apart from the data produced by the High Commission for Planning (HCP), related to the human milieu (demography, social economy), access to data related to the natural environment (climate, soil, vegetation cover, agriculture, satellite imagery, etc.) is almost not available. There is an urgent need for a comprehensive information system that collects data at the national level for easy access. The digitization of all the knowledge that ENFI has accumulated over fifty years of teaching and research has been among the proposals that all participants in this workshop have penned most.

Broader Policy and Legislation

The first policy for the forest sector in Sudan was developed during the colonial era and it remained in continuous development until it reached the last policy that was established in the year 2002. With the development of forest legislation, forest counselling remained a focus and it is considered one of the forest educational methods, through the extension workshops that are held in villages and rural areas to enlighten the local population recognizes the importance of the forest sector and their role in preserving it. An important addition to forest legislation is to give local communities a role in establishing and managing forests (grassroots forests). The authority trains citizens on how to manage, care for and harvest them, whether wooden or not. In some educational institutions, curricula are modified according to political and legislative changes. The principles and policies of legislation in Algeria are based on comprehensive organizational foundations that are built through consultations and discussions at various levels stemming from the necessity of legislation to take decisions and include specialized education mechanisms in vital areas. Accordingly, the previous legislation was implemented through legislative executive decrees.
requiring the establishment of national schools of forest sciences, such as the executive decree establishing the National School of Forestry, which does not include within the Ministry of Higher Education but affiliated with the Ministry of Agriculture. Therefore, it does not allow it to issue university specialization certificates, but only professional competency certificates. All higher schools that are under ministerial tutelage for higher education have been established and legislated according to ministerial decisions entrusted with executive decrees that define in general the goals and mechanisms for the management of these groups and higher schools. Sometimes they contain specializations in forest sciences (such as the National School of Agricultural Sciences in Algeria and the New National School of Sciences Forests in Khenchela). It can be said that in Morocco there is a good connection between the management of forests and the institutions of forest formation (engineer-technical), since the school curricula stem from the forestry strategies. In this framework, the Forest Training Coordination Council convenes every four years to study the compatibility of training with the needs of the management in terms of technical, administrative and legal matters.

**Promotion of a multi-landscape or mixed landscape approach**

Some faculties and departments of forestry in universities began to introduce curricula concerned with sustainable management of natural resources, in addition to technical management of forests. Approaches to sustainable natural resource management deal with an integrated landscape ecosystem that includes forests, rangelands, wildlife, farms and orchards. In addition to the communities that are affected by these resources and affect them, forest alone is not seen as an independent entity. In terms of legislation, the National Forest Authority needs to issue legislation that allows dealing with the various components of the ecosystem as a single entity and works in coordination with other components on forest management without negatively affecting other components of the ecosystem. In Algeria, systematic scientific planning has become, at the present time, calling for advanced new approaches that aim to broaden the perspective of understanding and education through comprehensive interdisciplinary studies. It, This encourages to even go beyond to studies "within the same disciplines" (interdisciplinary) and fosters awareness of the effectiveness of this approach as a scientific approach in highlighting and defining ways to develop and protect forests that cannot be attributed to or involved under a single methodology or a single discipline. It does not highlight any interactions or overlaps between the scientific, economic and social fields related to forests and does not guarantee any effectiveness of directive and educational interventions if it stems from an individual field or specialty. Most of the supervisors are now aware of the importance of a comprehensive expansion of forestry training and education due to the aforementioned advantages. However, some weaknesses are recorded in many university programs related to forest sciences, as the professors, trainers, and supervisors generally come from the same formative and research disciplines, which imparts a kind of highly specialized or one-vision education. This does not benefit the formation of a multi-skilled workforce, which is required and desirable from the investing economic institutions and operating wires. The latter is the character of an individual, in-depth specialization in limited areas of forest sciences and is not beneficial either to graduate students or to employment. Meanwhile, there is also a significant weakness in some qualifications, especially field competence, because higher training in the field of forestry has become broadly based on lessons and lectures inside the halls (intramuros), which makes the scientific outcome of the graduates almost devoid of real applied experiences. Attendance programs in halls and theoretical studies cannot replace these applied experiences.
In 2004, a specialization in protected areas management was created, which aims to preserve the rich and private ecosystems, in which the study of landscapes and mixed landscapes (LANDSCAPE) is a major focus. Whereas the landscape course is very important both theoretically and practically in the field in the mountain areas and the protected and unprotected areas. These magazines are valued in environmental training and awareness of citizens in general and tourists (mountain tourism). Training programs also revolve around biology and biological diversity, ecological cartography, joint management of natural areas, the concept of the biosphere and management of protected areas. Seven to ten engineers are trained in this specialty.

**Public education, advocacy and awareness**

In the NENA region, there are several activities for public education, advocacy and awareness.

In Sudan, there are various activities and radio and television programs that work in public education, advocacy and awareness, such as spreading the culture of preserving and protecting the trees and benefiting from its non-wood products such as shade and fruits, in addition to the environmental role it plays. One of the important annual activities that the National Forests Authority is keen on is what is known as “Tree Festival.” On the other hand, Sudanese associations play an important role in maximizing the tree, and they have various programs such as the student tree, planting schools and giving lectures in institutions. The radio and television provide educational doses for children in the field of forests by introducing them to the most important tree species in Sudan and their economic / environmental importance. There are many songs broadcast on the radio and television that glorify the tree and indicate that logging causes desertification, and so on.

In Algeria, audio-visual media is used to spread forest education and culture through the preparation of educational programmes that appeal to the audience. These include presenting reports and photo reports about the various forest areas in the country, giving different information to get to know them more and attracting viewers to visit them, and carrying out publicity and awareness campaigns to preserve the forest and animal wealth. Otherwise, they show entertainment programs and competitions in which viewers can participate, answer questions, and win trips to some natural areas. It is possible to conduct training courses and special training for journalists interested in the field of environment and forests at the forestry services in order to gain accurate information and know how to communicate it to the public.

In Morocco, we find that this axis of training is underdeveloped at the level of training institutions despite its importance and the recommendations that have been emphasized. However, in this context students and professors conduct some workshops in the framework of the study in forests. Moreover, lesson about communication within training is offered.
Renaming forest education

The participants in the symposium in Sudan believe that there will be general education courses that contain fundamentals in forest education such as the climatic regions in Sudan, the characteristics of those regions, the types of trees and forest shrubs prevalent in each region, and their economic, social and environmental importance. In post-general education stages there may be schools for forestry education (technical education or vocational training) with names such as: School of Forestry Education or Institute of Forest Technicians, then specialized institutes can be established to educate forest technicians that qualify students in specific fields such as forest nursery technician or saws and production technician and so on, so that the technician in the particular specialty has no opportunity to continue / bridge to obtain a bachelor’s degree. Students who are selected for education in forest education schools or specialized institutes for the education of forest technicians may be granted financial subsidies / salaries that are an incentive for them to enrol in this type of education and give them guarantees that they will be absorbed in the National Forest Authority and related authorities after graduation, and a job description and career progression separate from currently available for forestry professionals.

As for university education, there is no need to change the names, perhaps, if necessary, to graduate professionals specializing in various fields, as is the case in the College of Forestry at the University of Khartoum. In the Morocco, forest training was traditional, from its inception in the 1960s to 2004, where the forest was seen as a pure field of production. In 2004, after the meeting of the Coordination Council, it was urged that the training be open to broad aspects of natural resources, water, soil and vegetation cover. After this, new names were introduced to the forest formation, including economics of natural and environmental resources, valuation of wood and non-wood forest products, ecology and management of natural resources and management of protected areas.

Educating the next generation of forest researchers

Algeria: All efforts should be directed to educate present and future generations about the importance of forestry. The big challenge is the ability to train competent generations in this field, who must be aware of the current problems and provide innovative solutions. Most of the participants in the forum focused on the importance of this field, and the discussions resulted in a great weakness recorded in educating the current generation whose interests are generally focused on other areas, which calls for serious work in this context, which the specialists have unanimously agreed to activate through some of the proposed solutions at the end of this report.

Student admission

In Morocco, students are admitted to the baccalaureate level from secondary education by means of a competitive examination, a test based on selection criteria linked to specific working conditions in the woods: physical aptitude, moral qualities and intellectual abilities. The duration of the study is two years. The first technician women joined ITREF in 2015 and graduated in 2017. They numbered 12, and currently,
females make up nearly 50% of the cohort. At the technical education level students are admitted to the baccalaureate level from secondary education by means of a competitive examination, a test based on selection criteria linked to specific work conditions in the woods. At the higher education level students are admitted to ENFI, by selection, from candidates who have passed the first course of the IAV Hassan II (2/3) and ENAM (1/3). Accepted foreign students are mainly proposed by the Moroccan Agency for International Cooperation (AMCI), as they generally have a Diploma in General University Studies (DEUG), baccalaureate + 2 years.

In Sudan, there are no special policies and guidelines for admission in the field of forestry. Forestry education, as the majors related to natural resources, needs to be enrolled in a scientific course - as biology be major in the last year of high school. Sudanese degree students choose this specialization in their last year of high school, where they sit for compulsory courses. This group of courses qualifies those who choose it to compete for many colleges, including the colleges of health and medical sciences (such as human medicine, pharmacy, dentistry, medical laboratory sciences, nursing sciences, public health, environmental health and veterinary medicine) and natural resource colleges such as agriculture, animal production and forestry), in addition to educational sciences. Due to the state's lack of interest in natural resource specialties, and the desire of degree students to study medical and health sciences as advanced desires, we find that there is reluctance of students to study in these field. This has resulted in low percentages eligible to study these specializations, and in many cases students refrain from applying to study forestry or agriculture, preferring to study in non-governmental higher education institutions in the fields they desire, despite the high costs associated with studying in these institutions. Currently, there are no incentive policies that would make students apply to study forests (for example), the horizon in front of them is blocked. Graduates of a bachelor's degree in forestry have not been employed for a long time, their opportunities for serving outside the field of specialization are narrow, and the opportunities for self-service are very limited.

In order to ignite the desire for students of the Sudanese Certificate of Forestry Studies, it is necessary to develop incentive policies for forest graduates, including providing job opportunities for graduates and amending curricula to allow training in establishing self-employment projects.

**Summary of the main challenges**

- A comprehensive weakness in forestry education programs and curricula, especially in the middle and secondary stages, which causes the erosion of previous educational gains
- Not to involve specialists in the fields of environment and forests in formulating and directing educational programs for the benefit of the teachers
- Absence of educational activities and field trips directed at environmental and forestry education
- Lack of systematic supervision of forestry professors and teachers
- Lack of definition or ability to define the benefits of forests and their importance in the areas of investment and sustainable development
- Inconsistency and complementarity between university educational programs and higher degrees with the requirements and expectations of the field of employment, this difference is one of the most important weaknesses that were pointed out during the consultations
• The incompatibility of the axes of scientific research and the requirements of institutions active in the field of forests, especially those that invest and complain about the lack of actual technical solutions issued by the field of scientific research in forests that do not match the desired research needs of investors.

• The confinement of education, university, and professional training in forestry sciences within very specialized concepts at the level of universities, institutes, and higher schools without directing the formative content to answer the concerns and demands of the employment sector and the investing institutions.

• Many of the programs are not adapted to the requirements of the times and contain some old curricula that have passed by time, as programs are only introduced with some individual initiatives by some professors and supervisors. The training is largely theoretical and contains little applied studies and field outputs.

• Failure to integrate the competencies of the economic sector in the field of forestry education, that is, to involve them in preparing, updating, and providing training programs and targeted technical lectures.

• Lack of coordination between the structures and departments of education, training, research and economic dealers.

• Lack of coordination between vocational training and higher education in the field of forests, noting that each sector can provide actual support to the other to improve supervision and educational and professional levels.

• The dual system of the education system, which is governed from the administrative point of view by one institution and from the pedagogical point of view, to another institution.

• Weak training and continuous training abroad and at home for faculty and research members to enable them to keep pace with new scientific concepts and new technologies.

• The lack of a budget dedicated to scientific research in particular.

• Lack of a program and an organized structure that ensures regular access to international scientific documents, especially those published in paid journals.

• Lack of periodic review of curricula.

Summary of planned solutions, interventions and associated actors

• Defaming the benefits of forests in the areas of sustainable development and improving financial resources.

• Inclusion of forest sciences in an effective and effective manner in education programs, especially those related to the intermediate and secondary stages.

• Training teachers of education in the fields of forestry education by local competencies, with the preparation of simplified and documented curricula for the benefit of supervising professors in order to encourage them to become aware of the importance of this field.

• Taking new educational measures that harness special training for teachers living in forest surroundings for the purpose of effectively preparing them for the protection and management of forests that they have established in their surroundings.

• Reviewing curricula in a participatory manner with all interested and beneficiaries of forests.
• Improving the levels of staff and trainers in the field of forest sciences through training courses adapted to new developments and quality requirements in training
• Organizing and expanding awareness days throughout the year and not only reviving national and international days to highlight the role and importance of forests, through national and international conferences, seminars
• Inclusion of forestry professions related to non-wood wealth in university education wiring and programs, especially university degrees
• Consensus on correct uses of terms and dictionaries related to forest concepts to enrich the linguistic diversity of forest education, professional forest training and university training
• Allocating permanent places or centres for awareness, activating the role of associations in the field of forests, and re-establishing green clubs in the intermediate and secondary education stages
• Activating the attractiveness of forest professions among the constituent groups to ensure their actual and voluntary integration into forestry professions to fill the void registered in the labour market, where the shortage of qualified workers in forestry professions has been identified
• Prioritizing these forestry professions for the benefit of people in rural and mountain forest areas to improve professional skill and open employment opportunities in areas close to forests for local talent.
• The forestry professions and crafts that are in constant decline today due to the lack of interest in them on the part of young people who direct their attention to other fields, which may cause their demise in the future.
• The revival of some forestry trades and professions such as feeding professions, which have become very few if not rare in view of the increasing demand for these competencies in the employment market and investment projects from some institutions aspiring for large future investments. It is necessary to anticipate development plans through well-studied training in areas and specializations that highlight opportunities
• Work to revive the environment sections for groups of schoolchildren
• Reformulation of scientific research programs as required by investors’ concerns to achieve an effective compatibility between scientific research and economic development, which would benefit the national economy and protect forest wealth
• Work on institutional reform
• Develop a lasting partnership with regional forest institutions to sponsor students and facilitate the integration of recent graduates
• Strengthening the partnership with similar institutions at the regional and international levels: double diploma, exchange of professors, regular students and postgraduate
• The necessity of starting education for forestry with the beginning of this school stage and focusing on selecting specialized professors for this purpose and the adoption of examples in the curriculum from the reality of the Syrian environment.
• The necessity to find a kind of link between the moral values of society and the environmental and natural concepts
• The necessity of involving specialists in forestry education in book writing committees at this stage of education for all grades. Those concepts and vocabulary should be included in a sequential and logical manner within the relevant materials through the sequence of classes, and take on a form in that the beginning is with drawings, models and films. When necessary, a separate specialized material on forests should be entered and its importance and ways to protect it.
Conclusions

SYRIA

In Syria, the workshop's work focused on the most important points related to the current situation and the gaps that accompanying it. The stakeholders, processes and basic requirements required to achieve the objective of strengthening forest education and overcoming its deficiencies, developing skills, capabilities and procedures result in: preserving forests and achieving the most important goal, which is the sustainable management of forests in the Syrian Arab Republic. Consequently, we can refer to the main conclusions of this workshop.

First, the main challenges faced by forestry education in Syria are summarized as follows:

1. The continuation of the current crisis in Syria and its reflection on all aspects related to the different stages of education.
2. The insufficiency of the material resources necessary to develop educational systems, equipment and tools necessary to raise their level of performance and thus the level and competence of graduates, especially with regard to forest education.
3. Forests were exposed to fires and severe damage during the summer of 2020, thus depriving the concerned students of the sites required for training and rehabilitation for many years to come, as well as for the desired benefits of these forests, which need great potential for their rehabilitation.

The solution to these challenges is to overcome these challenges and secure what is required with the help of the Syrian Arab Republic by international organizations and friendly countries to overcome these difficulties and challenges. Second, the non-formal education is necessary to complete the role of formal education in relation to forests, although its role in Syria is still very limited and below the required level. Third, so far, the initiatives that have so far succeeded in improving education at the national level in Syria are the self-initiatives of volunteers and the governmental encouraging role despite the many material difficulties and the enthusiasm of teachers and the constant desire to develop curricula and methods of education. The current initiatives focus on changing plans and encouraging postgraduate studies to qualify specialized cadres capable of teaching students at different educational levels. Fourth, forestry education needs to be redefined to align with the overall expectations of forest management and the proposals for required actions addressed in the summary of solutions and required interventions section.

SUDAN

In Sudan, there is a clear weakness in forestry education in the general education stages. This calls for the inclusion of courses related to forest education in the various stages of public education, taking into account the size of the doses to suit the age groups of students and their absorptive capacities: a) in kindergartens the development of love for the tree in the hearts of children and the definition of its benefits, b) in the primary stage, introducing climatic regions and the most important trees in them, c) in the secondary stage,
introducing global environmental activities and their international agreements. Lack of technical education related to forests: In the past, there was technical education, but it was cancelled due to the lack of students enrolling in it, preferring academic education under which they are granted a bachelor's degree, which allows those wishing to enrol in postgraduate programs (Master / PhD). Poor keeping up of some departments / colleges with the developments and development of forest sciences. Some departments have been established for more than two decades without the curricula being reviewed or changed. At the level of material resources: the weakness of laboratories and laboratories for basic sciences, and the absence of tree gardens, museums, and lawns. Also, the absence of nurseries, forests, and university workshops to train students. The weakness or absence of the private sector in funding scientific research related to forests. The formation must be fully linked through its qualitative and quantitative analysis. It is necessary to pay close attention to the aforementioned risks and the shortage of engineers in this sector.
<table>
<thead>
<tr>
<th>Challenges</th>
<th>Solutions and required interventions</th>
<th>Associated actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>The absence of courses concerned with forest education in all stages of public education.</td>
<td>Introduction of courses concerned with forest education in all stages of public education in proportion to the age groups of each stage</td>
<td>The Ministry of Education in cooperation with the National Forest Authority and academics specializing in forestry field</td>
</tr>
<tr>
<td>The lack of vocational schools to teach forestry (vocational training) to benefit from educational losses.</td>
<td>Establish vocational training schools for forestry education to accommodate students who have failed to enrol in universities after the Sudanese certificate exams</td>
<td>Ministries of Education at the national and state levels in cooperation with the National Forest Authority, the Ministry of Labour and Human Resources Development and specialized academics in forest areas</td>
</tr>
<tr>
<td>Lack of intermediate technical cadres (intermediate diploma)</td>
<td>Designing specialized intermediate diploma programs in various fields of forest education: such as nursery technology, saw maintenance, and others (they must be designed so that it is not possible to bridge to obtain a bachelor’s degree (because the possibility of bridging is what lost the field of forestry cadres; technical)</td>
<td>Faculties of Technical and Technical Education of the Ministry of Higher Education and Scientific Research in cooperation with the National Forest Authority</td>
</tr>
<tr>
<td>The lack of commitment of some forest colleges and departments to the periodic updating of their curricula.</td>
<td>Paying attention to the periodic review of the curricula in forest colleges and departments every five years to strengthen some courses and add new developments in the field.</td>
<td>Teaching staff in colleges and departments with the opinions of stakeholders (i.e. those with whom the graduate is likely to affiliate)</td>
</tr>
<tr>
<td>Not including curricula that support a forest graduate to work independently (self-employment) faculty members in colleges and departments.</td>
<td>The inclusion of curricula and training programs that open the student’s horizons towards self-employment</td>
<td>The experiences of forest professionals can be used who have been able to create their own businesses (self-employment)</td>
</tr>
<tr>
<td>Lack of / weak integration between the executive management of forests, forest research and forest education</td>
<td>The conclusion of memoranda of understanding between the three components and the work to create a research strategy to deal with the problems facing the executive management of forests</td>
<td>The higher departments of the National Forest Authority and the agencies / agricultural and forest research centres and forest colleges</td>
</tr>
<tr>
<td>Lack of a strategy to absorb forest graduates to fill the shortage and upgrade the forest sector</td>
<td>Opening jobs and certifying the appointment of graduates</td>
<td>Ministries of Manpower and Finance in coordination with the National Forest Authority to identify needs and work to meet them</td>
</tr>
<tr>
<td>The absence of the private sector in financing scientific research.</td>
<td>Attracting the private sector to contribute to scientific research, especially in non-wood forest products such as natural gums and forest tree fruits</td>
<td>Assessment of the private sector that is active in the trade and manufacture of forest products. Coordination can be made to improve product quality through scientific research, and this will benefit private investors</td>
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<tr>
<td>Weak budgets for education</td>
<td>Increase the budget for basic, secondary and higher education</td>
<td>The Ministry of Finance, Education, Education, Higher Education and Scientific Research in addition to the private sector</td>
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<tr>
<td>Mismatch and integration between university educational programs and labour market requirements and expectations.</td>
<td>Involve all groups related to forests in developing curricula and educational institutions committees</td>
<td>Educational institutions and representatives of the labour market</td>
</tr>
<tr>
<td>Incompatibility of the axes of scientific research and the requirements of institutions active in the field of forests</td>
<td>Development of research programs for universities in line with the actual needs of investors and the labour market</td>
<td>Universities, other research institutions and investors</td>
</tr>
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Annex 1. Regional consultation time-table/programme

Global Project on Forest Education
Regional Expert Consultation Workshop on Forest Education
in the Near East and North Africa

Arab Organization for Agricultural Development in collaboration with the Food and Agriculture Organization, United Nation

Regional Consultation Programme
Wednesday 24, February 2021,

12.00 hours, Mecca Al-Mukarramah time

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Session chairperson</th>
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| 12.00 – 13.30 | Opening Session  
-Welcoming remarks, AOAD  
-Welcoming remarks, FAO  
-Regional report presentation | His Excellency, Director General AOAD,  
Professor Ibrahim Adam Al-Dakhiri, |
| 13.30 – 14.30 | First Working Session  
Presentations:  
National report, Algeria  
National report, Jordan  
National report, Morocco  
National report, Sudan  
National report, Syria | Prof. Karar Abadi |
| 14.30 – 17.00 | Second Working Session:  
Discussion | Prof. Karar Abadi |
Annex 2: Regional Consultation Participants by country

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<th>No.</th>
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<th>Students</th>
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<td>Oman</td>
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<td></td>
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<td>Saudi Arabia</td>
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und Landwirtschaft