



معهد البحوث الصناعية
INDUSTRIAL RESEARCH INSTITUTE
INSTITUT DE RECHERCHE INDUSTRIELLE

Annual Report 2016



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IRI: Its Purpose & Function

The Industrial Research Institute is a Lebanese institution for studies, industrial research, and scientific testing and analysis. IRI is a non-profit, non-commercial, public utility organization having an independent legal personality with the right to own, purchase, sell, insure, accept donations, take loans, and engage in litigation and similar activities. IRI was founded in 1953 and was linked to the Ministry of Industry pursuant to Article 3 of Law n° 642 of June 2, 1997. IRI is governed by private law, and its bylaws and internal and financial regulations.

IRI enjoys financial and administrative independence and is subject to post-auditing by the Court of Accounts in what concerns the contributions of the government to IRI.

IRI's headquarters are located in Hadath, and it is entitled to establish branches in all parts of the Lebanese Republic and abroad.

IRI is an independent national research center, and combines:

- Knowledge, expertise, and specialization
- Scientific material and equipment
- Data and technical documents.

IRI offers specialist scientifically reliable services to the national economy as well as existing industry and those which can be established with the aim of industrial development. The services include:

- Consultations
- Studies and research
- Testing, metrology, and analysis.

IRI, through its activities and operations, seeks to achieve the following goals:

- Conducting research and studies to enable the establishment of new industries
- Conducting research and studies on various materials and items to learn their properties and determine their uses and applications
- Offering specialist consultations on technological, administrative, and economic matters related to existing industry with the aim of industrial development and encouraging the creation of new industries
- Offering internationally accredited services in testing, analysis, and metrology related to materials and items, and issuing certificates of quality and conformity certificates
- Collaborating with national and international official bodies, and economic institutions and trade unions with the goal of fostering economic development.

IRI brings together a reliable body of experts, specialists, and engineers in many fields to carry out its activities, supported by another body of administrators, accountants, and clerks who undertake administrative tasks and other internal services.

Our Ethical Standards

In carrying out its functions, the Institute adheres to ethical and professional standards whereby it safeguards the clients' best interests. Furthermore, IRI regards as the client's property any information, processes, patent or techniques developed during work with the client and safeguards such matters in complete secrecy.



Because We Believe in Institutions

**Director General of Industrial Research Institute
Dr. Bassam Frenn**



After two difficult years of vacuum at the highest level of authority in our country and before winding up, 2016 granted us a President, General Michel Aoun.

Our President comes from the head of the military institution, promising the republic that law to order will prevail, hierarchy will be respected and the coherency of integrity and transparency everywhere.

After electing Mr. the President, a government was formed; and although it is one that survived two eras, it has brought renewal, especially that Mr. Saad Hariri is now Prime Minister, and he is coming with hopes, and aiming at building institutions. Also, young figures within the government – old and new - are full of aspirations, and bring more hope to the country; and though the parliament has extended its tenure, it is presided by Mr. Nabih Berry, and has restored the golden reputation of lawmaking.

With all the hopes that we are placing in the new mandate, and all the good and firm intentions it is showing. We, at the Industrial Research Institute believe in institutions and we also believe that in working from within them to build transparent, productive, ethical correct, useful institute that has a sense of direction in terms of what the country needs then each institute will serve as a building block.

With a multiple diversity and high level of scientific, technical and practical skills of our human resources, we have succeeded, over a period of two decades, in transforming the Industrial Research Institute into “ the technical arm”. Yes the technical arm not only for economical sectors, beginning with the sector of industry, but also for the country of Lebanon. The IRI has incorporated its fruitful activities horizontally in the various sectors of the industry, economy, health, environment, national security and social fabric. Which lead to empower the national industrial productivity through improving the product and making it more competitive to the

outer markets, thus embettering the exporting abilities of the industrial institutes.

The services provided by the Industrial Research Institute gain even more importance, since it is always keen to safeguard public health and safety, supervise national and imported products, and provide protection to both the consumer and industry.

The IRI administration, presided by us, applies the principles of absolute transparency in its endeavors towards ensuring quality by following quality control measures. On the field of environment, we are in a continuous pursuit to widen the scope of reliance on renewable energy, market green buildings, and work on the improvement of the industrial environment, in order to remove Lebanon from the map of environmentally polluting and unfriendly countries.

In our first decade at the helm of the Institute, we moved from an old to a new building that is more suitable with ambitious goal that we have aspired for, in terms of providing the scientific structure that an experimental technology institution requires in terms of equipment, machinery and working space, to accommodate more than 150 people who are part of its human resources since we took the responsibility of administration. Especially that these personnel work at extracting wealth and resources, and also at creating new services. The Institute opened its doors to host new institutions or specialized centers, in the aim to complement its views and fulfill the aspirations of our administration. Among those, we welcomed working with the Lebanese Cleaner Production Center, the Euro-Lebanese Centre For Industrial Modernization, and the Innovation and Technology Center, in order to encourage applied research, invention and transfer of technology.

We also set the bases for external and internal ties, in the scope of our long term vision to develop scientific bonds both internationally and regionally, and to make the IRI stand out and excel, all while acknowledging its scientific capacities and intellectual worthiness, receiving international approval certificates from advanced and developed organizations and laboratories, and getting recognition of its high capacity to complete the tests, experiments, measurements, and certificates issued by the IRI.

Today, international pioneering and developed institutions can attest that the IRI has become a scientific reference, both nationally and internationally, participating in the decision-making process of institutions within developed countries, and voting for policies set by international organizations in the name of Lebanon. Also, the IRI is following a pioneering planning policy in the field of scientific development, and transferring its scientific and vocational knowledge, at the demand of international institutions, to Arab and African countries, which makes it an ambassador for those leading institutions.

In addition to this, and before ending our second decade at the helm of the IRI, we will put the foundation stone of its complementary wing that will be integrated with its current building.

We are full of hope in the new period and new era, we trust it and would like to reassure that the plans set by us for the Institute - within the scope of a fully integrated vision, plan and strategy, since we started directing the IRI - are definitely ahead of their time and straight to the point. Also, we would like to reassert that our success is the outcome of our aspirations, efficiency and hard work.

In fact, we surpassed challenges during very difficult times, and while confronting many bysiders that were trying to impede our advancement.





IRI General Activities

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The Industrial Research Institute (IRI) culminates its internal activities with ones that are more inclusive, whether in terms of quality or in terms of the IRI relation with the Lebanese government ministries...

And if the Minister of Industry has an evident role in this pioneering national institution, other ministries actually need it too, namely when it comes to cooperation in economic studies and laboratory analyses...

The ministries relation with the IRI revolves around the internal activity of the institute. and also around performing analyses. However, other activities are responsible for the creation of new economic events, and some of the most eminent events of 2016 tackled renewable energy, and decreasing the cost of energy in industrial production.

Speaking of the IRI relation with the Ministry of Economy and Trade, as summarized by (former) Minister Alain Hakim, it includes 80% of common work between the two entities..

The Minister of Industry, and the Minister of Economy and Trade and the Industrial Research Institute

Hajj Hassan: "The IRI is a big necessity on the national level"

Hakim: "The IRI is at the peak of its development and we are proud of its achievements"

Frenn: we adopted a policy of development, modernization, research and censorship in accordance with international standards"



The Industrial Research Institute - February 24, 2016

The Minister of economy and Trade, Dr. Alain Hakim, and the Minister of Industry, Dr. Hussein Hajj Hassan, accepted the invitation of the IRI director general, Dr. Bassam Frenn, to visit the institute, check its laboratories, equipments, studies and research centers, and get acknowledged with its work mechanisms.

The event was attended by the Director General of the Ministry of Economy and Trade, Mrs. Alia Abbas, the General Director of Grains and Sugar Beet, Hanna El Amil, the General Director of the Lebanese Standards Institution LIBNOR, Lina Dergham, as well as heads and managers of departments at the IRI, and both ministers' consultants.

Dr. Frenn: We are working in the framework of an efficient control mechanism

First of all, Dr. Frenn had a welcome speech, and mentioned that the IRI is following a developmental, modernizing, research and control policy, in accordance with the highest international levels and standards, and in cooperation with various ministries and public administrations on one hand, and the private sector on the other. Great efforts are exerted by the IRI executives and employees, in the framework of a long term policy and strategy that we have set, to provide the best for the Lebanese citizen, and this is all done in cooperation with the Minister of Industry". He added: "Our link to the Ministry of Economy and Trade relies on projects, plans, programs and full commitment to develop the economy, safeguard the public interest, protect the citizen and serve industrials. There were many achievements on that front, and we are continuing to walk on this long path, with the aim of developing our exports and protecting the consumer from any products that would be invalid or non-compliant, and to avoid dumping. We are working in

the framework of an efficient control mechanism, and trying to expand its effects, so it can have an impact on other public administrations”.

Minister Hakim: The IRI is at the peak of development and activity

Minister Hakim thanked Dr. Frenn for his kind invitation to visit the IRI. He said: “on this occasion, and after being acquainted with the activities of this science and research institution, we consider the IRI as a role model for all state administrations, in view of its big achievements pertaining to various economical, industrial, research and commercial levels and activities. The IRI has reached a peak in the fields of development and activities, and we are proud of it. Also, we are proud of the human resources working in it, and namely of its director general”.

Hakim also said that the relation of the Ministry of Economy and Trade with the IRI “is a big continuous one, based on business and cooperation. There is

Minister Hajj Hassan: The IRI activities are at the service of economy, trade and industry

Minister Hajj Hassan thanked Dr. Frenn for organizing the common visit to the Industrial Research Institute, specifically aimed at informing the main pillars of the Ministry of Economy and Trade about the nature of work at the IRI, about how it is developing, and how the IRI is following up on economic activities, with the help of modern scientific means.

He said: “The IRI has become a big necessity on the national level, since it fulfills the requests of ministries and public administrations, and provides economic, industrial, research, and experimentation services required by the private, and namely industrial sector. The IRI is here at the service of the Ministry of Economy and Trade, taking on the responsibility of doing lab tests on imported wheat, and doing all tests for most imported and locally produced goods. The IRI has achieved a very important level of scientific research, and has been performing tests in accordance with international specifications and national specifications issued by the Lebanese Standards Institution (LIBNOR). Also, the IRI has been receiving international accreditation certificates from

almost 80% of common activity between us. Thus, we are keen on staying committed to the international and national standards. Big efforts should be exerted to rectify any error that might happen, not because of the set standards mechanism, but because of poor coordination that happens, from time to time, between administrations. Thus, we are calling to enhance and enable cooperation between various stakeholder ministries and administrations, and namely the customs, in order to achieve higher degrees of expertise and knowledge and improve performance, to be able to achieve the common goal that was set, which is to grow national economy and protect the Lebanese citizen. Being present at the IRI feels like being at the Ministry of Economy and Trade. I am proud to work with Minister Hajj Hassan, and both of us are trying to improve the performance of both ministries and their administrations, in coordination with the IRI”.

international organizations and laboratories, thanks to which the compliance certificates it issues have become recognized. The IRI activity is at the service of economy, trade, industry and various economic activities”.

He considered that “in addition to the IRI role in checkups and laboratories, it has role, which is not less important, in the field of development and research. For instance, it is pursuing studies aimed at sponsoring innovations, identifying the less harmful conservatives, reducing costs, unveiling production methods that use the least energy and produce the least environmental pollution possible, as well as other scientific research that helps increasing productivity, competitiveness, marketability and development of products, in addition to protecting the consumer’s health and ensuring his safety”.

Finally, he reasserted saying, “We hope that the IRI stays an attractive pole and a support for research, innovation and laboratory research activity both in Lebanon and regionally, thanks to our constant support to it, and thanks to the provision of a network for communication and cooperation between the IRI, LIBNOR and all operating ministries and administrations”.

The IRI opens an office at the Chamber of Commerce, Industry and Agriculture in Beirut and Mount Lebanon

**Frenn: In the framework of an integrated strategy
We decided to be at the heart of economic decision-making**



Beirut - March 23, 2016

On March 23, the Industrial Research Institute opened an office for itself in the building hosting the Chamber of Beirut and Mount Lebanon. The event was organized with the presence and participation of the Minister of Industry, Dr. Hussein Hajj Hassan, the Minister of Economy and Trade, Dr. Alain Hakim, the Chairman of the Federation of the Chambers of Commerce, Industry and Agriculture of Lebanon, and President of the Chamber of Beirut and Mount Lebanon, Mohamed Choucair, the Director General of the IRI, Dr. Bassam Frenn, and economic actors.

The opening took place at the headquarters of the Chamber of Beirut and Mount Lebanon, at the invitation of Dr. Choucair. For the occasion, the Director General of the IRI, Dr. Bassam Frenn, was honored. Then, participants headed to the 12th floor, where the opening ribbon was cut. After that, Hakim, Hajj Hassan, Choucair and Frenn visited the premises and the latter presented the functions conferred upon him.

During the event, Dr. Frenn gave the following speech:

Today, we are opening an office for the Industrial Research Institute at the national economy building, i.e. the headquarter of the Federation of the Chambers, the Association of Lebanese Industrialists, the International Chamber of Commerce - Lebanon, the Beirut Traders Association, the Lebanese Arbitration Center, and the Lebanese Franchise Association. In other words, this is all taking place at the economic center of decision of the private sector, which always needs care, interaction and integration with the government authority and public official decisions. The Industrial Research Center has always had this role, since it was instituted in 1953; and since 1998, it acquired bigger responsibilities and expanded its services, as well as its functions pertaining to development, research, science and laboratory in Lebanon, and toward our Arab surrounding, Asia, Africa, Europe and countries around the world. Of course, this amazing and great quality development happened thanks to those who did, are, and will keep on participating, in the future, to ensure that the path traced by the IRI stays “lively, devoted to giving and successful”, in order to serve the national economy, upgrade the industry, activate trade, and supervise

quality, with the aim of guaranteeing that the Lebanese citizens enjoy economic, social, environmental, health and services wellbeing, safety and security.

These IRI achievements only became real thanks to the trust it was granted by the ministers who presided its board, its successive boards of directors, all the officials, local and international partners in work and production, and especially the people of Lebanon.

I would like to thank all of these people and show them my appreciation. I would also like to show my great appreciation for the unlimited support shown by his Excellence the Minister, Dr. Hussein Hajj Hassan, to the Institute, since it proved that it represents a national need, as well as an oasis for an economic, scientific and research references, whose abilities and capacities equal those of similar international institutions. This is what we seek from our communication and cooperation with international organizations, institutes and laboratories. Also, this is what has been proved to us by these authorities, and by our continuous relation with all the concerned ministries and administrations.

Honoring the presidency of the Institute cannot be separated from honoring its workers, who kept on showing their outstanding and creative capabilities throughout the years I worked with them. They proved to be highly competent in operating a work system that

involved our national production and commercial activity amidst the new path that the world is following. The IRI activity has merged into the national, economic and social fabric. It is faithful to the “interacting together” slogan. It is about deriving wealth and extracting resources to provide job opportunities, create new services and overcome challenges.

Opening our office at the central building of national economy stressed on the interactive role of the Institute in the business community. With the increase of the needs and requirements of the business community, we decided, in the framework of an integrated strategy, to be close, if not at the heart of economic decision-making, in order to fulfill those needs.

I would like to thank my friend Mohamed Choucair for his openness and flexibility, because these are the traits of a responsible and successful man who has a vision that is always renewed and encouraging for the private sector. I am sure that the presence of the Institute team at this place will provide additional support and value to the business community.

By being present here, geographic distance will no longer exist, historical bonds will be tighter, and we will invent together common solutions, to serve the national economy.

The IRI supports green buildings for sustained development

Minister Hajj Hassan: “We support providing encouraging tax and financial incentives”

Dr. Bassam Frenn: “Main global trends need new ways of thinking”



The Industrial Research Institute - May 31, 2016

The Minister of Industry, Hussein Hajj Hassan, launched the Franco-Lebanese conference, organized by the IRI in cooperation with the French institution CERWAY. The conference tackled the methodology used to endorse the Program for designing ecologically sustainable constructions CEDRE, and help it get a certificate of compliance for green buildings from the IRI.

Frenn

In his speech, the IRI Director General, Dr. Bassam Frenn, said that “sustainability represents one of the biggest new global trends in a changing world, and that new ways of thinking are needed to tackle the size and speed of the next challenges. Those who lead the global sustainability movement know that the key for a quality transformation lies in developing the relation between organizations and the role that they play. The IRI works to achieve sustainable development thanks to procedures, which include supporting the green buildings concept by creating evaluation tools, which comply with international standards. Since 2009, the Institute has been cooperating with the Building Scientific and Technical Center, CSTB, in France, and



with Certivéa, with the aim of enhancing the High Quality Environmental standard (HQE) in Lebanon, then in the region. The most important results of that cooperation are translated into:

First - embracing the High Quality Environmental Standard (HQE) in Lebanon, in the form of a national reference system named CEDRE (Environmental Design and environmental organizational sustainability), that we developed at the IRI,

Second - Signing a framework agreement, last year, between the IRI and CERWAY (the party responsible for issuing certificates in France), in order to propose

this methodology in Lebanon. As a result of long term efforts, Cedre has become a reference system, and we are working to make our buildings more suitable for life and more adapted with their environment, i.e. to make them greener, and this is something that we cannot achieve on our own.”

Dargham

The General Director of the Lebanese Standard Institution (Libnor), Eng. Lena Dargham, mentioned that “pushing buildings to comply with sustainability requirements has become a priority, in light of the effects of the rapid urbanization, which include pressure exerted on water springs, power consumption, water storage systems, wastewater treatment, sanitary sewers and public health. Libnor launched projects and initiatives that comply with the sustainability and green buildings concept, by issuing hundreds of national specifications for energy, environmental management systems, and power management, as well as specifications related to home appliances and their power performance, thermal insulation of buildings, solar power supply...”

Dargham assured that “sustainable development is a political choice before being a technical one. For this reason, governments play a crucial role in developing a national strategy and issuing the necessary legislations for that matter”.

Nossent

Afterwards, the President of the French group Cerway, Patrick Nossent, took the floor to clarify that his group has a strategic partnership with the IRI, which implies common work with more than 22 states benefitting from the High Quality Environmental Standard (HQE) certificate, the second worldwide system granting specialized environmental certificates. In Lebanon, our

work is focused on developing the green buildings concept, and it all starts from our belief that respecting the environment, or more precisely adopting sustainable development, has become a global challenge that requires imposing applied practices on the national level.

Minister Hajj Hassan

Minister Hajj Hassan described the green buildings projects as an ambitious program that needs encouragement, within the framework of a comprehensive governmental policy, which should be based on approving legislations that are at the same time stimulating and prohibitive, in order to create green buildings and safeguard green spaces in Lebanon after they decreased to almost the half. This is especially true, with Lebanon getting closer and closer to desertification, the signs of which are starting to appear, including a big difference in day temperatures, as well as temperature decreases of more than 15 degrees at night.

“It is a national, economic, health and environmental responsibility. Ministries, administrations and stakeholders should work interdependently, in order to convince people of the positive sides of this project, its economic income and impact on health. In order to achieve this, help is needed to train engineers and construction workers on the green buildings concepts, and to decide how to apply those concepts in accordance with the related specifications and standards”.

Discussion

After the speeches, a discussion took place between expert participants from ministries, public administrations, engineers and contractors unions, as well as private institutions.

The IRI launches the integrated solar energy project
The EU grants its support and advice to face joint problems
Frenn encourages a higher adoption for photocell solar technologies

Nazarian: The IRI is completing the second phase of the solar energy station

Hajj Hassan: We can save 500 million dollars yearly in Lebanon



The Industrial Research Institute - June 7, 2016

The Minister of Industry, Dr. Hussein Hajj Hassan, the Minister of Energy and Water, Arthur Nazarian, as well as the Industrial Research Institute Director General, Dr. Bassam Frenn, launched the integrated solar energy project at the IRI building, which was implemented within the scope of the EU Foster in Med project. The event was attended by the regional coordinator for EU programs, Dr. Esmat Karadashi, the general director of the Ministry of Industry, Dany Gedeon, the general director of the Lebanese Standards Institution (LIBNOR), Eng. Lina Dargham, the President of the

Association of Lebanese Industrialists, Dr. Fady Gemayel, the President of Chamber of Commerce, Industry and Agriculture in Sidon and South Lebanon, Mohamed Saleh, the Foster in Med project manager in Lebanon, Naji Abi Zeid, the President of the Lebanese Center for Energy Conservation, Pierre El Khoury, as well as representatives from the European Union, and stakeholders from public and private institutions.

After the National anthem and a documentary film, Eng. Talal Salem had an extensive presentation about



the importance of the project, followed by a word by the Foster in Med project manager, Naji Abi Zeid, who signaled that “the integrated solar energy technology in buildings will be one of the most important adopted technologies to utilize solar energy in a smart way, and it will help saving both space and energy”.

Karadashi

In his speech, Karadashi asserted that the European Union is always ready to provide support and consultations and to exchange expertise, in order to tackle common problems faced by both European and Arab countries, the most important being about how to reduce energy consumption from traditional sources, and to replace it with alternative clean energy. He re-insisted on the continuous cooperation between the European Union and the Industrial Research Institute in numerous developmental, industrial and environmental fields.

Frenn

Afterwards, Dr. Frenn took the floor and said that “this project aims at increasing the adoption of photocell solar technologies in the Mediterranean region. It is

following a strategic path that includes multiple phases, in partnership with the private sector, and is making sure to leave a double impact in the Mediterranean Basin countries, as per the number of results achieved, and as per expanding them, spreading their benefits and taking them to a level that goes far beyond partnership. Thus, our aim is to transfer expertise, knowledge and culture in the field of innovative solar power, in order to implement and enhance a common design strategy, and enhance solar energy technologies at the level of civil society. The IRI building was chosen among many other participating Mediterranean countries, because it includes several strategic benefits, the most important being the readiness of the IRI building to accept such a project, which decreases temperature inside the building, cuts the electricity fees needed for air conditioning, and plays an esthetic role that complements the building architecture”.

He added, “it is expected to set the solar energy system in the backyard, in order to create a training center with 5 Kilowatts of power. It will be supplied with a platform to train on photovoltaic cells, with a partial financing from France, in coordination with the Lebanese Center for Energy Conservation. Thus, the total solar energy production capacity will be of almost 90 KWc, and we expect a rise of the solar energy production rate till it reaches 15% of the IRI needs, thus surpassing the level set by the Lebanese government at 12%. Also, we are striving to increase the rate to above 20%”.

Minister Nazarian

Minister Nazarian exposed the cooperation history between the Ministry of Power and Water, through the



Lebanese Center for Energy Conservation, and the Industrial Research Institute. According to him, “It was full of practical achievements, which include the laboratory that measures the performance and efficiency of solar water heating, obtained by the Ministry of Power and Water thanks to a Greek grant to the UNDP in Lebanon. It was deposited and set at the IRI, because the Institute is seen as a reference in all kinds of experiments. For the time being, we are working on developing and modernizing it, with the help of several international entities. We should also make notice of the work being currently done on the piece of land offered by the IRI, to create a training platform for university and technical institute students, on photovoltaic systems and technologies, in a project which was financed by the General Administration of the French Treasure, through the FASEP program. And now, the IRI is completing, with the help of the EU projects, the second phase of the solar energy station, an important initiative that will help achieving self sufficiency in energy production for private purposes, through the use of renewable and sustainable sources of energy, which will also impact the IRI image in the environmental sector”.

Minister Hajj Hassan

Minister Hajj Hassan then took the floor and said: “I am glad that we came together to launch the integrated

solar energy project at the IRI building. It is one additional achievement to be added to those of the IRI in the fields of development, environment and industry. The new project aims at making buildings compatible with renewable energy sources. It is an ideal project, since renewable energy is clean, unpolluted, and free of emissions. The more we rely on those natural energy sources, the bigger the balance that we will achieve between the harm of emissions and the role of nature, forests and green spaces in preserving environment. Also, using renewable solar, wind or water energy will cut the consumption bill paid by the state, and by the production, industry, agriculture, healthcare and household sectors. In a primary reading of the savings resulting from that, we see that the oil bill in Lebanon is of nearly seven billion dollars a year. Thus, if we achieve the 12% rate targeted by the Lebanese government by using alternative energy sources, we could save up to 500 million dollars a year. This would also improve the trade balance, the balance of payments and the public budget, and save money in the private sector, homes and households in general. We must surpass the phase of simple solar energy production and be able to link it to a network for electricity transmission and distribution.

Then, he briefed everyone on the components of the project.

The Industrial Research Institute and the Lebanese University distribute certificates

To students from the Faculty of Engineering who participated in a training session at the Lebanese Welding Center



The Industrial Research Institute - June 10, 2016

The Industrial Research Institute, as well as the Faculty of Engineering at the Lebanese University, achieved the third round of training organized at the Lebanese Welding Center, which is affiliated to the IRI, for Faculty students. The training was done in the fields of welding and non-destructive tests, after which certificates of the session were distributed to participating students. The ceremony was attended by the Minister of Industry, Dr. Hussein Hajj Hassan, the Lebanese University President, Adnan Sayyed Hussein, the IRI Director General, Dr. Bassam Frenn, and the Dean of the Faculty of Engineering, Dr. Rafik Younes, as well as directors, teachers and students.

After the national anthem and a documentary on cooperation between the IRI and the Faculty of Engineering at the LU, the student Tarek Taha read a speech in the name of the graduates, in which he thanked “the Institute, which is the only one to organize such sessions, to become a special technical supporting agent that makes a big difference for students, both scientifically and practically, and sets a main pillar that opens doors of specialization for trainees.

Frenn

Dr. Frenn spoke of the IRI role in welding, stating that

the Institute started “granting certificates on the welding technique, in accordance with international standards and techniques, and in implementation of the technology incubator strategy, and that it is working on spreading it in every university and scientific environment.

The IRI has a future vision based on taking advantage of scientific research on the use of technology, in order to serve the society, develop industry, improve the quality of production, protect the consumer and find new job opportunities”.

He added: “on this occasion, we renew our commitment to developing scientific research, while closely cooperating with public and private Lebanese universities, and with the sectors of industry, agriculture, trade and engineering, in what goes along with the vast panoply of services provided by the IRI within Lebanon and in the region countries, based on strategic alliances, international relations, and cooperation agreements reached in the past years”.

Sayyed Hussein

In the description provided by Dr. Sayyed Hussein, he said that “cooperation between the LU and the IRI is entrenched, old and stable, and it is one that we are proud of. It is enough to mention that the IRI is located within the LU campus in Hadath, considered the



biggest campus for higher education in Lebanon. Also, we are proud to have the Minister of Industry as a Lecturer at the LU, after he was a student there. He is very well acquainted with the IRI activities and role, and knows well what is still needed to enhance the government obligations towards it. I would like to praise the LU Faculty of Engineering, for standing in the face of interferences for more than 30 years, because it knew how to protect the entrance exam from any influence, in addition to its high quality teaching, training and scientific communication with the most prestigious European and worldwide universities. Based on this, eight Master's degrees were created at the Faculty, being either linked to research and technology - or professional. Several cooperation agreements have also been signed between the Faculty and productive fields in both the public and the private sectors. On this occasion, I would like to call for exerting serious efforts, in order to implement and execute those agreements, because the university played its role and is awaiting opposite sides to perform their duties, in order to set developmental and modernizing bases for the relation between the University, economy, growth and technology”.

Minister Hajj Hassan

Minister Hajj Hassan expressed his happiness: “let the aim of this activity, which expresses the will to coordinate, communicate, and have a cooperation between the LU and the IRI, be the development of skills in a big number of fields. Of course, we should praise the specialized sessions aimed at training, in order to get a coherent, high quality and valuable production that does not cause any harm. Thus, it is a matter of skills, value, quality, economy and revenue. In case the worker or employee has experience, his

salary will be higher. I call for varying the fields of specialization and training, in what suits the needs of the labor market”.

He added saying, “since the level of university education in Lebanon is very high and is deemed of an international level, since technical, cultural and scientific skills are present, and since financing possibilities are abundant, then why don't we develop industry, create new factories, increase production, boost exports in order to end the budget deficit, trade deficit, and create job opportunities? The reason lies in the continuous political decision, taken by some in Lebanon, to refuse the development of the industrial sector. We need around 35 thousand new job opportunities, on a yearly basis, for university and technical and professional institute graduates. The sectors of tourism, services and banks has limited possibilities, and cannot assimilate a big number of newcomers to the labor market. However, if the industrial sector is given a chance to grow and develop, it can absorb a big number of those, in various fields of specialization”.

Certificates were distributed to the graduates.



Conference on energy management, sponsored by Ministers Hajj Hassan and Nazarian

Consensus on lowering energy costs to improve industrial competitiveness

And agreement on using renewable energy for a lower bill and a cleaner environment

Lebanon is invited to improve its energy goals for 2020

Industrial Research Institute - July 27, 2016

The Minister of Industry, Dr. Hajj Hassan, and the Minister of Energy and Water, Arthur Nazarian, sponsored the Conference on Energy Management for the Industrial Sector in Lebanon. It was organized by the National Energy Efficiency and Renewable Energy Action for the recovery of Lebanon - Cedro 4, in cooperation with the Industrial Research Institute (IRI) and the Association of Lebanese Industrialists.

The conference was launched with the presence of Head of the European Union (EU) Delegation to Lebanon, Ambassador Christina Lassen, the Resident Representative of the United Nations Development Program (UNDP) in Lebanon, Mr. Philippe Lazzarini, the Director General of the IRI, Dr. Bassam Frenn, and the President of the Association of Lebanese Industrialists (ALI), Dr. Fadi Gemayel, in addition to officials, experts and industrialists.

The project implements the United Nations Development Program in Lebanon; it is funded by the European Union and by a 3 million Euros grant. Its aim is to reach a more sustainable energy system, by entrenching innovative and renewable energy technologies, thanks to research and assessments, and by building capacities and raising awareness. The project should be achieved during the current 2017 year.

Frenn: New technologies to help the industry

In his inaugural address, Dr. Bassam Frenn reasserted “the importance of using renewable energy and energy efficiency, since it helps abiding by environmental

standards and creates sustained development”.

He stated the projects implemented by the IRI in that domain, namely in cooperation with the European Union, and revealed that 15% of the power used by the IRI is renewable and based on solar energy.

He added: “as for the industrial sector, the IRI executed projects that help industrial group owners adopting newly developed technologies in the operations pertaining to the management of manufacturing and natural resources, which helps decreasing production costs”.

He also called for supporting current and future industrial projects, whose aim is to rely on a higher use of energy efficiency, and assured that the IRI is preparing the studies and research papers that are needed in that regard. He also said that the IRI is providing technical consultations and research studies to enter this field, and praised the stimulus policy adopted by Banque du Liban.

Gemayel: A fund supporting energy for the needs of industry

According to Dr. Fadi Gemayel, “managing energy costs has become possible to the majority of our industrial organizations, thanks to financing lines that are affordable and supported by Banque du Liban. This rush toward cost management ensures a reduction of the energy costs in industrial institutions, which has positive effects on the cost of industrial production and public finance. Also, it helps reducing the pressure exerted on the lines, allowing the Ministry of Energy and Water to invest the saved energy in other urgent



needs that participate in reducing the electricity rationing hours incurred by citizens. However, energy costs have repercussions on main sectors, and its intensive use cannot be managed by enterprises alone, regardless of how many development and creative procedures are implemented in those enterprises. Thus, the responsibility of management should lie on the state, especially in light of the promising job opportunities that those enterprises provide to our youth, and of their direct participation in reducing the trade deficit”.

Gemayel requested to set a fund that supports energy for industrial needs, at a cost of thirty million US dollars.

Lassen: achieving the 2020 goals

Ambassador Christina Lassen reiterated that “the European Union will keep on taking part in the energy autonomy in Lebanon, and that its aim is to get continuous energy supplies for all citizens at affordable prices”. She added saying: “we are calling Lebanon to improve its 2020 goals that pertain to renewable energy, energy efficiency, fighting greenhouse gas emissions, as it happened recently with the EU member countries, in a way that guarantees that this energy is as efficient, strong and environmentally friendly as possible”.

Lazzarini: there is a dire need for solar energy use

Philippe Lazzarini took the floor and said: “we are gathering to review the common works done between

the industrial sector, and the solar energy sector. It is known that the high cost of energy is one of the most important components that influence Lebanese production, having a negative effect on the competitive capacity of its industry in the international market. This is why there is a dire need for solar energy use, and for improving energy efficiency, in order to reduce production costs. It is known that technology has a role in making the path of production more efficient. For this reason, the EU is financing the Cedro project”.

Minister Hussein Hajj Hassan: energy prices are too high for the industry

In his speech, Minister Hajj Hassan thanked the conference organizers, and praised the EU for funding the Cedro project, as well as other development projects. Also, he praised the cooperation with the UNDP.

He said, “the talk about energy is long and has many ramifications, because energy is the driver of economy, with all its components. It is at the heart of policies and wars. Thus, it is very important for our lives, lifestyles, and future. In Lebanon, industry is facing difficulties, because of the high energy costs, which restrain its competitive capacities. Sometimes, the cost of energy in the industries that heavily rely on it represents 35%, and does not get below 10% in all industries.

He continued saying, “electricity in Lebanon is not provided in sufficient quantities, and its price is inadequate, generally speaking, namely for the industry sector, in comparison with partner countries with whom we exchange merchandise in accordance

with trade agreements, such as the Arab Facilitation Agreement, or the European Cooperation Agreement. We all know that the prices of oil and gas are subsidized in Arab countries, as well as in other countries, in addition to the subsidies on industrial electricity and fuel used in the industrial sector. Furthermore, the Lebanese industry is suffering, because of other burdens that resulted from the cancellation of customs fees, the markets opening, and the high cost of industrial real estate”.

He reiterated the importance of reducing the price of energy in production costs, “in view of all its economic, environmental and health benefits, as well as its positive impact on the general balance of payments”. He also called for “using alternative energy sources, and namely solar and wind energy, in addition to rationing consumption and stop waste”.

He spoke of providing support to projects that go in that direction, since it is the one on which Banque du Liban, the Industrial Research Institute, and the industrial association are focusing, with the support of the European Union.

He said that “energy efficiency is a condition for finding a solution, in order to recover losses in our balance of payments, which were caused by the decrease of exports, since “every hundred million of dollars decrease in the value of exports leads to losing between 500 and 1000 job opportunities”.

Arthur Nazarian: the National Energy Efficiency Plan 2016-2020

In his speech, Minister Nazarian said: “I am pleased, because I had the chance to meet the Minister of Industry, Dr. Hussein Hajj Hassan, twice in such a short period of time, and not to announce consumer positions, but to adopt new initiatives that translate into programs and projects that were or are being implemented in the field of renewable energy.

Speaking of industry, and despite procedures aimed at unifying the electricity tariff for the industrial sector, and despite the subsidized tariff that does not even cover the cost, with the worldwide price decrease of the oil barrel, the cost of electricity supply is still a burden on industrial production and it decreases the competitive capacity of the sector, which is currently facing obstacles related to regional problems. In parallel, the cost of renewable energy is decreasing, and it is expected that the costs for producing its components continue their drop, as a result of the big development in production

techniques, and the maturity of this industry on a worldwide level in general, and in Lebanon in particular. Thus, will we see a shift, in Lebanon, from the era of infusing renewable energy into the industry, to an era of renewable energy industry? This matter might sound out of reach in the next era. However, it does not mean that this logical path shall be put aside, and it is necessary to mention it in the renewable energy national plan, on which the Ministry of Energy and Water is working, in the hope of announcing it during the seventh edition of the Beirut International Energy Forum that will be held next September”.

He added that “the National Energy Efficiency plan for the years 2016-2020 mentioned a special axis to be followed by the industrial sector, and experts from the Lebanese Center for Energy Conservation (LCEC), which is affiliated to the Ministry of Energy and Water, analyzed this axis in cooperation with the Directorate General of the Ministry of Industry, the Industrial Research Institute and the Lebanese Standards Institution (LIBNOR), and it will be an integrated work that sets the frameworks of cooperation and draws clear and flexible executive mechanisms to stop energy waste and adopt proposed solutions and suggestions.

It is also important to mention that the national plan needs a financial budget in order to come to life, and since the Lebanese Government budget is limited, and most of its expenses are linked to consumption, we are seizing the opportunity today, in the presence of representatives of active international organizations, to ask them, once again, to let their policies and programs mention sustainable energy issues and thus, support the Lebanese government in achieving its 2020 goals, in accordance with all the decisions and recommendations at international conferences, the last of which being the Paris Conference that was held last year”.

The conference covered three essential topics about energy in the industrial sector:

- Energy efficiency for industries, with the publication of a report that specifies the methods used by industries to reduce their energy consumption.
- Electricity from solar energy, based on the solar energy systems experience in several industries in Lebanon.
- Generation of renewable energy heat, thanks to solar energy, in order to ensure the production of huge quantities of heat needed in the industrial sector.

Dialogue at the IRI on environmental engagement among industrials Frenn: the IRI ensures an environmental and industrial balance in Lebanon



The Industrial Research Institute - August 17, 2016

The ministries of Industry and Environment, as well as the IRI, organized a dialogue session on the environmental engagement among industrial institutions of the first category. The session was sponsored and attended by both the Minister of Industry, Dr. Hussein Hajj Hassan, and the Minister of Environment, Mohammad Machnouk, as well as the Director General of the IRI, Dr. Bassam Frenn, in addition to employees from both ministries and the IRI, and environmental and industrial experts.

Frenn

First, Dr. Frenn welcomed the audience, and mentioned the institute's role in providing environmental and industrial stability in Lebanon. Then, he provided the industrials with technical and technological consultations and scientific researches, in order to help them avoid problems and try preventing them, as much as possible, before they happen.

Dr. Frenn reiterated the importance of being committed to preventive production, and of the continuation of that path, through clean and sustainable production. He assured that industry is not as polluted as industrial specialists are. He said that those also lack commitment to environmental standards, and stressed on the importance of working and communicating with them, to help them commit to environmental standards.

Then, Eng. Ali Chehimi, head of the licensing department at the Ministry of Industry, and Marwan Rizkallah, director of the project on fighting environmental pollution at the Ministry of Environment, had a presentation on the subject.

Minister Hajj Hassan

Minister Hajj Hassan took the floor to speak, and considered that "the environment issue, as well as the pressures weighing on Lebanon and the world, are the current problem imposing pressures on the Lebanese reality. The environment degradation in Lebanon is a reality, not an illusion. It is not an issue that concerns the industrial sector alone, but also the sectors of transportation, agriculture, tourism, construction, building, sewage, garbage and other actions resulting from human activity. Industry is an important cause of pollution but it is not the main one. First category industries are the ones in need of the biggest care, to make them abide by the environmental conditions. It is in the industrialists interests to change the stereotype image of those sectors. There are clear laws, decrees and standards that define how to stay committed to the environment. Industrialists need to abide by them, at least inside the factory, and if there is a lack in infrastructure, the government is required to provide it, and from that moment on, the responsibility does not



lie on the industrialists any longer. He summoned industrialists “to willingly commit to those standards, because their economical, developmental and social interests require so. Industrialists should be convinced in that, so that the industrial sector can continue operating actively, participating in economic activity and achieving the targeted economic growth. Also, industrialists should exert thorough efforts to get an environmental commitment certificate, so they can have stronger means of confrontation. At the end of the day, work should be focused on changing the prevailing perception, and should not stop at treating the consequences of pollution, but should also anticipate the course of events and prevent pollution first, in order to avoid it as much as possible”.

Minister Machnouk

Minister Machnouk asserted that “in light of the exacerbation of environmental crises in Lebanon, which caused a deterioration of the Lebanese health and economy, owners of industrial groups should start treating pollutants and trash resulting from their industrial activities, adopt the principles of sustainable consumption and production, and rationalize the consumption of natural resources in accordance with the clauses stipulated in the Decree on the environmental commitment of enterprises”.

He added that “the Ministry of Environment is aware of the size of challenges and pressures suffered by the

industrial sector, with the continuous development of international markets and barriers that impede the sales of Lebanese products. From there, when the Ministry of Environment specified deadlines for the environmental commitment of companies, it had recourse to legal deadlines that mind urgent environmental needs on one hand, and suit industrialists and their economic situation on the other”. He also said that “in order to facilitate the industrial companies’ commitment and alleviate the economic burden imposed on factories, the Ministry of Environment launched the Lebanon Environmental Pollution Abatement Project, LEPAP, which provides financing for environmental projects, in order to decrease industrial pollution through affordable with the support of Banque du Liban, and an almost zero interest rate, in addition to providing the needed expertise for the implementation of those projects”.

He also addressed industrialists, saying that “the industrial problem does not lie in what you produce, but in how you produce”, adding that “we hear from you all the time nice words about loans that can be repaid within 7 years. My friend told me that now, they will deposit money in banks and gain an interest rate. As for pollution, they’ll leave it to God, and then other ministers will come. But this is not right; there is a need for commitment and follow-up. We have set a deadline to get prepared for environmental commitment at two years and four months from now. After that time, environmental commitment should be fully

implemented, and we don't know under whose ministry it is going to take place. We want to reassure factories that this step is a chance and not a punishment, and let them know that they can use it to enhance their industrial position, and not only to take advantage of those loans for environmental embellishment operations, and to diminish the burden of pollution on the surrounding. If we consider the Litani pollution, we will realize that 600 industrial institutions are located along the 170 KMs of the river, most of which are in the Bekaa and above the Lake Qaraoun, and all of them negatively affect pollution. Is this going to continue? No, it cannot continue, and we need to stop the polluters. Also, polluters should not only pay money; they should be paying fines and be arrested. What if we forbid polluting factories from continuing, based on a complaint from the municipality, or from citizens, and if we launch an environmental inspection, uncover infractions, record them and based on a warning, set a clear deadline before deciding to stop those factories? This is not only a tough job, but also a restraining one and we do not want to even imagine

that we will have to recourse to it, but we need from industrialists to understand that this is serious talk".

"Since the deadline to apply for a an environmental commitment for A class industrial companies is 31/12/2018, company owners should begin taking necessary steps to show their commitment to environment, starting with the preparation of an environmental auditing study to be presented to the Ministry of Environment for approval, to the implementation of the environmental management plan. We will set a count-down calendar and keep on sending periodical letters to factories, to enquire about their advancement. Factories should fulfill their duties. This count-down period will include warnings, because the law has to be implemented, and having granted loans and aids, culpability will be falling on those who are guilty, and you should look at that not only as industrialists, but also as citizens".

Then, there was a discussion among participants.

The IRI launches a platform to train students to use solar energy technologies

Financed by France, the IRI and the Lebanese Center for Energy Conservation, and with the support of the UNDP in Lebanon



The Industrial Research Institute - September 19, 2016

The Minister of Industry, Dr. Hussein Hajj Hassan, the Minister of Energy and Water, Arthur Nazarian, the French ambassador in Lebanon, Emmanuel Bonne, and the Industrial Research Institute Director General, Dr. Bassam Frenn, launched a platform at the IRI, to train on using solar energy technologies. This is a common project that was financed by the French government, the IRI, and the Lebanese Center for Energy Conservation, supported by the United Nations Development Program in Lebanon, and executed by the French consultancy TransEnergie.

The event was attended by representatives of the public sectors in Lebanon and France, and by delegates from Lebanese and French companies specialized in the energy sector.

Frenn: Pioneers in setting the first big solar energy station

In his speech, Dr. Frenn mentioned that “the project reflects the IRI dynamism, shown in its achievements and cooperation with its partners, and that these works are directed towards innovation, creativity, modernization and development, taking into account the protection of Lebanese citizens and the fulfillment of their needs and future perspectives”.

He spoke of energy, and namely solar energy, “whose uses have expanded in Lebanon, while the number of projects setting and creating solar systems is doubling, which makes us proud, at the IRI, because we were pioneers in financing and setting the first big solar energy station in 2012, and because we continued increasing the capacities of this station, until it became a pioneering project that represents a role model for industrial sectors and other institutions”.



He unveiled that at the IRI, we are getting close to relying on solar energy at a rate of 15%, compared to the total needs of the IRI, and this rate is presently considered a worldwide standard". He made it clear that the training platform complements the tools that we are developing to strengthen the national economy and modernize the Lebanese industry, by rationalizing energy use, cutting carbon emissions and safeguarding the environment. He listed the cooperation projects between the IRI and French institutions, reiterating the importance of the IRI development policy and on improving communication with those French institutions, in what serves scientific research, technology and innovation.

Bonne: The project is gaining great support from france

Ambassador Bonne praised the great cooperation between the IRI on one hand, and the French government and private institutions on the other, with the aim of enhancing, developing and strengthening relations between Lebanon and France.

He added that the project is gaining great support from France, which participated in financing it, by paying nearly 50% of its costs, through a 210 thousand Euro grant from the Ministry of Finance and Economy. We are proud to implement the project through a French company, in cooperation with the IRI. In fact, this

strengthens the relationship between them and opens new horizons toward the creation of new job opportunities. He also reassured that the French commitment to the project comes as a result of its trust in numerous economic and environmental benefits that the renewable energy sector can come up with.

Nazarian: Congratulation for completing a training platform on photovoltaic energy systems and technologies

Nazarian linked the platform launch to the imminence of the seventh edition of the International Energy Forum in Beirut. He expected it to hold parallel events and lectures, in the presence of elite experts from Lebanon and the world. He considered the platform project a main step in the sustainable energy path in Lebanon, which will be completed at the Energy Forum in Beirut, where we will have a general presentation on the reality of the renewable energy and energy efficiency sectors, and national plans in the next phase.

In this event that is hosted by the IRI and presided by Dr. Bassam Frenn, with the presence of his Excellence the Minister and friend, Dr. Hussein Hajj Hassan, who is also the real partner in every high quality step in this country, I would like to congratulate everyone and praise their common and interactive efforts to achieve

a training platform for university and technical institute students, and also for the people of the sector, who are working on photovoltaic energy systems and technologies. This station would have not been real without financing from the General administration of the French treasury, through the Fasep program, and without cooperation between the IRI, the UNDP in Lebanon, the Lebanese Center for Energy Conservation at the Lebanese Ministry of Energy and Water. It is worth noting that the partnership was not only in kind; it also included a direct fund investment from the financial side, to complement the French initiative, in view of the importance of teaching and training systems that are deemed important, from the beginning, for the development of skills and knowledge, and for building capacities, namely because this is the main axis followed by the national renewable energy plan. On this occasion, we would like to restate the importance of developing, modernizing, and enacting productivity at the laboratory measuring the performance and efficiency of solar water heating devices. This allows making use of a series of Arab and international initiatives, the most important of which probably being the rules and procedures necessary for solar power stations and heaters, within the framework of the Arab project for solar thermal system certificates, known as the “shamsi” network. This is a subject constantly followed up by stakeholders at the Lebanese Center for Energy Conservation and the IRI.

Also, we would like you to pay attention to the necessity of working on the equipment of an integrated laboratory for photovoltaic cell experiments, and of trying, with the help of international donors, to ensure a direct or indirect grant in that field.

Hajj Hassan: the platform is a step towards adopting varied energy sources

Minister Hajj Hassan praised the cooperation between Lebanon and France in the fields of economy and development. He considered that the platform for training on the use of solar energy is an additional step towards inciting people in Lebanon to vary their energy sources, and restated the need to find means to make the optional incentive effort obligatory one way or another.

He said that because of desertification and climate change, Lebanon lost some of its water, but gained extra sunshine and it is witnessing raises in temperature, which makes the use of solar energy easier.

He congratulated the IRI for its continuous efforts to reach a worldwide level, and hoped that the rate in Lebanon would rise to almost 10%, after setting national plans aimed at using solar energy for lighting, heating, water heating and other needs and requirements. By reaching this rate, we would have decreased the deficit bill in electricity by almost 10%.



The Industrial Research Institute Organized a National Workshop On the Development of Clean and Green Exports

Frenn: “Let us export green products and not Lebanese brains”

Yaacoub: The aim is to have active cooperation between the sectors of environment and industry

Hakim: The shift towards a green economy is an urgent necessity

Hajj Hassan: Towards removing barriers that impede Lebanese exports



Mövenpick Hotel (Beirut) – December 6, 2016

In cooperation with the United Nations Conference on Trade and Development (UNCTAD), the Industrial Research Institute organized, at the Mövenpick hotel, a national workshop entitled the “National green Export Review”. The event was sponsored by the Minister of Industry, Dr. Hussein Hajj Hassan, and the Minister of Economy and Trade, Dr. Alain Hakim, as well as the Director General of the Industrial Research Institute, Dr. Bassam Frenn. Were also present at the event: the Director General of the Ministry of Industry, Dany Gedeon, as well as the UNCTAD representative, Robert Hamwey, the director of the Lebanese Cleaner Production Center, Ali Yaacoub, in addition to industrialists and experts.

Frenn

At the beginning of his speech, the Industrial Research Institute Director General, Dr. Basam Frenn, launched a slogan: “Let us export green products and not Lebanese brains”. He said, “In the past several years, countries around the world set new goals for sustainable development, environment protection, social justice and putting an end to poverty. These goals defined them in conferences, the most famous of which being the Rio+20 conference, the Financing for Development conference, and the Paris Agreement on climate change. The UN agenda for 2030 puts those concepts all together within the framework of sustainable development goals”.

He added, “many countries, including Lebanon, were invited to define those goals. This national workshop is supported by the UNCTAD program, as an example for the UN support for the national efforts exerted to develop a sustainable or green economy. This project aims at focusing the attention of local partners on the importance of a globalized green economy and the big chances it provides.

With the end of the political storm, after General Michel Aoun was elected as president of the republic, chances arose to work together in the public and private sectors, among consumers, and in the academic and civil society, in order to reset the national development and progress. We need more production, and better production, in a time when we’re working on diminishing our great dependence on imports, all the

the greatest challenge faced by developing countries, in their fight against backwardness and their quest to solve social problems, such as poverty and unemployment. Also, it has proved that industrial advancement and its direct link to environmental performance leave traces in the development of the economies of many countries. The industrial sector development and its relation with environment, amidst international economic changes, globalization and all sorts of accompanying challenges and competition, require that we all work on different pathways, some of which we are tackling during this seminar, which is addressed to the trade and industry sector. This seminar aims at setting the path and starting an active cooperation between the sectors of industry and environment on one hand, and the commercial



way to providing more job opportunities and increasing the incomes of our families”.

He ended his speech by saying, “we need to admit that we live in a much globalized and intertwined economy. In order to enhance the productivity and competitive capabilities of our national economy in international markets, we need to pursue the industrial and agricultural operation in an environmental friendly manner, which is compatible with the UN goals for sustainable development, and look at building a green sustainable economy, all while preserving our natural resources, decreasing our dependence on polluting energy and focusing on alternative power sources”.

Yaacoub

Dr. Yaacoub spoke in the name of the Lebanese Cleaner Production Center and on the behalf of the UNCTAD representative. In his word, he said: “since the start of the third millennium, industry has become

institutions in Lebanon and abroad on the other. Of course, this collaboration will serve everyone’s interests, and the cooperation that we have with UNCTAD in Geneva, Switzerland, is just the beginning to help Lebanon advance and improve its economic situation”.

Minister Hakim

Minister Hakim saw that “the shift towards green economy in Lebanon has become an urgent necessity, especially with the worsening of the climate change phenomenon, the environmental deterioration, and their results and repercussions, which weigh on the society and economy at once. In such circumstances, the Ministry of Economy and Trade expressed to the UNCTAD our will to have a National Green Export Review, to support the efforts exerted by the Ministry, incite the growth of green sectors and participate in building local capacities, with the aim of providing



added value green products to local and export markets, while trying to create more productive work opportunities. So, here we are in the first workshop of that kind, reiterating the importance of green economy, as the perfect way to restart our national economy and make a quality shift that will allow us to ensure sustainable development in the future, and look into the sectors and products that can create an important export opportunity for Lebanon. Thus, I would like, first of all, to thank UNCTAD for answering our request, and for the efforts they exerted to make this initiative successful”.

He added that “green economy is based on the principles of weighing in equally economic development, social justice and environmental sustainability, and creating an environmental balance. Among worsening environmental crises, clean production - or “green production” - remains the best and most profitable solution. However, it can only be achieved as a result of two things:

- First, to try consecrate a green culture; this should be done officially and at all levels
- Second, to attract adequate financing, with the aim of preserving and providing sustainable natural resources in Lebanon, which are abundantly present and allow investing in the green economy”.

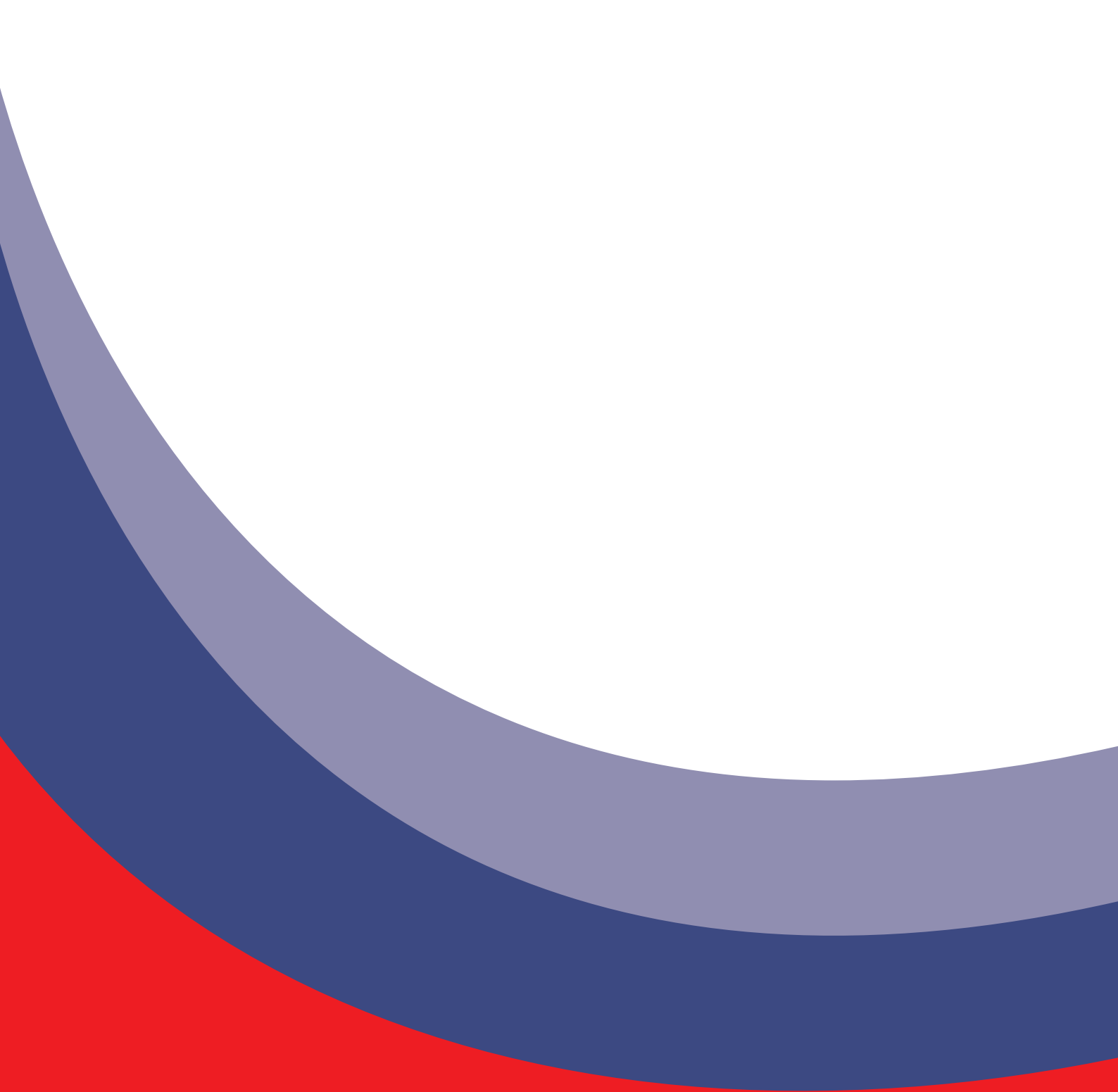
Minister Hajj Hassan

Minister Hajj Hassan considered that “Lebanon is facing big environmental challenges, resulting from several factors, including industry, the biggest example of the environment deterioration being the Litani River pollution. Other river beds have also become a place for throwing away anything. Thus, we are in front of a real problem that necessitates setting a national strategy that would help stopping the environmental worsening situation, and fix the consequences and destruction caused by environmental deterioration.

The Ministry of Environment is responsible for that file, in cooperation with the concerned ministries and administrations, as well as scientific and research centers. All these stakeholders are concerned with setting definite solution programs with clear goals, time frames and mechanisms. We are committed to green and clean production, amidst our quest to protect the environment in Lebanon, safeguard the health of our children, and preserve our natural resources. As for the economic situation, I reiterate my quest to form an economic ministerial group that will hold regular meetings and work on setting a strategy for the next six years, aiming at increasing our economy, decreasing the budget deficit, growing exports and lowering imports”.

On the freedom of trade in the world, he said: “Trade is not only free, but also unfair. While Lebanon is demanding to open up its markets to worldwide products until there is a glut in the market, technical and other obstacles, most of which are fabricated, are impeding the export of Lebanese products, whose quality and commitment to international standards are guaranteed”.

He continued saying that “the world is going towards green economy. Lebanon is welcoming this concept. However, its’ implementation requires new investments, which means more production. If we are unable to compete locally, because of dumping, and to compete abroad, because of obstacles and support and protection policies used by most countries around the world, what should we do with our production? Our most important challenge is to increase exports, and we should all turn this issue into a public opinion matter. Thus, if there is no export, there will be no production and no more new investments, neither in green industry nor in any other production sector at all”.





Activities of
the Director General

2

Overseeing two decades of committed work, looking at the achievements through the prism of memories, carrying aspirations, as if they were far away dreams, and then working to make them attainable...

The Industrial Research Institute is a continuous workshop, whose palpable achievements are shown in statistics. However, there is an unseen part of the activity, done by the Institute human resources, working under the direction of Dr. Bassam Frenn...

With meetings held locally and abroad, as well as interactions, during international conferences, with institutions and entities that utilize modern technologies and look toward kick-starting the economy with low cost productivity... Dr. Frenn continues representing the IRI, and advises its human resources to also represent this institution, which places specialization at the core of invention...

All of that in order to serve the Lebanese industry and national economy...

Here below is a statement about Dr. Frenn's appearances locally and abroad; as for his activities with ministers, they were already stated before.

Internal Activities

Evaluation of the Institute achievements in five African states
Frenn and Scholtès discuss the development of the relationship
between UNIDO and IRI



The Industrial Research Institute – January 26, 2016

The IRI Director General, Dr. Bassam Frenn, held a business meeting with the Chief Executive of the United Nations Industrial Development Organization (UNIDO), Philippe Scholtès, and the UNIDO Regional Representative, Cristiano Bassini, at the IRI headquarters.

During the meeting, participants made a general summary of the historical relationship between the IRI and UNIDO, evaluated common projects within the Subcontracting and Partnership Exchange (SPX) and the Lebanese Cleaner Production Center (LCPC), and discussed future plans.

Afterwards, participants reviewed the projects executed by the IRI for UNIDO in five African and Arab countries, encompassing the quality structure, evaluation of laboratories and credit. They agreed on the importance of the relationship between them, and on how crucial it is to develop it in a way that serves the industry and research sector in Lebanon. Also, they reviewed the work of specialized centers within the Institute, and took acknowledgment of the modern equipments in laboratories.



Scientific cooperation agreement between the IRI and the SMDC (Society of Management and Development Consultants) consultancy



The Industrial Research Institute - June 29, 2016

The IRI Director General, Dr. Bassam Frenn, and the SMDC (Society of Management and Development Consultants) president, Mohanad El Assaad, signed a cooperation agreement between the Institute and the consultancy, encompassing the fields of training, exchange of information and expertise.

As per this agreement, there shall be an exchange of general studies and experiences in the sectors that are at the core of both parties' activities, or that resulted from using new mechanisms and trends, in addition to an exchange of experts, consultants and workers in the field of experimentation, with the aim of training or participating in seminars. The agreement stipulates that specific works need to be executed either jointly, or following a request presented by one of the parties to the other, including:

- Proceeding with a general or a specific study,
- Executing a consultancy or a training mission that is either short (for a few days), or long (for a few months), with activities and training sessions to take place at the Institute headquarters.
- Delegating experts, an experimental group, or consultants, with or without their means, at a specific request, to rely on the other party either temporarily or within the scope of a project. The Institute should suggest specialized experts to fulfill the needs of the first party, and to provide it with expertise and information pertaining to general matters.
- Instituting a partnership for the execution of some works, whenever requested by one of the parties within the scope of a bid, or a regional or international contract signed in accordance with the laws enforced for each party
- Both parties should respect private intellectual property and guarantee the secrecy of exchanged information and data, as well as the non-competency principle.
- This agreement is valid for three renewable years.

The Saint Joseph University Rector and IRI Director General Signed a cooperation agreement for training, common research and information exchange

The Rector of Saint Joseph University, Professor Salim Daccache, and the IRI Director General, Dr. Bassam Frenn, signed a cooperation agreement between the university and the institute, at the Campus of Innovation and Sports – Damascus Road, in the presence of the Vice-Rector of the university, Father Michel Scheuer s.j, the vice-rector for scientific research, Professor Dolla Sarkis, as well as vice-presidents for academic and administrative matters, deans and academics. Also, Dr. Frenn accompanied senior directors and researchers from the Institute.

Firstly, Professor Sarkis welcomed the audience, and praised the importance of this cooperation which she described as seamless, between the two parties. She commended the positive role of the laboratory manager at the Institute, Dr. Joseph Matta, who is at the same time a lecturing teacher at the Faculty of Pharmacy, at Saint Joseph University.



Saint Joseph University – Beirut
September 20, 2016

Daccache

For his part, the Rector of the University, Professor Salim Daccache, expressed his happiness on the occasion, namely because this agreement aims at enhancing the scientific research dynamics, which are an important component for development, in addition to being an inherent part of the mission of the university.

Frenn

As for Dr. Frenn, he assured that “this gathering is a translation of our cooperation in terms of applied research, innovation, quality, technological exchange, as well as enhancement of partnership networks

between local and international partners, in order to develop scientific research”.

He also expressed his pride, “because we implemented our strategic vision through three axes:

- Planning and development of technical knowledge in laboratories of different fields of specialization, an in specialized centers.

- Performance of our regulatory system, regarding quality and certifications.

- Scientific interactions and cooperation with international institutions”.

I also consider that the agreement constitutes a legal framework for fruitful cooperation between both parties.



Content of the Agreement

The agreement stipulates several points, including:

- Setting training programs and participating in them;
- Setting common research programs and participating in them;
- Constantly exchanging information on scientific activities;
- Receiving the partner's researchers, trainers and students and facilitating their stay;
- Exchanging technical and administrative employees...

In addition to practical points that facilitate the work of both parties and serve scientific research.



Foreign activities of the IRI Director General

Dr Bassam Frenn empowers the IRI To participate in the International Conference on Smart Cities and Green ICT Systems (SMARTGREENS)

Rome – April 2016

Dr. Bassam Frenn, Director General of the IRI, had a remarkable presence at the International Conference on Smart Cities and Green ICT Systems (SMARTGREENS), held in Rome, Italy, from April 23 to 25, 2016.

The international conference aimed at gathering researchers, designers, developers, and professionals who care about developments and applications pertaining to modern cities, information technologies, green communications, sustainability, as well as systems and technologies that raise consciousness about energy.

Since the beginning of the third millennium, the IRI has been showing great interest in environment and matters related to it.

Amidst continuous efforts to update the Lebanese reality in the fields of environment and energy, the IRI has been developing, since many years, an evaluation



system for green buildings, known as CEDRE, which is an abbreviation for Construction Ecologique et Durabilité Réglementaire Environnementale, translated as a “system of ecologically sustainable constructions”.

The Institute is developing this system thanks to its special bonds with French institutions, which work on implementing the HQE-Hautes Qualités Environnementales (or High Environmental Quality) system, such as Certivea, which instituted, two years ago, a company specialized in implementing the bases of this system, known as Cerway.

...And he presided the Lebanese delegation in Munich - Germany To take part in the international conference on nondestructive testing

The IRI Director General, Dr. Bassam Frenn, presided the Lebanese national delegation, which included Tarek el Hakim, head of department at the Lebanese Welding Center, and Eng. Siham Youssef, head of the Publishing and Documentation Center, to Munich - Germany, where the IRI participated in the 19th international conference on nondestructive testing, from June 13 till 17, 2016.

Since the IRI is part of the international conference, it was present at the fair, to introduce the activities of the institute in the fields of welding and nondestructive testing.

Besides, Eng. Tarek el Hakim participated in the meetings of the technical committees, held in the course of this conference.



Munich - June, 2016

A conference in Paris on a "winning partnership with Africa" Attended by the Director General and Lebanese businessmen

On October 20, 2016, Dr. Bassam Frenn fulfilled an invitation by the Franco-Lebanese Chamber of Commerce in Paris and Ile de France, and participated in common business meetings between France and Lebanon, held in Paris an entitled: "towards winning partnerships in Africa".

The meeting was organized thanks to a cooperation between the Franco-Lebanese Chamber of Commerce, Banque du Liban, the Association of Lebanese Industrialists, the ESA Business School, and Business France. It gathered more than 250 businessmen who came from Lebanon and the Lebanese Diaspora in Africa to French institutions.



Paris - October, 2016



The event aimed at:

- Establishing relations between French institutions on one hand, and institutions and businessmen from The Lebanese Diaspora in Africa on the other, in order to enter business partnerships.
- Establishing relations between French and Lebanese institutions in the city, in order to sign partnerships in Africa, relying on the Lebanese Diaspora in Africa.

...And also participated in the Mediterranean Economic Week in Marseille

To link Mediterranean countries to digital technology.

Marseille - November, 2016

The IRI was also present at the 10th edition of the Mediterranean Economic Week, and was represented at the highest levels by the IRI Director General, Dr. Bassam Frenn. The Mediterranean Economic Week was held between November 2 and 4, 2016, in the French city of Marseille.

The 10th edition of the Mediterranean Economic Week was launched with a very warm and welcoming opening party. The main introductory session was about the “shift to digital technology and change within the company in the Mediterranean region”. The events of the week took place at La Villa Méditerranée, near the international marine station in Marseille, which hosted, for three days, workshops, conferences and



dialogue roundtables, in coordination with OCEDO (Office of Economic Cooperation in the Mediterranean and the Middle East).

Throughout the ages, Marseille has always been a link between Mediterranean countries. In the tenth edition of the Mediterranean Economic Week, it is taking the linkage between those countries to a whole new level, where digital technology is prevalent.





Laboratory services,
observation and activities

3

The Industrial Research Institute did not counter its previous path of activities, and even enhanced it with the continuous development it has been seeing since 2008, the year when Dr. Bassam Frenn came to preside its administration, transforming it to a scientific emblem that he kept safe from surrounding trends, which were influenced by wars and economic shocks and led to wiping away development and growth. Also, he protected the IRI from internal political tensions and from the decrease of economic activity, thus ensuring its commitment to the ethics of functional work and success, and becoming a bridge between all the national economy sectors, thanks to scientific data that helped strengthening its market position both locally and abroad.

This way, the IRI has remained the leading scientific institution in Lebanon and the East, being able to utilize its scientific capacities and the abilities of its laboratories, as well as its and human resources, to serve not only the industrial sector, but also the public sector, providing funds and granting scientific support - and swift results - with the campaign aimed at supervising and checking agricultural, industrial and health care products, answering the requirements of the Ministries of Economy and Trade, Industry, Health and even Agriculture in Lebanon, in addition to supervising new liquid gas bottles. The daily workload rate in the fields of experimentation and customs files alone reached 3585 operations, thus

creating the biggest work cell in Lebanese institutions.

The total numbers of experiments, tests and auditing operations, were distributed as follows:

- 354972 experiments and analyses in the field of compatibility, performed by the IRI laboratories during 2016, in an increase of 9120 operations, or 2,6%, from 2015, at a daily rate of 1270 experiments.
- To these experiments are added external detections, whose number reached 336, in addition to 615750 gas bottles.
- Also, the number of measurement and calibration experiments increased by 2228 experiments, or 14,8%, to 17304 experiments.
- The IRI worked in the field of investigation, about whether the merchandise arriving from the external Lebanese gates is compatible with the mandatory specifications. Thus, it verified 44004 files, and stayed at almost the same level of 2015, i.e. 44291 customs files, at the rate of 152 files per day.

Hence, the IRI proved its competence as a caring scientific institution that is capable of assimilating the needs of the public administration and private sector, in order to achieve scientific and technical experiments in many fields, with precision and efficiency, and to prepare researches and scientific studies in all fields of economy.

Experiments and Analyses

Generally speaking, electricity laboratories outpaced other laboratories, as per the number of experiments they performed in 2016, by almost 34%, thus preceding the engineering and soil laboratories, whose share in the experiments was of 26,2%. The rate of participation of chemical laboratories was of 20%, while activity in the fields of bacteriological tests almost reached 38000, or roughly 10,6%... followed by petroleum laboratories, then the central laboratory for wheat and flour research, then textile laboratories...

Experiments included 55293 samples of the various mentioned types.

The welding laboratory, for its part, performed 3281 experiments on nearly 29 projects.

According to statistics tables, the laboratories activities appeared as follows:

Number of experiments in each laboratory

Year	2016	2015	2014	2013
Chemistry and Physical chemistry	71 400	72 850	63 349	53 806
Bacteriological analyses	37 620	39 614	33 816	19 974
Textile-leather-rubber	6 830	6 397	3 835	5 714
Paint - Petroleum and derivatives	13 200	12 450	2 895	5 037
Civil engineering	93 073	72 972	83 110	78 833
Electricity	119 595	130 011	127 402	124 577
Central laboratory for wheat and flour research	9 973	7 543	12 356	8 837
Welding	3 281	4 015	3 785	9 045
Total	354 972	345 852	330 548	305 823

Sample Number- Laboratory

Laboratory	2016	2015
Chemistry and physical chemistry	12840	10870
Bacteriological analyses	7100	6935
Textile, leather and rubber	1200	1436
Paint - petroleum and derivatives	2200	1150
Civil engineering	17876	13325
Electricity	13079	17506
Central laboratory for wheat and flour research	998	1079
Total	55293	52301

Chemistry and physical chemistry laboratories

The total number of experimentation operations inside chemistry and physical chemistry laboratories reached 71400, decreasing by 1450 experiments or 2%, and making an almost 20% share of all laboratories experiments.

Bacteriological analyses

There was a decrease in bacteriological experiments, due to the declining number of samples sent by the public sector, aimed at ensuring water and food safety and others. 37620 experiments were performed in 2016, decreasing by 1994 experiments, or 5% from 2015.

These experiments represent 10,6% of the total number of experiments.

Textile, leather and rubber laboratories

There was an increase in the number of experiments and analysis operations in those laboratories, proving that the local textile and garment industry has recovered some of its full production capacity. In view of the decrease in the export volumes from Syria, or the inflow of capable Syrian workforce to Lebanon, the number of these experiments and tests reached 6830, representing 1,9% of total experiments, or an increase of 6,8%.

Petroleum and derivatives laboratories

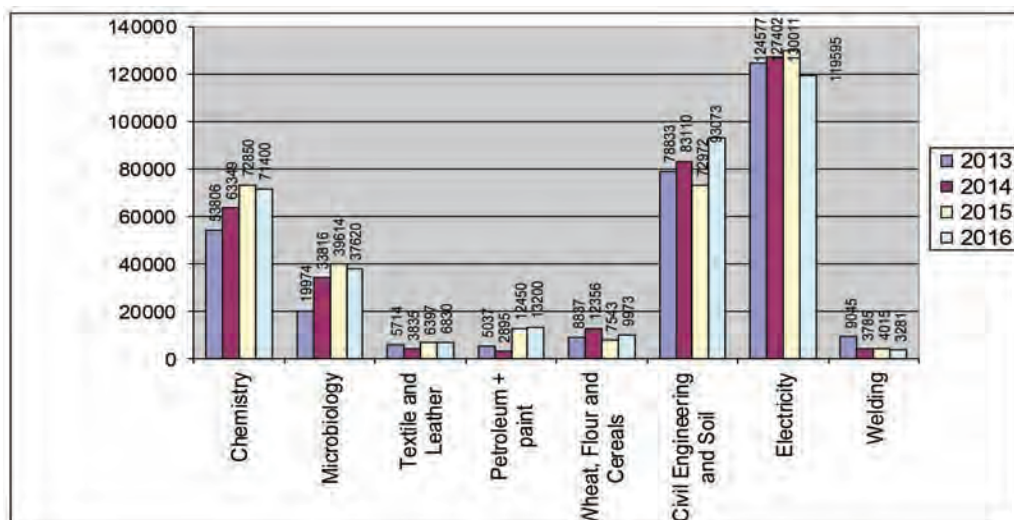
Also, paint and petroleum laboratories made a big jump from 2895 experiments two years ago to 12450 experiments in 2015, thus increasing by 330% and 13200 experiments in 2016.

Civil engineering laboratories

There was remarkable activity in civil engineering and soil laboratories, which saw an increase from 72972 experiments in 2015 to 93073 experiments, thus jumping by 20101 experiments or 27,5%. This proves how active the construction sector is in Lebanon, and shows demand for various construction materials and equipments. These experiments represent 26,2%, or more than a quarter of the activity in IRI laboratories.

Electricity laboratories

During this period, the activity of electricity laboratories decreased from its traditional pace of growth seen between 2010 and 2015, at an annual rate of 14,4%. The number of electric devices experiments reached 119595, declining by 10416 experiments or an 8% rate.



The central laboratory for wheat and flour research

In light of the intense cooperation between the Ministry of Economy and Trade and the IRI, and as the Minister of Industry, Dr. Hussein Hajj Hassan says of the IRI, "it served the Ministry of Economy and Trade, given the responsibility it has to perform laboratory tests on imported wheat, as well as to test the majority of imported and locally produced goods". The central laboratory for wheat and flour research performed 9973 experiments, in an increase of 2430 experiments, or 32,2%, since 2015.

Welding laboratories

As for the number of welding operations, it reached 3281, thus decreasing by 18%.

Metrology and calibration laboratories

Metrology laboratories pursued their activity, and showed growth in the number of experiments it performs. Thus, it saw an increase of 2228 operations, or 14,8%, and performed 17304 experiments, compared with 15076 experiments in 2015.

These laboratories received 1887 metrology devices, in an increase from 273 devices from 2015, and they were used to perform 17304 experiments.

Experiments were distributed in the fields of temperature, pressure, force, masses, dimensions and electricity.

The activity of those laboratories came as follows:

Temperature

Temperature laboratories received 512 devices and performed 5120 experiments, adding 860 experiments or 20,1%, at a rate of 10 experiments per device, which is the same rate since 2010.

Pressure

There was a total of 87 pressure devices set and delivered for experiments, and they performed 696 experiments, at a rate of 8 experiments per device, which is the same as the adopted rate.

Force

Force measurement laboratories received 5 devices, and were asked to measure their force. Those devices were used to perform 40 experiments, at a rate of 8 experiments per device.

Masses

The number of masses was of 1062. 9680 experiments were performed on them at the rate of 9,1 experiments per unit. Also, the number of units saw a yearly increase of 10,2% and the rate of experiments an increase of 7,3%.

Dimensions

The number of units grew to 115 and of experiments to 920, thus increasing by 121,2 respectively for units and experiments.

Electricity

The number of experiments on electricity field devices increased in 2016, with 63 devices compared to 54, and 504 experiments, compared to 432, and a growth by 16,7%.

Various experiments

As for various experiments, the number of devices decreased from 47 to 43, and 344 experiments were performed on them.

Metrology and calibration laboratories

Year	2016		2015		2014		2013		2012		2011	
	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test	Unit	Test
Total activity												
Temperature	512	5 120	426	4 260	408	4 080	431	4 310	328	3 280	241	2 410
Pressure	87	696	68	544	59	472	59	472	93	744	103	824
Force	5	40	3	24	2	16	6	48	19	152	15	120
Masses	1 062	9 680	964	9 024	911	8 480	820	7 885	737	7 008	618	5 844
Dimensions	115	920	52	416	60	480	68	544	83	664	58	464
Electricity	63	504	54	432	92	736	117	936	115	920	131	1 048
Various experiments	43	344	47	376	8	64	9	72	24	192	28	224
Total	1 887	17 304	1 614	15 076	1 540	14 328	1 510	14 267	1 399	12 960	1 194	10 934

External control

Laboratories of the Industrial research Institute performed 336 external control operations in 2016. These include controlling and having a careful examination of natural gas reservoirs through 162 operations, controlling and calibrating oil reservoirs through 93 operations, and controlling boilers through 81 operations.

Control has encompassed 615750 locally made gas cylinders.

External Control

Activity	2016	2015	2014	2013
Examination of gas reservoirs	162	170	420	410
Examination and calibration of oil containers	93	70	51	53
Examination of steam boilers	81	108	132	120
Examination of various pressure devices				
Total	336	348	683	583
Examination and control of locally produced gas cylinders	615 750	8 000	8 000	24 000
Examination and control of imported gas cylinders	0	29 500	15 000	0

Customs Files

The Industrial Research Institute audited 44004 customs files in 2016

The number of customs files bound for IRI investigation was close to 44,291 in 2015 and decreased to 44004 files in 2016. However, this number grew from 18,532 files nine years ago, and recorded an annual median growth rate of 11,5%, with 152 daily transactions, in comparison with 142 in 2014.

In fact, the Syrian war, closure of land border crossings to transit vehicles transporting merchandise by land from Jordan, Iraq and Turkey all led to a decline in the movement of transiting goods back and forth through the Masnaa gate, which links Lebanon to Syria.

The IRI is reviewing and auditing customs files, in addition to several tasks it is bound to fulfill since 2005, in order to ensure that imported products match the mandatory Lebanese standard specifications.

Were it not for the events in Syria and Iraq, which impact transit movement through the Masnaa gate, the number of customs files under investigation would have increased and grown much further.

Audits show that files subject to scrutiny represented almost 70% of the total number of investigated files. It also turned out that 1393 files of them do not abide by the mandatory requirements, and this number represents 3.16% of the total number of files. 1349 of those files were rectified, while 44 others were cancelled.

The IRI is investigating about 60 files in its transit stations or under horizontal specifications, and all files are reviewed and returned to their owners the same day. It is notable that 40% of the merchandise under investigation enters warehouses before it is allowed to be marketed.

Files were distributed according to industrial sectors as follows:

1- Files that are not subject to investigation:

These are files received by the IRI, but they are not subject to the auditing mechanism, and are out of it, because they do not abide by any binding specifications that can be used for comparison. The number of those files increased from 4594 in 2007 to 12909 in 2016, and decreased from 13071 in 2015.

These files are reviewed at the IRI. They have a

mention on them, stating that they are not bound for investigation in the same day of their reception.

2- Prior investigation

The number of merchandise files bound for prior scrutiny in the export country, before being shipped to Lebanon, decreased to 1461 files, representing 3.3% of the total, in comparison with 4% in 2014, 9% in 2012 and 4.7% of the total number of files in 2013.

3- Horizontal specifications

The files abiding by horizontal specifications represent 22.3% of the total number of files and 28% of the files under investigation. These files are reviewed and returned to their owners in the same day. Their number increased from 4300 in 2007 to 9788 in 2016.

4- Investigation of the stocked merchandize

These are files subject to investigation after the merchandize mentioned in them had been stocked. The number of such files reached 13057, in comparison with 12953 in 2015. They represent 29.7% of the total number of files and 42.5% of the files subject to investigation and auditing.

5- Investigation at border crossings

The percentage of files subject to investigation at border crossings decreased from 25.2% to 14.6%, and their number reached 6420. Among those, 3844 files were audited at the Beirut Airport, 2521 files at the Port of Beirut, 5 files at the Masnaa gate, and 50 files at the Port of Tripoli.

File Distribution according to type and transit gates

Customs files subject to auditing and investigation at the IRI were distributed in accordance with the type of merchandise as follows:

Electrical items and devices represented the biggest share, with 28.2% of the total and 12388 files. Chemical devices and items, as well as medical devices, represented more than half of the files. The number of chemical files reached 7721, representing 17.5%. That of medical device files reached 5894, representing 13.4%, followed by sanitary ware and ceramic tiles files, whose number reached 4078, representing 9.3%, and then the common files, whose

Laboratory services, observation and activities

number reached 3529, representing 8%.

There were 2771 files for textiles, representing 6.3%, and 2698 for paints, representing 6.1%... the number of car tire files reached 1705, while the mechanical engineering files reached 1184, pressure device files

reached 197, and energy files reached 171.

The Port of Beirut had a share of 71.5%, with almost 31430 files, followed by the Rafic Hariri International Airport - Beirut, with 27% or 11933 files, and the Port of Tripoli with 524 files.

Customs Files by Type

	Pre Shipment	Chemical	Electrical	Medical	Elevators	Mechanical	Energy	Paint	Pressure	Soil	Textile	Vehicle	Common Files	TOTAL
Total	1461	7721	12388	5894	207	1184	171	2698	197	4078	2771	1705	3529	44004
Subject	1461	5817	7970	5292	154	578	114	713	68	3956	2219	0	2384	30726
Not Subject	0	1904	4161	577	52	600	56	1985	128	106	552	1705	1083	12909
Not Subject after Inspection	0	0	257	25	1	6	1	0	1	16	0	0	62	369
% Not Subject	0.00	24.66	35.66	10.21	25.60	51.18	33.33	73.57	65.48	2.99	19.92	100.00	32.45	30.17
Non Conform	0	9	861	95	0	0	36	29	3	303	57	0	0	1393
% Non Conform	0.00	0.15	10.80	1.8	0.00	0.18	31.58	4.07	4.41	7.66	2.57	0.00	0.00	4.53
Corrective Action	0	5	842	92	0	0	36	14	3	303	54	0	0	1349
Rejected	0	4	19	3	0	0	0	15	0	0	3	0	0	44

Customs Files by Borders' Entry

	Pre Shipment	Chemical	Electrical	Medical	Elevators	Mechanical	Energy	Paint	Pressure	Soil	Textile	Vehicle	Common Files	TOTAL
Masnaa	0	32	2	0	0	4	3	2	5	0	0	0	0	48
Port	1461	5150	8552	1303	183	1112	154	2528	162	4035	2371	1605	2814	31430
Saida	0	0	0	0	0	0	0	0	0	0	69	0	0	69
Tripoli	0	283	16	7	0	0	1	13	1	9	129	33	32	524
Airport	0	2256	3818	4584	24	68	13	155	29	34	202	67	683	11933
Total	1461	7721	12388	5894	207	1184	171	2698	197	4078	2771	1705	3529	44004

Authentication certificates

The Industrial Research Institute is pursuing its quest to enhance and support the Lebanese industry condition. Till the end of 2016, it provided 26 industrial institutions with the ISO 9001 certificate, 4 institutions with the ISO 14001 Environment Management System Certification, 2 institutions with the ISO 22000 Food Safety System Certification, 3 institutions with the ISO 13485 Medical Devices -- Quality Management Systems Certification, one institution with the 18001 OHSAS certification, which aims at developing a set of specifications for occupational health and safety management systems.

ISO 9001 Certified:

Yendis Hair since 2014	Château KSARA since 2003	LECICO since 2008
Centre Hospitalier El Youssef since 2005	Holcim (Liban) SAL since 2003	MIRODEC since 2011
Holcim Béton since 2008	Integrated Digital Systems since 2004	Nasri Karam & Sons since 2003
Harfouche Trading & Industrial Pastel Paints since 2004	MDM Plastics since 2003	ACET since 2012
MONDI since 2010	Nakhlé Zgheib & Co. since 2008	Vervie since 2013
Produits & Solutions Informatiques – PSI since 2002	SOIME since 2012	Multichem since 2015
SADAPACK since 2012	Betomix since 2009	Holderchim Building Chemicals since 2014
Building Chemicals Company since 2014	Elie Melhem Clinic since 2014	Vanrise Solutions since 2014
Emena Pharma since 2016	United Investment and Trading CO since 2016	

ISO 14001 Certified:

Holcim Liban since 2004	Building Chemicals Company since 2014
Holderchem Building Chemicals since 2014	Multichem since 2015

ISO 22000 Certified:

Château KSARA since 2009	DAHER INTERNATIONAL FOOD since 2011
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ISO 13485 Certified:

Medical Distributing & Manufacturing (MDM) since 2010	Steritech since 2010	Lebanese International technologies since 2014
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OHSAS 18001:

Mondi since 2013

Product Authentication Certificate

45 products in 11 productive institutions received the Quality Certificate from the IRI in 2014.

11 companies with IRI certified products (45 products certified)

<p>Poppins</p> <ul style="list-style-type: none"> - Corn Flakes, Choco Flakes, Honey Flakes, Frosted Flakes - Cereal bars (10 Bars) - Honey roundies - Choco bits, choco pops, Choco bumps - Daily bran - Fruity Bytes (4 flavors) - Honey pops 	<p>Cimenterie Nationale</p> <ul style="list-style-type: none"> - P 52.5 BTNA RMS - P 42.5 BTNA RMS - P 42.5 - CS 42.5 ChB - PAL 42.5 	<p>Holcim</p> <ul style="list-style-type: none"> - P 42.5 BTNA RMS - PAL 42.5 - C-S 42.5 ChB - P 42.5 	<p>LECICO</p> <ul style="list-style-type: none"> - Sanitary ware
<p>Lematic</p> <ul style="list-style-type: none"> -Refrigerators, Freezers and Bottle Coolers 	<p>Haykal Plast</p> <ul style="list-style-type: none"> -HDPE pipes 	<p>Ciment de Sibline</p> <ul style="list-style-type: none"> - PAZ 42.5 - PAL 42.5 - PRMS 42.5 - P 52.5 	<p>Sannine</p> <ul style="list-style-type: none"> - Bottled mineral water 0.5l, 1.5l, 2l
<p>Almaza</p> <ul style="list-style-type: none"> - Almaza Beer alcoholic - Laziza non alcoholic 	<p>Sarkis CO.</p> <ul style="list-style-type: none"> - HDPE pipes 	<p>Techniplast</p> <ul style="list-style-type: none"> - HDPE pipes 	

Certificates for Qualified Individuals

The IRI grants certificates to individuals, allowing them to perform an examination of the systems and products quality, in cooperation with the French institutions AB Certification and FREA.

Certificates were distributed as follows:

76 welder

1 non-destructive tests inspector

45 trainees in non-destructive tests

51 Awareness according to ISO 9001:2015

13 Awareness according to ISO 14001:2015

The Lebanese Welding Center Certificates

Under Law No. 423/2002, which considers “the Industrial research Institute as the side granting accreditation and allowed to issue certificates of conformity of all kinds in the welding sector”, the Institute distributed 120 welding certificates through the Lebanese Welding Center, and one Inspection certificate for non-destructive tests.

Lebanese Welding center	2011	2012	2013	2014	2015	2016
Welding certificate through the Lebanese Welding Center	55	30	43	118	144	120
Inspection certificate for non-destructive tests	1	1	1	1	1	1

New equipments in the GCS laboratory:

1) Hydrostatic pressure tester used to determine the resistance of thermoplastics pipes and short-time hydraulic burst to constant internal water pressure at a constant temperature. It is applicable to thermoplastic pipes intended for the conveyance of fluids.



2) Optical emission spectroscopy (OES) used to verify elemental composition and grade identification of metal. It requires a preparation of flat surface of material to ensure a clean burning.



New equipments at the Central Lab for Bread and Wheat (CLBW)



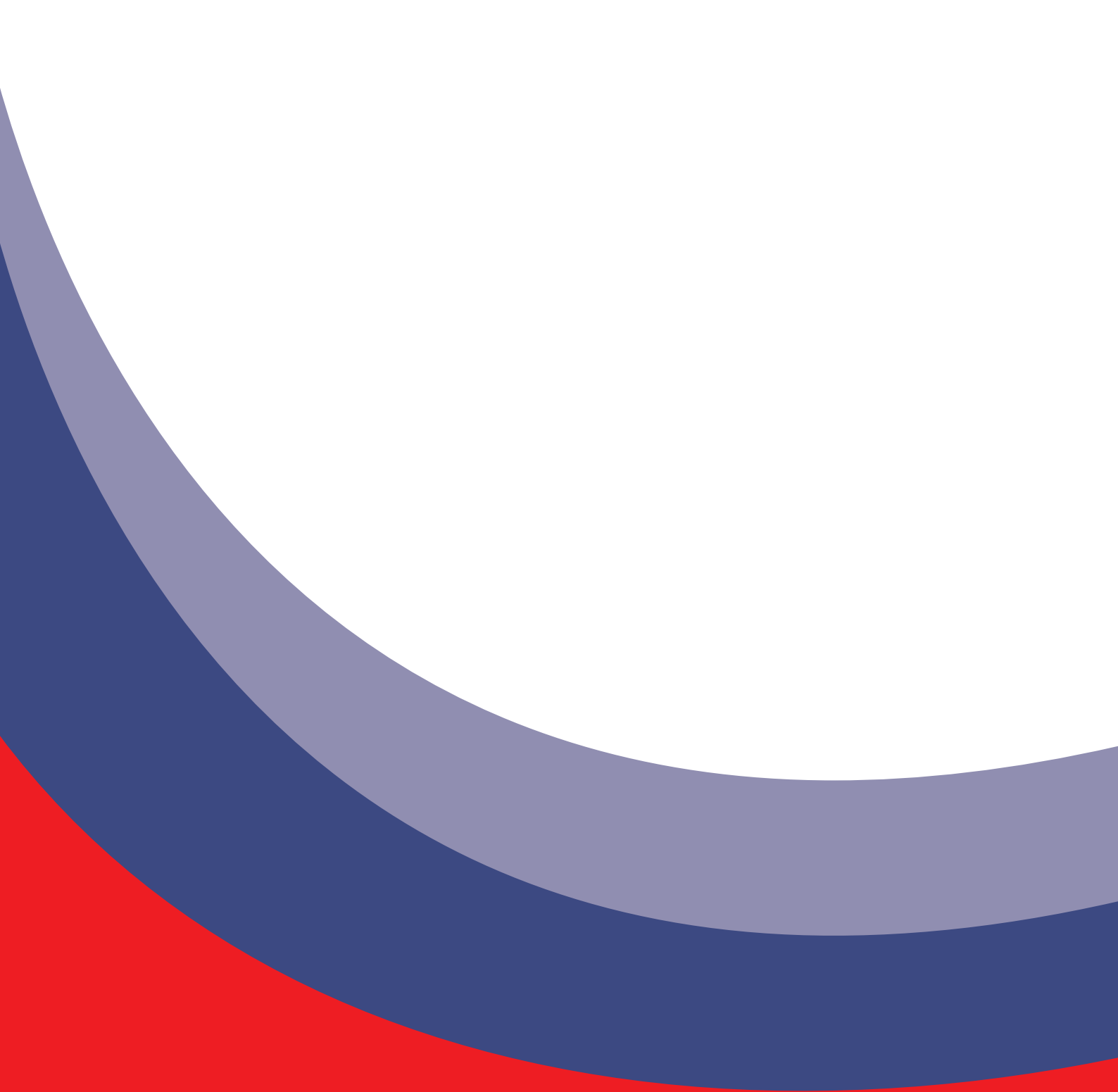
FOSS KJELTEC 8200: Fully automated Distillator for the determination of Nitrogen and Protein content of several matrices with high repeatability and accuracy.

NABERTHERM Furnace: This highly accurate automated furnace can cope with a large batch of samples for the determination of "total ash".

Both of these equipment are highly efficient and Rapid and are mainly used for the application of Decision No. 31/H CH issued by the Ministry of Economy and Trade of 24/05/2016.

Delivering quick and accurate result for wheat flour samples.







International Accreditation

4

Quality management overview

The Industrial Research Institute enhances the quality management department

Classified as one of the strictest accreditation systems

Quality management section personnel assisted by 40 trained auditors keeps and maintain a sound quality management system in accordance with the ISO17025 & ISO 17020 requirements.

With 1000 controlled documents, 30 Key Performance Indicators continuously monitored, 500 man-days audits and assessments performed, the competence of IRI was recognized from the most rigorous accreditation bodies in the world (successively DAP, DACH, DAKKS, ACLASS and ANAB) .

In addition, IRI regularly participates in international proficiency testing rounds to validate its results. Until date, 1800 tests were done for 1200 parameters with a successful ratio of 97%.

This robust quality management system helped the Institute becoming a key player in the National Quality Infrastructure and earning the confidence on national and international of the most prestigious organization thus enhancing its network of partnership.

The scope of accreditation is gradually expanding, and actually covers more than 350 tests methods in different fields as detailed below:



CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board

500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

**Industrial Research Institute
Lebanese University Campus, IRI Building, Hadath (Baabda)
Beirut Lebanon 11-2806**

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the fields of

CALIBRATION AND TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of calibrations and/or tests to which this accreditation applies.

ACT-1898

Certificate Number

ANAB Approval

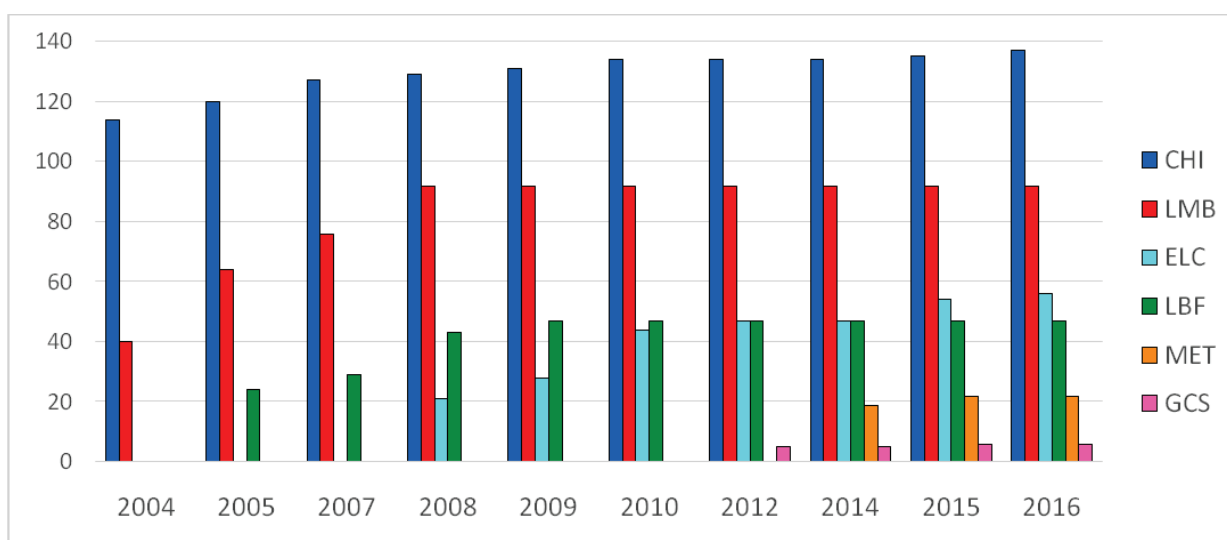
Certificate Valid: 12/09/2016-11/03/2018
Version No. 002 Issued: 12/09/2016



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).

IRI Scope : Fields coverage

- **Chemical, physic-chemical and microbiological** testing of food and animal feeding stuff, vegetable oils, water for human consumption & waste water, cosmetics, wet wipes & baby diapers
- **Electrical** testing of household appliances, electrical products, luminaires, lamps&lead acid batteries, circuit breakers
- **Physico-chemical and rheological** testing of grain, flour, cereals, pulses, feed,milled products & by products in bulk and sacs
- **Mechanical calibration** of conventional masses (class E2 & lower) and balances (on site & in permanent laboratories)
- **Physico-mechanical** testing of cement and ceramic tiles



	2004	2005	2007	2008	2009	2010	2012	2014	2015	2016
CHI	114	120	127	129	131	134	134	134	135	137
LMB	40	64	76	92	92	92	92	92	92	92
ELC				21	28	44	47	47	54	56
LBF		24	29	43	47	47	47	47	47	47
MET								19	22	22
GCS							5	5	6	6
TOTAL	154	208	232	285	298	317	325	344	356	360

Scope details are available on the website: www.iri.org.lb accreditation section





Internal and External
Activities

5

Seminars and workshops

In 2016, the Industrial research Institute organized training seminars and workshops, and sent delegations abroad to represent it. Thus, 160 employees and workers from the Institute participated, and spent 386 days/participant at those seminars and workshops, including 131 participants in local seminars, with 236 days/participant, and 29 participants abroad, with 150 days/participant.

Internal Activities

The Industrial Research Institute is organizing awareness activities To improve the intelligent energy management

The IRI is organizing awareness activities about sustainable development and the procedures needed to improve our society. Thanks to its belief in the principles and concepts of sustainability, and in implementation of its pioneering role to push Lebanese institutions in general, and industrial ones in particular, toward the best, the IRI implemented projects that will improve its energy performance, and help setting the example for other institutions.

In July 2012, the IRI launched the first solar electricity generator in Lebanon, working at 56 Kilowatts. It was fully financed by the Institute and did not stock any energy. Thus, the produced power was immediately consumed by IRI equipments. Analyses for the years 2013, 2014 and 2015 show that this generator absorbed nearly 8% of the IRI electricity needs, with a median production rate of more than 80 megawatts/hour yearly.

In February 2016, the IRI launched a second generator, working at 30 Kilowatts, and boards were fixed on its southern façade for three main purposes:

one being esthetic, the second aiming at shading the IRI passageways from sunlight, in order to decrease the temperature inside the premises in summer, so it requires less air conditioning, and the third being electricity production. To implement this project, the IRI made use of European funds, through the Foster In Med program, which chose the IRI building among dozens of others in various countries, to set the example for other buildings, and after publishing herein some of the dimensions implemented on both generators, it appeared that these generators produced more than 10% of the IRI needs in electricity in less than a year. In this context, we are sure to surpass a 15% rate when analyzing a whole year of information, and after setting a small 5 kilowatt generator, within the scope of the FACEP program for training on energy techniques, which helped the total solar energy production capacity reach 91 KWP in 2016. Of course, increasing the IRI solar power production capacity is part of the institute plans in the upcoming years, in addition to internal procedures aimed at getting energy efficiency, through setting energy efficient devices in the building.

Launching of a training platform on photovoltaic collectors

As part of the activities implemented by the IRI in cooperation with European countries, the multiple energies training platform on photovoltaic collectors was launched, with the sponsorship and presence of the Minister of Industry, Hussein Hajj Hassan, the Minister of Energy, Arthur Nazarian, and the French ambassador Emmanuel Bonne. The platform was collectively financed by the French government, the Lebanese Center for Energy Conservation and the IRI.

The platform aims at training university and technical institute students on the way to produce electricity from solar energy, as well as on the steps, structure and maintenance of that operation.

Several months after the launching, three training sessions were organized for experienced specialists and university teachers, so they could become specialized trainers for that platform.



The IRI sponsors the conference on renewable energies for developing countries and presents papers on the scientific view of the IRI directorate general

As part of the sponsoring group for the international conference on Renewable Energies for Developing Countries "REDEC 2016", which was organized at the Notre Dame university (NDU) from 13 till 15 July, Eng. Achraf NASSER EDDINE, representative of the Industrial Research Institute, presented two sessions concerning two research papers prepared at the IRI with the Technology and Development Director Dr. Imad Hage Chehade. These researches come in accordance with the scientific vision of the general directorate of the institute, to help the industrial institutions in all aspects of studies and researches. Scientific issues discussed during the conference are described in the below abstracts and they will be published in IEEE Xplore.

A Performance evaluation of an installed photovoltaic system without energy storage.

Case study: IRI premises.

Abstract—Lebanon has a significant potential for the



installation of photovoltaic systems. This technology of renewable energy is ecological, supplants other sources of energy and is widely attainable.

The objective of this paper is to examine and evaluate the performance of an installed PV generator during three years 2013-2015. This case study of the integration of 56 kWp at the Industrial Research Institute (IRI) includes accurate data for solar radiation, energy production, benefits in fuel savings and reduction in CO2 emissions.

The results can be used at any place with similar climatic conditions where these types of data are either

missing or unavailable. All the data collected from this study will grant us an opportunity for installing and integrating a photovoltaic system into any industrial and residential building in Lebanon. It comes in accordance to the vision of the general directorate of the institute to help the industrial institutions in all aspects of apprehension, studies and researches.

Estimation model for global solar radiation in Lebanon.

Abstract—Availability of solar radiation data is very scarce in Lebanon and it is often not accessible. The estimation of solar data is the most important parameter for designing and developing various solar energy systems such as photovoltaic, solar water heater and concentrated solar power.

The main objective of this paper is to present a comparison between different estimation models for global solar radiation based on sunshine duration applicable in Lebanon. Subsequently a new correlation is proposed to estimate the monthly average daily global solar radiation in Lebanon.

Measured data were obtained from the photovoltaic system installed on the roof of the Industrial Research Institute during 2013- 2015. Estimated data of seven previous models and a proposed coefficients model are compared to measured data based on the root mean error, the main bias error and the maximum permissible error. The results of using the new coefficients revealed that the error is minimized, and this new correlation can be used to predict the monthly mean average daily global solar radiations.

The Industrial Research Institute presents the real photovoltaic platform during the Berytech workshop

Within the framework of the “shams” project, students from the Lebanese University and Saint Joseph University (USJ) participated in a workshop on solar energy, at the technical business incubator Berytech in Mar Roukoz.

The workshop aimed at enhancing people’s awareness about solar energy use, through the transfer and application of good practices in legal, organizational, economic, and company matters, and through financing mechanisms, with the aim of helping access solar technologies with more ease.

The workshop included two sessions. The first was presented by Professor Imad Mougharbel, academic coordinator for the Master’s degree in researches on renewable energies at the Lebanese University. As for the second session, it was presented by Eng. Nasser Eddine, representing the IRI.

The event was organized with the aim of checking the performance of a 56 KWP real photovoltaic platform that was set on the rooftop of the IRI building.

For the fourth consecutive year, the Lebanese Welding Center organizes a training session for students of the Engineering Faculty at the Lebanese University

For the 4th consecutive year, the IRI Lebanese Welding Center organized a training session in the field of welding and non destructive tests, for the students of the Faculty of Engineering, at the Lebanese University. The session was held from 25/07/2016 to 09/09/2016, as an implementation of an agreement set between the IRI and the Faculty of Engineering at the Lebanese University.

The session was done with the participation of 44 students from the three branches of the Faculty of Engineering. Those majored in mechanical and petrochemical engineering. The session was supervised by the training staff of the Lebanese Welding Center, which divided the participants into 6 groups. Each group received two weeks of training, during which they theoretically learned the various welding methods, then applied them manually, using the electric welding method. During the second week, students took part in extensive and detailed lectures,



and got acquainted to non destructive tests, various kinds of welded material, and performed various tests, including visual testing, potent liquid testing, magnetic particle testing, ultrasound testing and finally x-ray testing, after which, students were able to apply the various testing methods on several welded materials, and to find out their defects.

National conference of management and valorization of wastes in Lebanon

The Industrial Research Institute, represented by Professor Joseph MATTA, participated in the National conference of management and valorization of wastes in Lebanon, organized by the Ministry of Industry, the ministry of Environment, the Lebanese University and the Lebanese Association for Advancement of Science (LAAS), that took place at the faculty of Engineering of the Lebanese University on 12 January 2016.

Professor Joseph Matta described the IRI activities in this field such as the specialized technological consulting services in the Treatment Techniques and in the Environmental Impact Assessment. He emphasizes on maintaining close co-operation with official institutions and industrial organizations and mentions the studies conducted as well as the applied



research performed at IRI in the wastes field. Professor Matta finally defined the procedures needed for field and laboratory quality control, for sampling, for determining hazardous constituents, properties and characteristics in wastes.

Symposium on the Entrepreneurial University at the Holy Spirit University of Kaslik (USEK)

Professor Matta: The Entrepreneurial University should be an incentive to launch an economy based on knowledge

Kaslik - January 26, 2016

Professor Joseph Matta represented Dr. Bassam Frenn, Director General of the Industrial Research Institute, at the Entrepreneurial University Symposium, organized by the Holy Spirit University of Kaslik (USEK) on January 26, 2016.

The symposium aimed at developing a culture of entrepreneurial business among doctoral students in Lebanon, to encourage them to participate in the economic development of the country.

According to Professor Matta, the Entrepreneurial University should actively participate in the economic and social development of the country, and become an incentive to launch an economy based on knowledge.

It seems that transformation of universities into Entrepreneurial Universities has become a basic standard in each dynamic university. In addition, partnering with institutions has a crucial importance in the teaching and research sector, in light of the continuous dynamic interaction between universities and institutions, of which both parties benefit. Relations between universities and institutions are multi-faceted and include: consulting services, training, research, development, creation of institutions and transfer of technology.

He insisted that the tackled subject is part of the aims the IRI tried to achieve before anybody else, in its quest to fulfill the needs of Lebanese institutions and industrials, through the provision of all the services that are necessary for development. The IRI tried hard to set a new direction, by setting new frameworks, which will define partnerships between universities and institutions, in order to help and develop the Lebanese Industry, with the aid of IRI specialization centers, such



as the Euro-Lebanese Center For Industrial Modernization (ELCIM). And the Technology and Innovation Center.

This is in addition to other basic services provided by the IRI in the field of applied research, conformity, quality, analytical experiments and the implementation of necessary standards, and to the environmental support provided by the Lebanese Cleaner Production Center.

In fact, services have been gaining increased importance after the signature of Arab, European and global trade agreements that impose on Lebanese products measures of conformity with international standards, so they can be able to reach global markets.

Lastly, Professor Matta reiterated the IRI general administration commitment toward ensuring the success of the Entrepreneurial University, as well as every project aimed at the service of institutions, industries and development.

Using modern technology to uncover food fraud

The Industrial Research Institute, represented by Professor Joseph Matta, participated in the competition entitled “the use of modern technology to uncover food fraud” at the Ministry of Economy and Trade - the consumer protection directorate, on February 20 and 27, 2016.

He reviewed and evaluated research projects aimed at launching an integrated project for uncovering food fraud. In appreciation for his active participation in the competition, the Ministry of Economy and Trade granted Professor Joseph Matta a certificate of appreciation on the World Consumer Rights Day 2016.



Professor Joseph Matta participates in the first Nutrition and Food Technology conference

Saint Joseph University (USJ)- (Beirut) - May 16 and 17, 2016

Professor Joseph Matta participated in the first Nutrition and Food Technology Conference, organised by the nutrition department of the faculty of Pharmacy, USJ, on May 16 and 17, 2016. He exposed the implementation of the food safety management plan in the Lebanese specialties industries. Critical control points were identified and executed in the cause and effect diagrams. The main focus was put on the calculation of risk priority number at different critical control points of the processes. Corrective actions were then taken for these steps to take these critical control points within limits.



Research day the USJ

“For a more active role in innovation and transfer of technology”

In the framework of its partnership with the International Organization of La Francophonie, the USJ vice-rectorate for scientific research organized an international conference entitled “for a more active role in innovation and transfer of technology”. The event was sponsored by the Minister of Industry, Dr. Hussein Hajj Hassan. It was held on June 13, 2016, at the USJ Campus of the Faculty of Humanity.

For the occasion, Professor Joseph Matta, who represented the Industrial Research Institute General Director, Dr. Bassam Frenn, explained the IRI strategic view pertaining to the evaluation of research, innovation



Saint Joseph University (USJ)
(Beirut) June 13, 2106

and transfer of technology, following three axes:

- Planning and development of technical knowledge through 10 laboratories, which are officially recognized both locally and internationally, cover various industry sectors, and provide numerous essential services related to applied research, conformity, quality, analytical experiments and the implementation of necessary standards.

Specialization centers, which provide support to industry and innovation, are aimed at fulfilling the needs of Lebanese industries, through the institution of the Euro-Lebanese Center For Industrial Modernization (ELCIM), whose activities revolve around providing support to local small and medium enterprises that work in the fields of technical and financial administration, as well as the Lebanese

Cleaner Production Center, whose principal aim is to push and help using clean technologies in production operations, and the Technology and Innovation Center, which is exerting efforts to be the main axis of the Lebanese industry, beckoning and providing new and innovative technologies.

- Checking the performance of the institutional system, through performing a quality verification, issuing certificates that are specific to the system, product and work team. This plays a strategic and essential role in the Lebanese production, and ensures that our products are exported to global markets.

- Interaction and scientific cooperation, through the development of a network of national and international partners at the highest levels.

The national symposium on quality and measurement science in Mediterranean agriculture universities

The Industrial Research Institute Director General, Dr. Bassam Frenn, represented by Professor Joseph Matta, took part in the national symposium entitled “quality and measurement science in Mediterranean agriculture universities”, hosted by the Lebanese University on June 1 and 2, 2016, and sponsored by the Minister of Education and Higher Education, Elias Abu Saab.



National workshop on national environmental standards

As per the International Organization for Standardization (ISO) MENA STAR project, and following training sessions for regional trainers, Professor Joseph Matta participated, in his quality of national expert, in preparing and organizing an awareness national event entitled: Environmental administration standards (focusing on ISO 14001 and its link to the watermark and carbon effects), between September 6 and 8, 2016.



The Activities of the MED TEST II project, financed by the EU and implemented by the IRI, in cooperation with the United Nations Industrial Development Organization (UNIDO)

The Industrial Research Institute made a big advance in the implementation of the MED TEST II project mentioned here above. The IRI experts had several field visits to the factories participating in the project, performed various needed examinations and laboratory tests, and set electricity, water and raw material counters on several production units and lines, using the UNIDO program for transferring environmentally safe technology to Lebanese factories.

After we performed a thorough analysis that was reviewed by UNIDO, technical reports were recently issued for each of the factories participating in the project, including a clear mention of all the possible choices that can be made, which are essentially based on the principles of efficiency of resources and cleaner production, which will lead, in case implemented, to lower pollution and production cost, to help achieving comprehensive and sustainable industrial growth.



External Activities

The financial and administrative director, Mr Selim Kfoury, represented the Industrial Research Institute in Jordan, Italy and Iran

Mr Selim Kfoury represented the IRI at the seventeenth meeting of the Coordination Committee for Arab Industrial Research Centers Distributing past missions: chemical deposits in water, renewable energy and food industries

At the invitation of the Arab Industrial Development and Mining Organization, and hosted by the ESCWA Technology Center, the seventeenth meeting of the Coordination Committee for Industrial Research Centers in Arab States was convened at the headquarters of the Royal Scientific Society in Amman – The Hashemite Kingdom of Jordan, from the 4th till the 6th of October, 2016, with the participation of representatives from various Arab entities. The Industrial Research Institute was represented by its managing director, Salim Kfoury, and the expert Talal Salem.

The sixteenth meeting of the Coordination Committee for Industrial Research Centers in Arab States, the accompanying workshop on linking scientific research institutions to the industrial sector, as well as the meeting of the ESCWA Technology Center technical committee were opened (common opening) with speeches given by the organizing entities, which included: the Arab Industrial Development and Mining Organization, the Islamic Educational, Scientific and Cultural Organization, and the Economic and Social Commission for Western Asia (ESCWA).

Participants unanimously discussed the accompanying agenda and at the end of the meeting, the attendees approved the following recommendations:

1- Redistributing the duties previously stipulated in the fourteenth meeting of the committee, concerning the preparation of technical studies in the water, energy and food sectors:



Amman October 4-6, 2016

First: in the water sector

- Project for treating the surface and groundwater polluted with residues of pharmaceutical compounds. The organization is following up with the expert, Dr. Othman Almashaqbeh/Royal Scientific Society- Jordan, to review the main study.
- Sub-study on cleaning the industrial water from contaminants produced by the pharmaceutical industries, using different techniques. The organization is following up with the expert, Dr. Khaled Selim/ Metallurgical Development Research Center - Egypt, to start preparing the study.
- Sub-study on the surface and groundwater pollution with residues of chemical compounds in Mauritania. The organization is following up with the expert, Dr. Abi Bin Mohammed / Higher Institute of Research and Technology - Mauritania, to start reviewing and updating the study.
- Sub-study on the surface and groundwater pollution with residues of pharmaceutical compounds. The organization is following up with

the expert, Dr. Joseph Matta / Industrial Research Institute - Lebanon, to start preparing the study.

- Sub-study on treating surface and groundwater from outdated medicines and pharmaceutical residues. The organization is following up with Dr. Mazhar Al-Tamimi / General Authority for Industrial Research and Development - Iraq, to provide the organization with a summary of the study and to start preparing it.

- The organization is dialoguing with Dr. Amr Farooq/ Academy of Scientific Research and Technology, to define the name of the expert and the title of the sub-study on polluted water treatment.

Second: In the field of renewable energies

- A main study project on the evaluation of renewable energy sources in the Arab World. The Public Authority for Industry in Kuwait is trying, in coordination with the Kuwait Institute for Scientific Research, to get the general opinion about the requested study, in order to provide the organization, after that, with the latest updates in that regard as soon as possible.

- A sub-study about the study project aimed at evaluating renewable energy sources. The organization is following up with the expert, M. Muhieddin Tawalbeh / The Royal Scientific Society - Jordan, on the latest updates related to this study

- A sub-study on sunlight in the city of Rosso - Mauritania. The organization is following up with Dr. Ould Eddah Elnah / Higher Institute of Research and Technology - Mauritania, to start revising and updating the study, and to re-deliver it.

- A sub-study on the development of the Arabic industrial component in the industries related renewable energy. The organization is following up with the expert, M. Walid Shahin/ Royal Scientific Society - Jordan, in coordination with the ESCWA Technology Center, on that study

- A sub-study on the possibility to produce silicon for solar energy in the Arab world. The organization is following up with the expert, Dr. Camillia Abdel Hamid Berrawi/ Central Metallurgical Research Institute - Egypt, to start preparing the study

- A sub-study on deepening the Arab component in solar energy. The organization is leading a dialogue with the Academy Of Scientific Research and Technology, to name the expert who will be in charge of preparing the study and sending a summary of it

- A sub-study on the search for other biofuel

sources in Arab countries (inventory and evaluation). The organization is following up with Farouk El-Baz/National Research Center - Egypt on the latest developments, to prepare the study

- A sub-study on the national project for nationalizing industry and producing solar heaters in Iraq. The organization is following up with the expert, Mazhar Tamimi/ General Authority for Industrial Research and Development-Iraq, to review and update the study.

Third: Food industry

- A new main study on the development of new grain products for Celiac patients, and a study of the impact of manufacturing steps on the fate of vitamins fortifying the Arabic bread. In this meeting, the representative of the Public Authority for Industry in Kuwait, Badria Hazim, was responsible of following up on the matter with the Kuwait Institute for Scientific Research. The organization is following up with Dr. Jassem Ahmad/ Kuwait Institute for Scientific Research, on the latest updates pertaining to the preparation of the study, in order to go ahead with it.

- A sub-study on functional foods for Celiac patients. The organization is following up with the expert, Dr. Sahar Al Oqabi/ National Research Center - Egypt, to start preparing the study

- A sub-study on the development of new products that are adequate for Celiac patients. The organization is following up with the expert, Dr. Ayed Amr/The University of Jordan - Jordan, to prepare this study.

2- Calling on the main pillars in the coordination committee of the Arab Industrial Research Centers, to coordinate with national entities concerned with the functions of the committee, and to provide the coordination committee with a cyclical country report on their work results, including industrial indexes

3- Calling on the main pillars of the committee (Industrial Research Centers in Arab countries) to benefit from the experience of the World Association of Industrial and Technological Research Organizations (WAITRO) and possibly join it

4- Approving the suggestion of the Industrial Research Institute in Lebanon to organize a training session or a workshop on solar cell technologies, which will be auto-financed and implemented in cooperation with the Arab Industrial Development and Mining Organization

External Activities

and the ESCWA Technology Center, and hosted by the Industrial Research Institute in Lebanon.

5- Approving the invitation of the Industrial Research Institute in Lebanon, to host the 17th meeting of the Coordination Committee for Industrial Research Centers in Arab States in the second half of 2017,

knowing that it will coincide with a forum for investment interviews that will be held in cooperation with the ESCWA Technology Center, after attracting mature and ready research projects to be presented to investors for manufacturing, as well as outputs of technical studies in the water, energy and food sectors.

Kfoury represents the IRI at the Italian Ecomondo fair

Mr. Selim Kfoury also represented the Industrial Research Institute, having accepted the formal invitation of the Italian Ministry of Environment, and in coordination with the Lebanese Center for Energy Conservation - LCEC within a Lebanese delegation. He participated in the official visit of the Ecomondo 2016 fair, held in the Italian city of Rimini from 8 to 11 November 2016, and got introduced to the latest innovative technologies in recycling, as well as treatment of sewage water and garbage in Italy. The fair included meetings organized by the Italian side between Italian companies and members of the participating delegations, each according to their request and field of specialization, in order to follow up with them later on and try to transfer those technologies, if needed, to Lebanon.



Rimini - Italy - 8-11/November/2016

And visited Iran as part of a Lebanese delegation

Iran - 27-31 August 2016

Kfoury also represented the Industrial Research Institute in the official delegation presided by the Minister of Industry, Dr. Hussein Hajj Hassan, to Tehran, between August 27 and 31, 2016.

The visit included meetings with ministers in Iran, including a meeting at the Iranian Standards and Metrology Organization, with the assistant to the President of the Republic and head of the Iranian Standards and metrology Organization, Mrs. Pirooz Bakht, in the presence of the general director of the Ministry of Industry, Mr. Dany Gedeon, the general director of the Lebanese Standards Institution (LIBNOR), Ms. Lina Dergham, and the managing director of the Industrial Research Institute, Selim Kfoury. The aim of the visit was to enhance and develop the relationship between these institutions.



He represented the IRI in Egypt, China, Jordan and Algeria

The development and technology director, Dr. Imad Hage Shehadeh

Participated in creativity, innovation and renewable energy conferences And completed activities pertaining to metrology and to the foundations of energy systems

The director of development and technology at the Industrial Research Institute, Dr. Imad Hage Shehadeh, represented the institute in various conferences held in different countries. He had an active role in those conferences, which were rich in science and innovation.

Cairo (Egypt) - The Arab Conference for Creativity, Innovation and Competitiveness

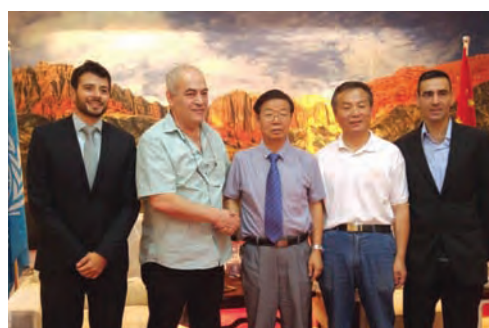
In May, Dr. Hage Shehadeh lectured on the “procedures adopted in Lebanon to support innovation and creativity”. He made a presentation explaining the various mechanisms that could be benefited from, through government projects, private initiatives and Lebanese banks. He presided sessions, led dialogues on the possibility to benefit from Arab capacities and encourage them, during the Arab Conference for Creativity, Innovation and Competitiveness, organized by the Arab Industrial Development and Mining Organization (AIDMO). The conference was hosted by the Central Metallurgical Research Institute (CMRDI) in the Arab Republic of Egypt, with the participation of delegations from all Arab countries.



Gansu Province (China) - Lectures on renewable energy

In cooperation with the Lebanese Center for Energy Conservation (LCEC) and at the invitation of the People’s Republic of China, the Industrial Research Institute, represented by the director of development and technology, Dr. Imad Hage Shehadeh, took part in a Ministerial Seminar entitled, “Solar Energy and Wind Energy: Development and Utilization for Developing Countries”

The event was hosted by the Gansu Natural Energy Research Institute (GNERI) in the Gansu province, and by the UNIDO International Solar Energy Center For Technology Promotion and Transfer (UNIDO – ISEC) in the city of Lanzhu, between August 8 and 14, 2016. The seminar activities were attended by delegations from different countries.



The seminar included several lectures on renewable energies, as well as a visit to a renewable energy fair, a visit to a wind turbine factory and a visit to a photovoltaic panel farm with a capacity of more than 20 megawatts, in addition to research and experiment platforms for the hosts.

Dr. Hage Shehadeh held direct talks with the general director of the center, Professor Zhou Jianping, on possible cooperation between Chinese research institutions and Lebanese ones.

Amman (Jordan) - Steering committee for the Middle East Metrological Help Project

As part of the Industrial Research Institute participation in implementing the works of the project financed by the national German laboratory PTB, on building capacities in the field of metrology, Dr. Imad Hage Shehadeh represented the IRI at the meeting of the Steering Committee, held in the Jordanian capital from August 22 to 24, 2016, with the aim of evaluating the project activities that were implemented in the two years that preceded that gathering. It is to be noted that the IRI participated in most of those activities, thanks to training sessions in Egypt and Jordan.



The meeting was a chance to suggest new ideas

about the activities to be pursued in the upcoming two years, and many ideas were provided to the financing entity for review.

The meeting was attended by delegations from Egypt, Jordan, and Palestine.

A visit was organized to the labs of the Jordan National Metrology Institute (JNMI), managed by the Royal Scientific Society, and those of the Jordan Standards and Metrology Organization (JSMO), and cooperation possibilities with those parties were discussed.

Algiers (Algeria) - Principles of the ISO 50001 energy management systems

Hage Shehadeh took part in the activities of the training session on internationally certified ISO 50001 energy management systems, organized by the International Standards Organization (ISO), in collaboration with the Algerian Institute of Normalization (IANOR), in the Algerian capital between December 5 and 8, 2016, as part of the Mena Star project activities for francophone countries (Lebanon, Tunisia, Algeria, and Morocco), managed in Lebanon by the Lebanese Standards Organization (LIBNOR).

This session complemented the one before it, which was held in Tunisia the year before.

The energy experts nominated for that project are pursuing technology transfer activities, holding conferences and organizing training sessions for Lebanese companies, with the aim of implementing those systems in them.



During the training session, the Lebanese delegation was invited by his excellence the Lebanese Ambassador Ghassan Moallem to a dinner at his place, during which the delegation explained its work and the aim of the visit.

Professor Matta as an expert in the ISO MENA STAR project And participating in two training sessions in Morocco and Jordan

Professor Joseph MATTA has been selected as national expert under the ISO MENA STAR project: Environment. This ISO project aims to strengthen institutional infrastructure on standards and regulations to support business and industry in Middle East and North Africa (MENA STAR).

The objectives of the project are:

- * Component National quality infrastructure: Strengthen the capacity of selected industry support institutions, such as the National Standards Body (NSB) and regulators as well as Trade Promotion Organizations, to enhance the country's participation in international trade, while increasing international competitiveness and export performance through quality.
- * Component Sustainable Development: Contribute to the development of a sound business-enabling environment by encouraging the private sector and other stakeholders to use international standards to demonstrate their commitment to sustainable development.

The component sustainable development covers three different focus area:

- * Energy management and energy efficiency (ISO 50001, ISO 50006)
- * Environmental management (ISO 14040, ISO/TS 14067) and
- * Water management and water foot printing (ISO 14046, ISO/AWI TR 14073)

ISO (MENA) STAR workshops:



This is to certify that

Joseph MATTA

Industrial Research
Institute

has participated in

ISO Regional Workshop on ISO 14001:2015 and its linkages to LCA

hosted by the Jordan Standards and Metrology Organization (JSMO)

in Amman, Jordan

from Monday, July 25, 2016 to Thursday, July 28, 2016

Kevin McKinley

Acting Secretary-General

Daniele Gerundino

Acting Director, ISO Academy



Professor Joseph MATTA, as national expert under the ISO MENA STAR, participated actively in regional Training-of-Trainer courses in 2016 in specific focus areas.

The first training has been conducted from 22 to 26 February 2016 at Institut Marocain de Normalisation (IMANOR) Casablanca, Morocco and covered the following topics:

ISO 14040: Environmental management - Life cycle assessment

ISO 14067 : Greenhouse gases - Carbon footprint of products

The second training has been hosted by the Jordan Standards and Metrology Organization (JSMO) in Amman, Jordan from 25 to 28 July 2016 and included the new revised version of ISO 14001:2015: Environmental Management System.

6th Seminar of European Customs Chemists



Amsterdam (Netherlands) - June 22/24, 2016

Professor Joseph MATTA attended the 6th Seminar of European Customs Chemists (6SECC) from 22 till 24 June 2016 at the Europe Building, Amsterdam, Netherlands.

This seminar aimed to share knowledge beyond borders. Hence, the newest analyses and sampling procedures for Customs purposes, the modern laboratory design and analysis technology, the current developments in quality assurance and quality control as well as the results achieved by the laboratories and the European Commission over the past three years have been presented. The latest developments in the field of Research and Development, the detection and control of fiscal and non-fiscal products have been discussed and the priorities for the coming years have been outlined.

The 15th meeting of the Euromed working group on Standards



The Industrial Research Institute, represented by Professor Joseph MATTA, participated in the 15th meeting of the Euromed working group on Standards on 8 December 2016 in Bruxelles, Belgium.

The meeting allowed the representatives of the Euro-Mediterranean countries to exchange among each other on the progress they made in the Work Programme on standards.

Fourth general assembly of the Arab Program for Scientific and Industrial Metrology (ARAMET) and the ninth meeting of advisory committee on metrology

The Industrial Research Institute was represented by the head of metrology laboratory, Engineer Elias Maalouf, at the Fourth general assembly of the Arab Program for Scientific and Industrial Metrology (ARAMET), and the ninth meeting of advisory committee on metrology from November 10 to 11, 2016, held at the headquarters of the Arab Industrial Development and Mining Organization (AIMDO) in Rabat.

The meetings were attended by representatives from the National Metrology Institutes in Lebanon, Tunisia, Saudi Arabia, Sudan, Egypt, Morocco and Yemen. During the general assembly, participants discussed the program work plan, which mainly aims at exerting efforts to make the ARAMET Arab gathering become part of the Bureau International des Poids et Mesures (BIPM). Also, the event was an occasion to reelect a president and members for the program executive committee. Engineer Maalouf presided the ninth meeting of the advisory committee on metrology, in his quality of a member of the executive committee.



Flow meters calibration between theories and practice



Cairo (Egypt) - 8 - 19 May 2016

The Industrial Research Institute represented by Eng. Elias Maalouf, Head of the metrology laboratory, took part in an advanced workshop on flow meters calibration, which was held in Egypt from 8th to 19th of May, 2016. This training was realized by the National Institute for Standards (NIS) within the PTB project "Quality infrastructure in support to sustainable economic development and trade capacities".

This workshop discussed all theoretical and practical aspects related to the calibration of liquid and gas flow meters.

Basic principles for the use of medical devices, their verification and their calibration techniques



Amman (Jordan) - 20 - 24 March 2016

Our institute represented by Mr. Edgar Shaaya, Unit head in the metrology laboratory, participated in the Royal scientific training & development on calibration and verification of Medical Devices which was held from March 20th to 24nd, 2016 in Amman Jordan. This training was realized by the Royal Scientific Society / Jordan National Metrology Institute (JNMI) within the PTB project “Quality Infrastructure in support to sustainable economic development and trade capacities”

This training conducted the basic principles for the use

of medical devices, their verification and their calibration techniques

The concerned devices were:

- Ultra sound machines
- Mechanical ventilators
- Pressure ventilator systems
- Infant incubators
- Blood pressure monitors
- Ultrasound Phantom calibration

This training will basically assist the institute to advance in the field of testing medical devices.

The IRI participates in Cairo In the calibration of electrical quantities

As part of the training program organized by the German cooperation program and national institute of metrology (PTB) to improve the quality related to the development of economy and of commercial capacities in Arab countries, the Industrial Research Institute, represented the the head of the metrology unit, Mr. Joseph Helou, participated in a session entitled “calibration of electrical quantities part two”, from April 10 to 14, 2016, at the National Institute of Standards in Egypt, considered as one of the biggest Arab center for safeguarding the quality system in metrology.



The invitation targeted metrology national institutes in Arab countries. These sent representatives from Jordan, Palestine, Lebanon, and Egypt. The session included two types of work: special lectures to study and clarify terms, during which participants were introduced to the primary reference devices present at the national institute, and which rely on a physical strategy to generate volumes of high stability and low uncertainty, to be fit for the comparison and calibration of secondary highly accurate devices, like to calibrate, for example, the Josephson voltage system 10V DC , and the Thomas resistors of L & E Type 1ohm.

The second work included a field visit to electrical laboratories at the national institute, where there was applied training on advanced methods in the field of metrology, and an explanation about how to use devices to measure fixed quantities and safeguard them.

...And a training session for metrology technicians in Cameroon

On another note, the Industrial Research Institute, represented by the head of the metrology unit, Mr. Joseph Helou, accepted an invitation to participate in giving a scientific session in metrology, entitled the calibration of scales and blocks in December, 2016, at the Hydrac Association, in Douala - the Republic of Cameroon.

The invitation was accepted, because of the need, at the Hydrac Association, to clarify the metrology concepts in general, their impact on the adopted quality system, and their role in improving the industrial sector, in addition to training technicians who work with them on ways to calibrate scales, clocks and thermal devices, in accordance with compatible methods that are globally recognized, and in order to improve their performance in that domain, to help them abide by the conditions set for the quality system, and to calibrate the devices present in their laboratories in the best possible way.

The Industrial Research Institute participates in a workshop for National Metrology Institutes in Jordan



The industrial Research Institute represented by the quality management Section Head, Eng. Robert Haddad and the Metrology Laboratory Head Eng. Elias Maalouf participated in a regional workshop for National Metrology Institutes held between October 9 and 12 , 2016 at JNMI, Jordan.

The workshop organized by PTB the national metrology institute in Germany within the framework of the project of quality infrastructure in support to sustainable economic development and trade capacities.

The workshop addressed representatives from Lebanon, Egypt, Jordan and Palestine.

The following topics were discussed:



- Accreditation process according to the requirements of ISO 17025
- Mutual recognition arrangement (CIPM MRA) purpose, requirements and benefits
- Submission process of the Measurement and Calibration Capabilities (CMC) in the Key Comparison DataBase (KCDB) of the “Bureau International des Poids et Mesure” (BIPM)
- Supervision process of the quality management system implemented at national metrology institutes by the Regional Metrology Organization (RMO)

The Industrial Research Institute participates in an international training on worldwide trade in Sweden and Egypt

In the framework of the international training organized by SIDA (Swedish International Development Agency) in cooperation with SWEDAC (Swedish Board for accreditation and conformity assessment) ,the industrial Research Institute represented by the Quality Management Section Head, Eng. Robert Haddad participated in the program on “ Quality infrastructure in support of world trade ” .

There were 25 representatives from 8 countries on regional level: Algeria, Egypt, Iraq, Jordan, Morocco, Palestine, Tunisia and Lebanon

The aim of this training was to highlight the role and the benefit of a sound quality infrastructure in support of world trade.

The following topics were discussed:

- International Trade agreements, regional TBT agreements and EU internal market
- Quality Management, Standardization, Accreditation
- Certification, Testing, Inspection and Metrology
- Quality infrastructure development
- Trade and environment

Study visits were also conducted in related key players in Sweden as well as practical visits in an inspection

body and testing and metrology laboratories

The first phase of this program was held in Sweden in February – March 2016, the second phase was held in Egypt in August 2016

The project presented by IRI focused on the optimization of the Custom Files Management related processes and their alignment with international best practices with a particular focus on the accreditation of the inspection activities as per the ISO 17020 requirements.



The head of the Central Laboratory for Grains, Flour and Bread Research at the Industrial Research Institute, Jbeily, was elected



Contributing to ICC's focused activity on issues that contribute to improved food quality, food safety and food security for the health and well-being of all people, started two decades ago with Dr. Bassam Frenn who nominated Eng. Amine Jbeily, Head of the Central Laboratory for grains, flour and bread research at that period as his deputy national delegate and member of the Technical committee of the International Association For Cereal Science and Technology-ICC Vienna-Austria, then later on in 2012 in Beijing-China Eng. Jbeily was elected as Technical co-Director.

Since then, with the Support of IRI and efforts of ICC officials, we established a new Technical Committee with currently 32 members from more than 20 countries which is responsible for the elaboration and verification of proposed standards and other technical documents of the Association to the Executive Committee for revision, approval and submission to the General Assembly.

It was a great honor to be elected as ICC's "Technical Director" for a renewable 4 years term in April 2016, in Istanbul-Turkey during the International Cereal and Bread Congress ICBC.

As the newly elected Technical Director I will be able to technically contribute to ICC's activities in "Knowledge dissemination, research projects and the development of future standards and standard methods" that will definitely help researchers, food authorities and decision makers worldwide to produce and monitor the quality and safety of our "Bread" from "Farm to Fork". In this content, the future looks bright, however many challenges lay on our path, with issues like expanding human population, Global warming and over exploitation of Earth's resources, we need to join our efforts to attain our common goals, this is why the active participation of country, corporate and institutional members is a key component to the success of all current and future projects.

I look forward to working with Lebanese and International experts with IRI and ICC which are available together to address any questions and support any suggestions.

The Industrial Research Institute takes part in a training On “Calibration of Electrical Quantities” in Cairo

Cairo (Egypt) - 17/21 May

Eng. Achraf NASSER EDDINE, Electrical Laboratory unit head represented IRI in a seminar organized by PTB entitled “ Middle East Regional Metrology Training on Calibration of Electrical Quantities / High voltage measurement ” in the framework of the PTB project “ Quality Infrastructure in support to sustainable Economic Development and Trade capacities”. The

seminar took place at the NIS laboratory in Cairo-Egypt from 17 till 21 may 2016. Over five days, the trainers from Egypt, Jordan and Palestine gave practical as well as theoretical examples of the calibration and testing methods according to IEC standards for energy meters and High voltage equipment.

Safety requirements for electrical and electronic equipment At the Bureau Veritas laboratories - France



Fontenay-aux-Roses (France)
19/23 December, 2016

• As part of a training program organized each year, Eng. Fady Y. MELLHEM (Unit Head –Electrical Laboratory at Industrial Research Institute), participated in the training titled “Safety requirements for electrical and electronic equipment”.

• The training was held at “The Central Laboratory of Electrical Industries (LCIE – Bureau Veritas)” in Fontenay-aux-Roses, Paris - France, from 19 to 23 December 2016.

• The aim of the workshop was to exchange and develop ideas about laboratory testing methods by covering several international standards such as safety requirements for electrical equipment for measurement, control and laboratory use (IEC 61010), luminaires and the safety specifications LED modules for general lighting (IEC 60598 and IEC 62031), the degrees of protection provided by enclosures IP code (IEC 60529) and photobiological safety of lamps and lamp systems (IEC 62471). The training completed by a site visit of all accredited testing laboratories in the LCIE.

Melhem preparing a study on power management and an electrical smart grid



Shaw center - Ottawa (Canada)
12 and 14 October - 2016

Eng. Fady Y. MELLHEM (Unit Head – Electrical Laboratory, Technology & Development Directorate) prepared a research paper in the fields of energy management and electrical smart grid titled “Residential Energy Management in Smart Grid Considering Renewable Energy Sources and Vehicle-to-Grid Integration”.

This paper has been presented in the 2016 16th IEEE Electrical Power and Energy Conference (EPEC) on 12-14 October at the Shaw Centre, Ottawa, Canada and it was published by the Institute of Electrical and Electronics Engineers (IEEE).

This research presents an integration of the distributed energy resources in the smart grid in an urban context. The analysis takes into account the integration of renewable energy production such as photovoltaic systems and micro-wind turbine systems, battery storage and gridable vehicles that can provide power to the grid by discharging the battery. Consequently, a mixed integer linear programming is proposed to optimize the energy production and consumption systems as well as the charging and discharging time of electric vehicle among a residential consumer. Besides, several case studies are presented by varying significant factors through design of experiments with Taguchi method to find the optimal solution and to illustrate their influence in the complexity of the system.

Training session in China on Renewable energies The IRI is represented by the president of the renewable energies laboratories



Within the scope of continuous cooperation with the Lebanese Center for Energy Conservation, the Industrial Research Institute participated, at an invitation by the Ministry of Trade in the People’s Republic of China and represented by the IRI president of the renewable energies laboratories, Engineer Mohamad Ali Hajjar, in a training session on energy, in China, from 26/10/2016 to 6/11/2016. The event saw the participation of representatives from 26 countries.

The session included scientific lectures on renewable energies, as well as introductory lectures, organized visits to a number of factories for photocell mirrors and wind turbines used for electric power generation, in addition to visits to sites at photocell farms, and wind turbines.

Efficiency evaluation of the air decontamination unit in Moscow-Russia

An Engineer from Industrial Research Institute Mr. Hovig Kouyoumdjian, evaluated the efficiency of a Russian air decontamination unit, which purifies air from airborne microorganisms. This new technology

could be beneficial in minimizing the airborne contamination that causes risk hazards in hospitals, food production premises and other clean rooms.





Applied Research
and Studies

6

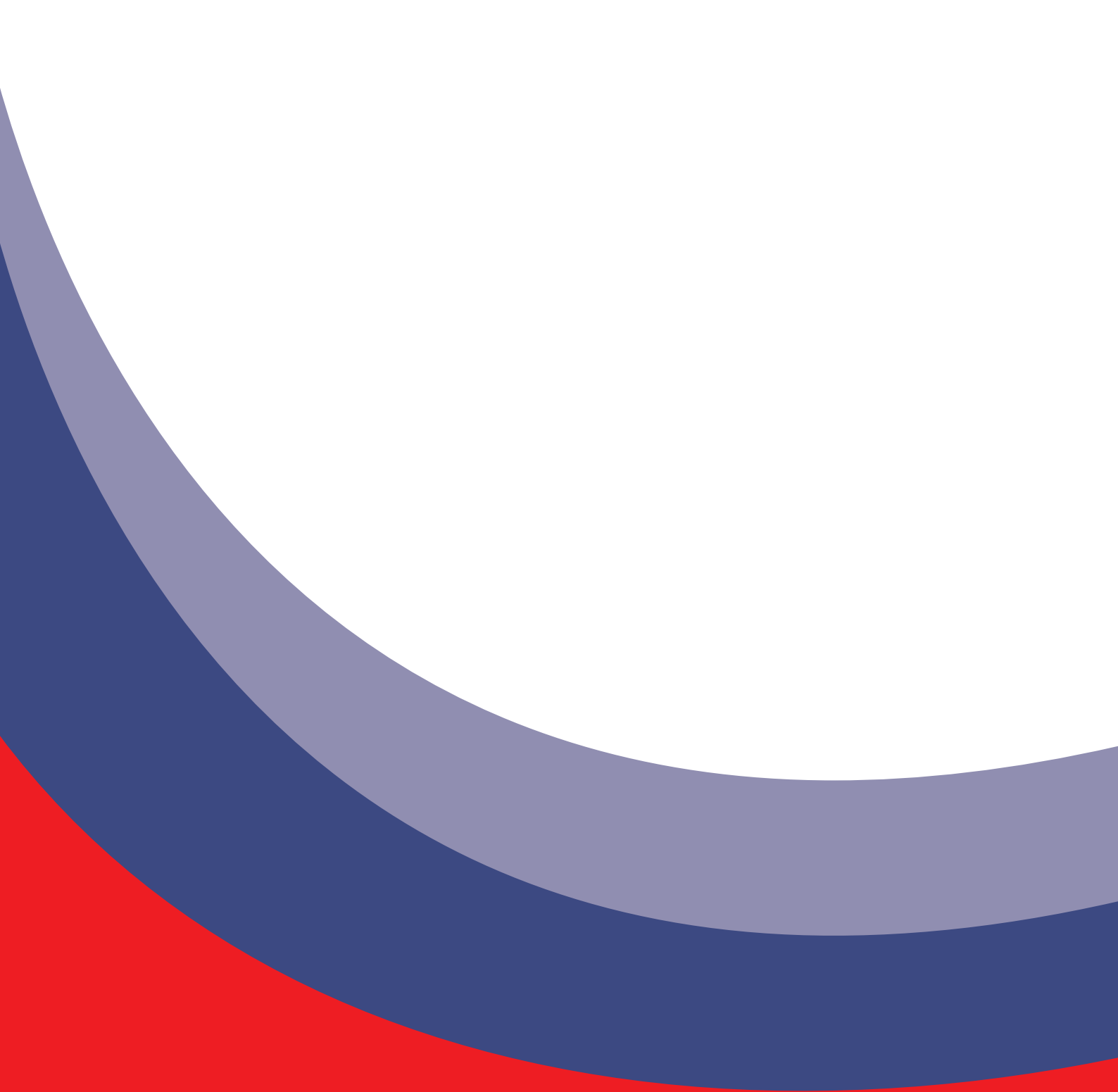
The Institute performed 27 environmental and technological study and analyzes

The Industrial Research Institute keeps pace with the current status of industries and factories, especially the ones that received ISO environmental certification from the Institute, and ensures their continuous compliance with the scientific and technological standards required to maintain a healthy environment for human beings and preserve the nature.

The IRI completed 27 studies and analyzes in nineteen factories, among which studies in environmental auditing and in environmental analyzes and technical field studies, as follows:

Comprehensive Environmental Analyzes and Technical Field Studies

El Ghouh Co.	Cimenterie Nationale	Unipack	Tanmia	Hawa Chicken
National Beverage Company	Kassatly Chtaura	Pastel Paints	MEICO	Solicar
Nidal Mechref	Ahmad Al Dirani	Algorithm	Global Cosmetics	Liban Lait
Jaber Jaber	Building Chemicals Company	Nexans Liban Cables	Chapha	





Scientific Publications

7

Scientific researches in 2016

Tackled health problems

Since scientific research that is based on tests, experiments, comparisons, and results, helps in the advancement of societies and protects communities, by providing them with a better life, the Industrial Research Institute took part in several papers in 2016, and their outcome was available in international scientific publications that help promoting science and knowledge.

I- Revue du Rhumatisme

Volume 83, Supplement 1, November 2016, Pages A297

Effects of one year of weight training on bone parameters in young overweighed men

Carmen El Khoury⁽¹⁾, Eric Lespessailles⁽²⁾, Antonio Pinti⁽³⁾, Ghassan Maalouf⁽⁴⁾, Joseph Matta⁽⁵⁾, Fabienne Frenn⁽⁵⁾, Hechmi Toumi⁽²⁾, Rawad El Hage⁽¹⁾

(1) Department of physical education, Université de Balamand, Kelhat, Liban

(2) Rhumatologie, Université d'Orléans, Orléans

(3) I3mto, Université d'Orléans, Orléans

(4) Faculty of medicine, Saint Joseph University, Beyrouth, Liban

(5) Research, Industrial Research Institute, Beirut, Liban

The aim of this study is to explore the effects of weight training on bone parameters (mineral bone content, mineral bone density, and trabecular bone score or TBS) in overweighed young men (with a body mass index of > 25 kg/m²).

This study suggests that weight training increases bone density of the lumbar rachis and the TBS in obese young men.

II- Environment Science Pollution Research

DOI 10.1007/s11356-016-8139-2

Springer-Verlag Berlin Heidelberg 2016

Serum concentrations of polychlorinated biphenyls (PCBs) in a Lebanese population: ENASB study

Mireille Harmouche-Karaki⁽¹⁾, Joseph Matta^{1,2}, Khalil Helou⁽¹⁾, Yara Mahfouz⁽¹⁾, Nicole Fakhoury-Sayegh⁽¹⁾, Jean François Narbonne⁽³⁾

1 Department of Nutrition, Faculty of Pharmacy, Saint Joseph University, Beirut, Lebanon

2 Industrial Research Institute, Lebanese University, Beirut, Lebanon

3 EPOC, University of Bordeaux, Bordeaux, France

Abstract

Polychlorinated biphenyls (PCBs) are persistent organic pollutants that are still routinely detected 30 years after their restriction in many countries. PCBs have been associated with several non-communicable diseases. They are best measured via human biomonitoring (HBM). The concentrations of six indicator PCBs (PCBs 28, 52, 101, 138, 153, and 180) were measured in the serum samples of 316 Lebanese students and employees from Saint Joseph University of Beirut, Lebanon, using gas chromatography coupled to an ion trap mass spectrometer detector.

PCBs were detected in 56.3 to 59.2% of the serum samples. The sum of PCB (Σ PCBs) levels ranged from <LOD to 338.84 ng/g lipids, with a geometric mean level of 10.34 ± 0.98 ng/g lipids. The major contributor to the Σ PCBs was PCB 180. In the present study, the levels were, in general, lower than the values observed in several Western and European countries. No association was found between age and concentration of any of the PCBs. In terms of risk for health, the highest levels were lower than critical limits such as HBM I and II values.

We observed an inverted U shaped association between levels of serum PCBs and the risk of overweight/obesity (OR = 2.140; CI = 1.095–4.185).

III- Conference Paper · May 2016

Conference: The First Nutrition and Food Technology conference, At USJ, Lebanon

ENASB – USJ study, first results of urinary concentrations of heavy metals and serum concentrations of polychlorinated biphenyls in a Lebanese population sample.

Khalil Helou⁽¹⁾, Joseph Matta^(1,2), Fabienne Frenn⁽²⁾, Nicole Fakhoury-Sayegh⁽¹⁾, Mireille Harmouche-Karaki⁽¹⁾, Maya Mahfouz⁽¹⁾, Yara Mahfouz⁽¹⁾, Pascale Salameh⁽⁴⁾, Jean François Narbonne⁽¹⁾

1 Department of Nutrition, Faculty of Pharmacy, Saint Joseph University, Beirut, Lebanon

2 Industrial Research Institute, Lebanese University, Beirut, Lebanon

3 EPOC, University of Bordeaux, Bordeaux, France

4 Lebanese University, Faculty of Pharmacy

Elevated levels of antimony, arsenic and cadmium in urine are a sign of recent exposure to antimony and arsenic, and of cumulative exposure to cadmium. They are also associated with chronic toxicity linked to metabolic and clinical illnesses. Furthermore, high levels of Polychlorobiphenyl-Benzenes (PCBs) and organochlorines in urine indicate cumulative exposure to these composed elements from electrical transformers, wall painting and incinerations for PCBs and pesticides for organochlorines. The main purpose of this work was to measure the levels of the 3 mentioned heavy metals in urine, and serum levels of the 6 PCB markers and 4 organochlorines in a population of students and non teaching personnel at Saint Joseph University (USJ) - Beirut, in order to set reference values and compare them with results in different countries. Secondly, it was about defining the various metabolic troubles, as well as clinical and alimentary parameters linked to the levels of the three heavy metals in urine.

Methodology: From April 2014 till April 2016, 316 participants were recruited, in accordance with a proportional stratified sampling of the different USJ campuses, and they accepted to provide a blood sample (PCBs and organochlorines), while 132 accepted to provide a urine sample. Measurement instruments included: a sociodemographic questionnaire and a food frequency questionnaire translated into Arabic and validated, as well as a 24 hour reminder of food consumption, anthropometric measurements, blood pressure measurements, blood biochemistry, a serum test of the 6 PCB markers and 4 organochlorines, routine urine tests and a test for 7 heavy metals (lead, antimony, copper, mercury, zinc, arsenic and cadmium).

In this presentation, we will focus on antimony, cadmium, arsenic, the 6 PCB markers and 4 organochlorines. Results: levels of antimony and cadmium inside urine were noticeably higher in the ENASB-USJ populations, in comparison with European and Canadian studies ($P = 0,00$).

Concerning age and professional occupation, arsenic levels were visibly higher in non-students/students ($P = 0,008$) and within the $>23 / \leq 23$ age category ($P = 0,022$). From a gender point of view, the levels of the three heavy metals were significantly higher in women/men ($P < 0,05$). Environmental parameters, such as population

density and the presence - or non presence - of industries and waste incinerators, as well as eating habits, have not shown any significant variations in the three heavy metal levels ($p>0,05$). For anthropometric and metabolic parameters, arsenic was the only heavy metal that showed significant variations ($P<0,05$) with the waist circumference (cm), fasting glucose (mg/dl) and blood pressure (mm Hg). As for serum levels of the 6 PCBs and 4 organochlorines, reference values in the tested populations were compared with foreign studies and can be called very good in comparison with them. Conclusion: antimony and cadmium levels proved to be visibly higher in the ENASB-USJ study, in comparison with European and Canadian studies. Arsenic was the only heavy metal to show significant variations as per the waist circumference, fasting glucose and blood pressure. A broader study is needed to find possible big variations in the different studied parameters, and to discover high levels of those three heavy metals in urine. As for the PCBs and organochlorines, numbers shows that the reference values obtained in the ENASB-USJ research are visibly lower than those appearing in foreign studies.

IV- 2016 3rd International Conference on Renewable Energies for Developing Countries (REDEC)

A Performance evaluation of an installed photovoltaic system without energy storage.

Case study : IRI premises.

Achraf NASSER EDDINE, Imad HAGE CHEHADE

Technology & Development Directorate, Industrial Research Institute Lebanese University Campus Hadath (Baabda), 11-2806 Beirut, LEBANON - dir_td@iri.org.lb

Abstract - Lebanon has a significant potential for the installation of photovoltaic systems. This technology of renewable energy is ecological, supplants other sources of energy and is widely attainable.

The objective of this paper is to examine and evaluate the performance of an installed PV generator during three years 2013-2015. A case study of the integration of 56 kWp at a specific location in Lebanon that is the "Industrial Research Institute" (IRI) includes accurate data for solar radiation, energy production, benefits in fuel savings and reduction in CO₂ emissions.

The results can be used elsewhere with similar climatic conditions where these types of data are either missing or unavailable. All the data collected from this study will grant us an opportunity for installing and integrating a photovoltaic system into any type of building in Lebanon. It comes in accordance to the vision of the general directorate of the institute to help the industrial institutions in all aspects of apprehension, studies and researches.

Keywords: Photovoltaic System, Solar Radiation, Energy Production, Fuel Savings, CO₂ Reduction, Efficiency.

V- 2016 3rd International Conference on Renewable Energies for Developing Countries (REDEC)

Estimation model for global solar radiation in Lebanon.

Achraf NASSER EDDINE, Imad HAGE CHEHADE

Technology & Development Directorate, Industrial Research Institute Lebanese University Campus Hadath (Baabda), 11-2806 Beirut, LEBANON - dir_td@iri.org.lb

Abstract—Availability of solar radiation data is very scarce in Lebanon and it is often not accessible. The estimation of solar data is the most important parameter for designing and developing various solar energy systems such as photovoltaic, solar water heater and concentrated solar power. The main objective of this paper is to present a comparison between different estimation models for global solar radiation based on sunshine duration applicable in Lebanon. Subsequently a new correlation is proposed to estimate the monthly average daily global solar radiation in Lebanon.

Measured data were obtained from photovoltaic system installed on the roof of the Industrial Research Institute during 2013-2015. Estimated data of seven previous models and a proposed coefficients model, are compared to measured data based on the root mean error, the main bias error and the maximum permissible error. The results of using the new coefficients revealed that the error is minimized, and this new correlation can be used to predict the monthly mean average daily global solar radiations.

Keywords: Solar radiation, Angstrom-Prescott model, Sunshine hours, Extraterrestrial radiation, Declination angle, Estimation models.

VI-AI Mouhandess

Volume 30, March 2016, Pages 1-2

Green buildings and regulatory environmental sustainability CEDRE

Dr. Imad Hage Chehade and Eng. Antoine Faysal from the Industrial Research Institute, IRI

The building, a necessary element of our modern society, has been unwillingly implied, throughout its existence, in the environmental degradation of our dear planet. Indeed, studies show that buildings are responsible for 30 to 40% of energy consumption, and 25 to 30% of greenhouse gas emissions. Thus, the notion of sustainable construction is increasingly gaining support in our minds: referring to construction that ensures the comfort and health of the inhabitants, while limiting its impact on environment as much as possible, and trying to integrate with its surrounding in the most respectful manner possible, using natural and local resources as much as possible.





Activities of the
European-Lebanese Center
for Industrial
Modernisation – ELCIM

8

The year 2016 was a year of planning whereby ELCIM and the CIT worked on promoting major pilot projects: The Food Advisory Unit (FAU), the Energy Advisory Unit, (EAU) the Scientific Platform, the Food Technology conference as well as the SoftShore conference, the results of which should be implemented in 2017.

In order to support these activities a set of MoU's were prepared with the major local universities covering exchange of expertise and services in various domains such as engineering, chemistry, agro food, research and others.

Workshops were also scheduled to address industrial stakeholders through the regional Chambers, ALI and the SLFI. The aim of the workshops is to promote the FAU by listing its services, and its comparative benefits, and in order to obtain orders. Eventually the workshops shall extend to food service providers.

Activities were also underway for the preparation of a "Food Technology Conference" as well as a Software Conference whereby the conferences set-up has been established as well as topics and a list of potential sponsors.

In the process of further developing the CIT and the establishment of a CIT program and org chart, one of the proposals developed is the "Scientific platform" aiming at linking the local research with industrial needs through facilitating knowledge and communication between the various stakeholders; namely Academia and Industry. This requires enforcing the MoUs between IRI and universities specialized departments such as Chemistry, Engineering and ICT. The Scientific Platform proposal further improved to match the requirements of potential external funding. Further efforts were made to support the Lebanon SoftShore Cluster through strategic regional and international links to further assist its members to open to new markets. The international presence of the LSS was also reinforced through the participation to GITEX 2016 edition co- financed by the Industrial Research Institute.

The year 2016 was also a year of closing projects such as the FOSTERinMed EU CBC MED funded project managed by the CIT, where the project ended with the implementation of a 30-kWp BIPV power plant at the IRI building.

ELCIM organizes a public training on time management skills

(February 3 to 5, 2016)

The Euro Lebanese Centre for Industrial Modernization (ELCIM) organized an In-House training at Arab Printing Press premises on February 3, 4 & 5-2016 under the topic of “Time Management”.

This training was held by Ms.Cecilia Moudaber. The overall workshop objective is to learn about optimal Time Management strategies to achieve organizational goals and increase efficiency.

This workshop witnessed strong participation from the participants and their feedback was very encouraging.

And a training on good quality and Hygienic Practices

(March 10-11, 2016)

An in house training organized by ELCIM at the House of Olives company premises, on March 10 & 11-2016 under the topic of “Good Quality and Hygienic Practices”.

The overall workshop objective is to learn about food safety and practices that preserve the quality of food in order to avoid food-borne illnesses and contamination. All the participants were strongly interested in the material covered.

ELCIM takes part in launching the ENI CBC Med Programme in Athens

Networking sessions were organized with potential partners, in order to present suggestions and research new ways of cooperations. (December 16, 2016)



And prepares a meeting in Paris

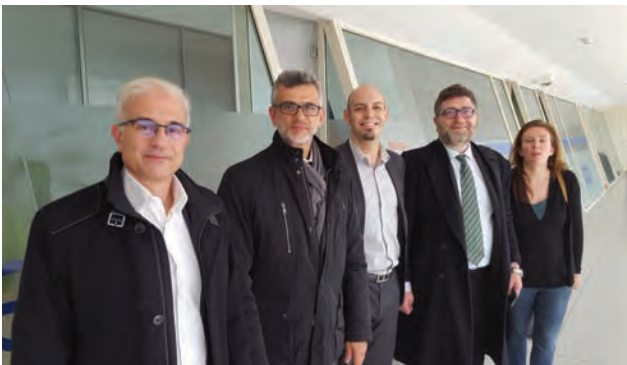
At the International Chamber of Commerce (ICC) headquarters, and in the presence of ICC representatives, in order to discuss additional ways of cooperation in the field of technical help and exchange of expertise. December 19, 2016

Lebanon SoftShore Cluster organizes A study visit to the Andalusia Technology Park



April 7 to 9/2016

A study visit was completed from 7 to 9 March 2016 to Andalucía technology Park (PTA) by LSS representatives. The mission co-organized by the EU TAIEX instrument explored possible ways of cooperation between the Cluster and PTA officials and local established companies and the ways to build capacity building regarding product development in the ICT sector.



In this perspective, meetings were held between member's mission and the PTA authorities, representatives from the University of Malaga as well as of the Malaga Chamber of Commerce, Industry and Navigation. In addition, fruitful visits took place to selected industries in the IT sector with promising results in terms of future cooperation

LSS in Jordan to meet INTAJ representatives (September 8, 2016)

In the framework of its activities to build strong relations with regional and international IT associations, LebanonSoftshore cluster representatives visited INTAJ association in Jordan.

- Discussions were focused on strengthening the relations between LSS and INTAJ through exchange of knowledge , trainings and workshops and other activities that might be of relevance to that goal.
- The possibility of members from the two entities participating jointly in international tenders was also explored.

Takes part in OSCOM 2016 December 3 - 2016

The Lebanon SoftShore Cluster(LSS) took part in the 2nd International Conference on Open-Source Software Computing (OSSCOM 2016) at the Lebanese University-Mathaf on the 3rd of December, 2016 which objective was to promote and share Open- Source Software(OSS) services, resources, applications, products, and tools. Interventions were made by ELCIM senior business advisor Mr. Fadi Fayad and by LSS member company B-Synchro represented by Mr. Michel Chamas CEO.



ELCIM takes part in HORECA April 22-2016

Following the success of last year at HORECA exhibition and in the framework of IRI / ELCIM's quest to better serve the Industrial sector, a series of short presentations were provided at HORECA each over a period of 45 minutes in different topics mainly in Food safety Law, Energy Saving, Company Reengineering, Labeling, Beverage Market and others. During this event, different meetings were held with qualified experts in various fields of expertise such as Quality Control, Food Packaging, Labeling and Microbiology .Around 500 professionals from different Food Sectors visited IRI / ELCIM stand and attended these presentations and meetings. The feedback was very encouraging and the information gained enlightening and formative.

- Participation to the launching of the ENI – CBC med proramme in Athens .

Networking sessions were held with potential partners in order to prepare for new calls for proposals and possible ways of cooperation. (December 16/2016)

- Meeting in Paris at CCI headquarters with representatives of the Chamber of Commerce of Paris in order to explore further collaboration in terms of technical assistance and exchange of expertise. (December 19/ 2016)



Participates in Project Lebanon fair

May 31-June 3, 2016

Dissemination of technical information and explanation to citizens on BIPV technologies by FOSTER in MED info point.



Takes part in GITEX 2016

LSS at GITEX 2016(October 16-20, 2016)

Anticipating the needs of the ICT enterprises in Lebanon and to better serve the IT sector, the Industrial Research Institute/Lebanon Soft Shore participated at Gitex 2016 in Dubai (October 16-20). Three members from the cluster were present at this exhibition: Profile software, DC Soft and Intelligile. Gitex 2016 brought together Entrepreneurs, Innovators, Investors, Mentors and Buyers. On the other hand, this Exhibition provided an excellent platform to the Lebanese companies in order to penetrate new markets and build new connections between local and International ICT companies, and exposes them to the global buyers and Investors, where they generate new business contacts, sign new contracts, learn new ideas, and find new markets and opportunities. Gitex was an opportunity for these companies to illustrate their capacity, resources and achievements.

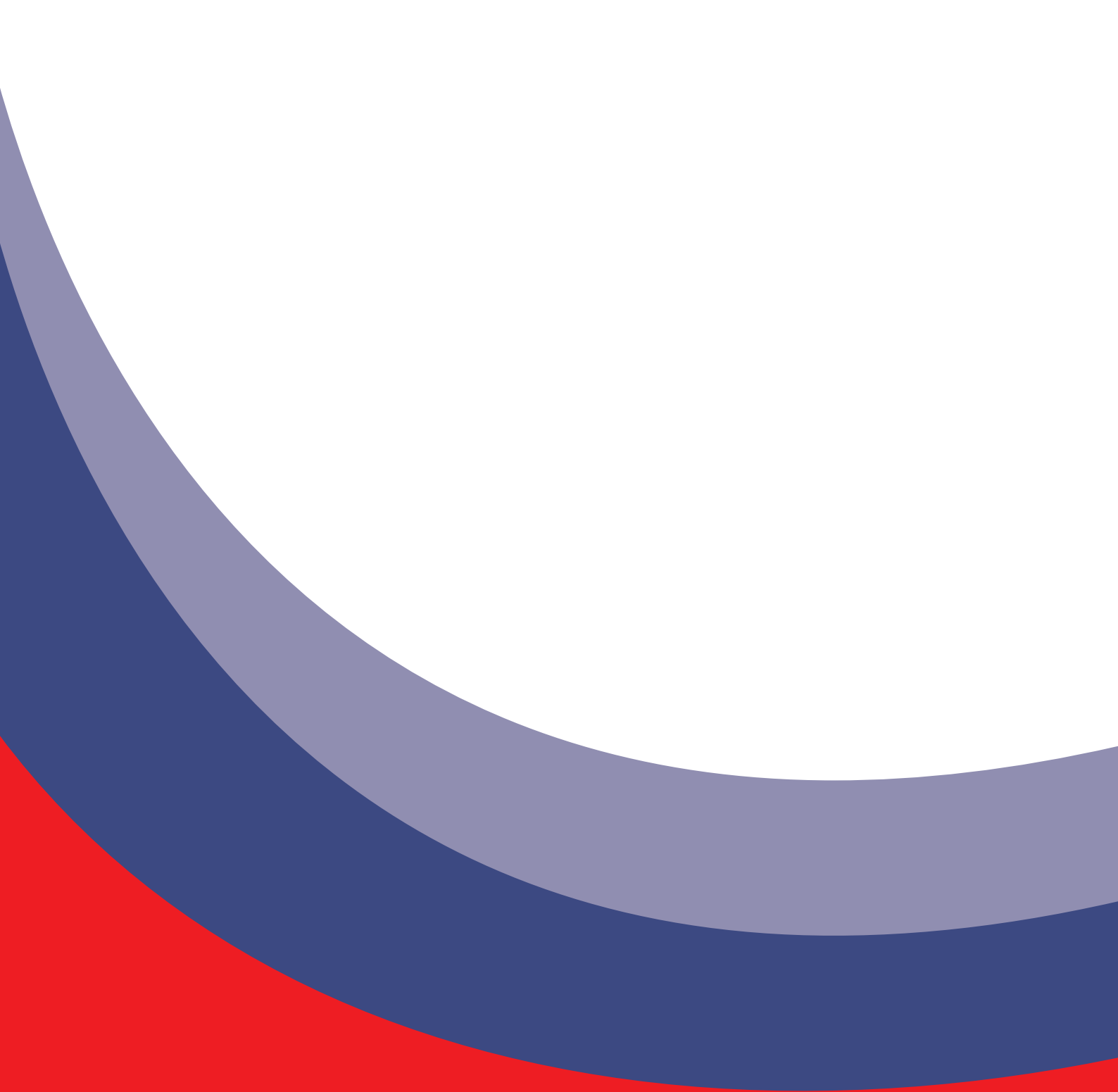


Technical training enhancement in companies affiliated to the gathering, at the Lebanese University



Vocational training enhancement in companies affiliated to the cluster, at the Lebanese University

- In order to link industrial institution to universities, an event was organized for two days, and some of the companies affiliated with the cluster presented their activities at the Lebanese university, at the Faculty of Engineering in Roumieh. The event was a great success, and around 25 students signed vocational training agreements with the companies affiliated with the cluster.





Activities of the
Lebanese Cleaner
Production Center - LCPC

9

**Help in saving 4 million US Dollars
The Lebanese Center for Cleaner Production cooperated with 39
Lebanese Companies in Lebanon
And provided 51 training sessions for students, managers and
experts from the industrial sector**

Since its institution, the Lebanese Center for Cleaner Production has worked in three main fields:

- Presentation inside the factory
- Awareness development
- Training and capacity building

As usual, it was able, during 2016, to achieve the goals it set in its work plan, and fulfilled the activities assigned to it.

In plant demonstrations:

Through In-plant demonstration projects, the LCPC explain in a practical way the concept of cleaner industrial production and its applications to industrial sector.

At the end of demonstration projects, the results are disseminated to all interested parties so that they can build on the successes of the demonstrations.

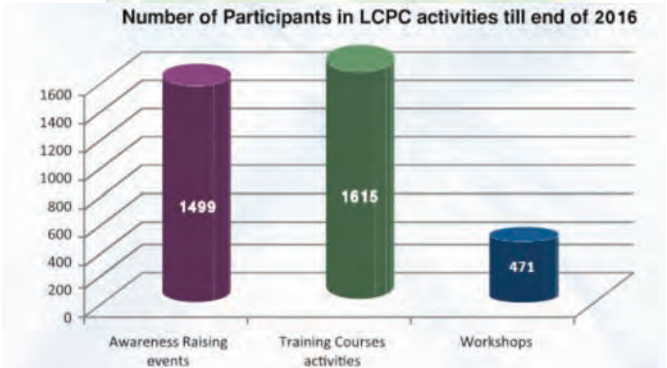
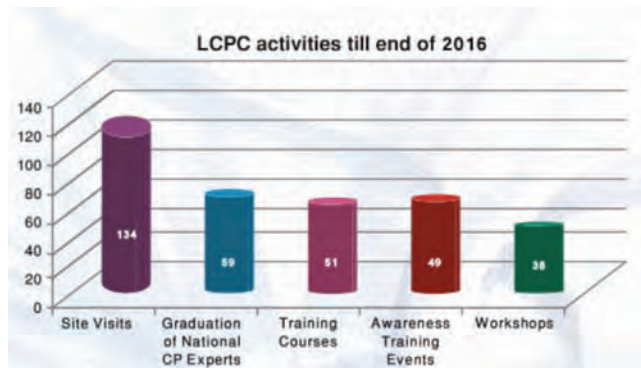
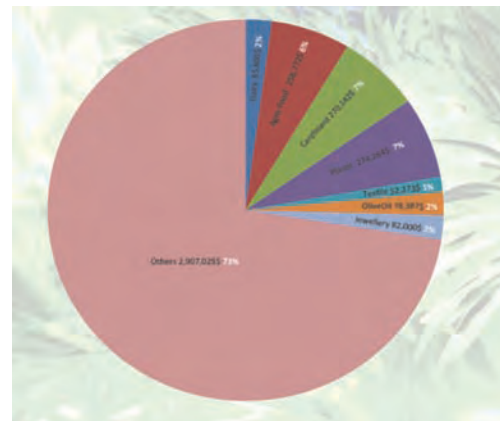
The selection of the sectors was based on evaluation criteria set by LCPC Advisory Committee.

Through the demonstration projects, the LCPC has been training volunteers to become national CP experts, adept in conducting CP assessments in different industries. These trainees will eventually become the LCPC's national network of CP assessors capable of conducting full-scale CP in-plant assessments according the UNIDO CP methodology.

LCPC has collaborated with 39 Company in Lebanon distributed among several industrial sub- sectors. These sectors are:

- Dairy sector
- Agro- food canning sector
- Paper and cardboard sector
- Aluminium production sector
- Ceramic production sector
- Plastic production and recycling sector
- Textile sector
- Olive oil sector
- Jewellery sector

The CP options implemented in SME's that participated in the LCPC programmes have led to a total yearly savings of 4,008,462 US Dollars.



1- Site Visits

Many companies have successfully implemented different CP options in collaboration with the center during 2016. A-Z Manufacturing, Bach Snack, Chamsine Bakery, Dirani Food, Malco, Manara Dairy, Saltek, Skaff Dairy, Hilbawi, Pain D'or, and Rifai.



National Green Export Review (NGER)

Under the patronage of H.E. Dr. Alain Hakim, Minister of Economy and Trade and H.E. Dr. Hussein Elhaj Hassan, Minister of Industry; Dr. Ali Yaacoub, Director of Lebanese Cleaner Production Center/ Industrial Research Institute and UNCTAD, organized the First National Stakeholder Workshop of the Lebanon National Green Export Review project (NGER) at the Movenpick Hotel in Raouche from 6 to 7 December 2016.

The objective of the workshop was to discuss selected green products/sectors in Lebanon that have a strong export potential in order to undertake a deeper trade, market and policy review based on national stakeholders' inputs and views. To support workshop discussions, UNCTAD has prepared a discussion paper describing the rationale used in identifying some promising green exports for Lebanon which will be examined in the NGER



Awareness Raising

As part of the awareness campaign raised by the LCPC to spread the word about the CP concept and its application in Lebanon, the educational sector constitutes an essential and important sector to spread the word among all students, and for the purpose of disseminating the CP Book: "Half is Enough: An Introduction to Cleaner Production" in the Universities for introducing CP Curricula.

Let us implement the Half required, and then say enough.
Do you think we will say enough?

Awareness Raising at Universities.

2.1. Training to the students of the Islamic University of Lebanon (IUL).



2.2 Awareness Raising in University of Saint Joseph about Coasts (USJ).



2.3. Lecture at American University of Beirut at Van Dyck Building (AUB).



3- Training and Capacity Building

This activity has been targeting industrial, environmental and financial stakeholders; namely decision-makers in industrial establishments, consultants, national experts, in addition to academic and research institutions.

The purpose is to build up skills not only in cleaner production but also in allied fields.

The LCPC has succeeded in conducting 51 training courses which targeted participants mainly students from the academic sector, managers and technical experts from the industrial sector and employees from the public sector and non profit organizations.

Training course and capacity building events were held on subjects related to industrial and environmental issues namely the following:

- Performance of energy audits in the industrial sector.
- Implementation of environmental management systems based on CP.
- Advantages of CP in industry.
- CP assessments and their implementation.
- CP methodology and CP options

3.1. SWITCH-Med Connect 2016 at Barcelona to support and connect stakeholders to scale up eco and social innovations in the Mediterranean

Dr. Ali Yaacoub, Director of Lebanese Cleaner Production Center and IRI staff and experts joined this workshop and made the lebanese representation successful. In this workshop, some bilateral talks with UNEP, UNIDO, EU, RAC/SCP and others. Arab countries and international organisations in Barcelona to support and connect stakeholders to scale up eco and social innovations in the Mediterranean.





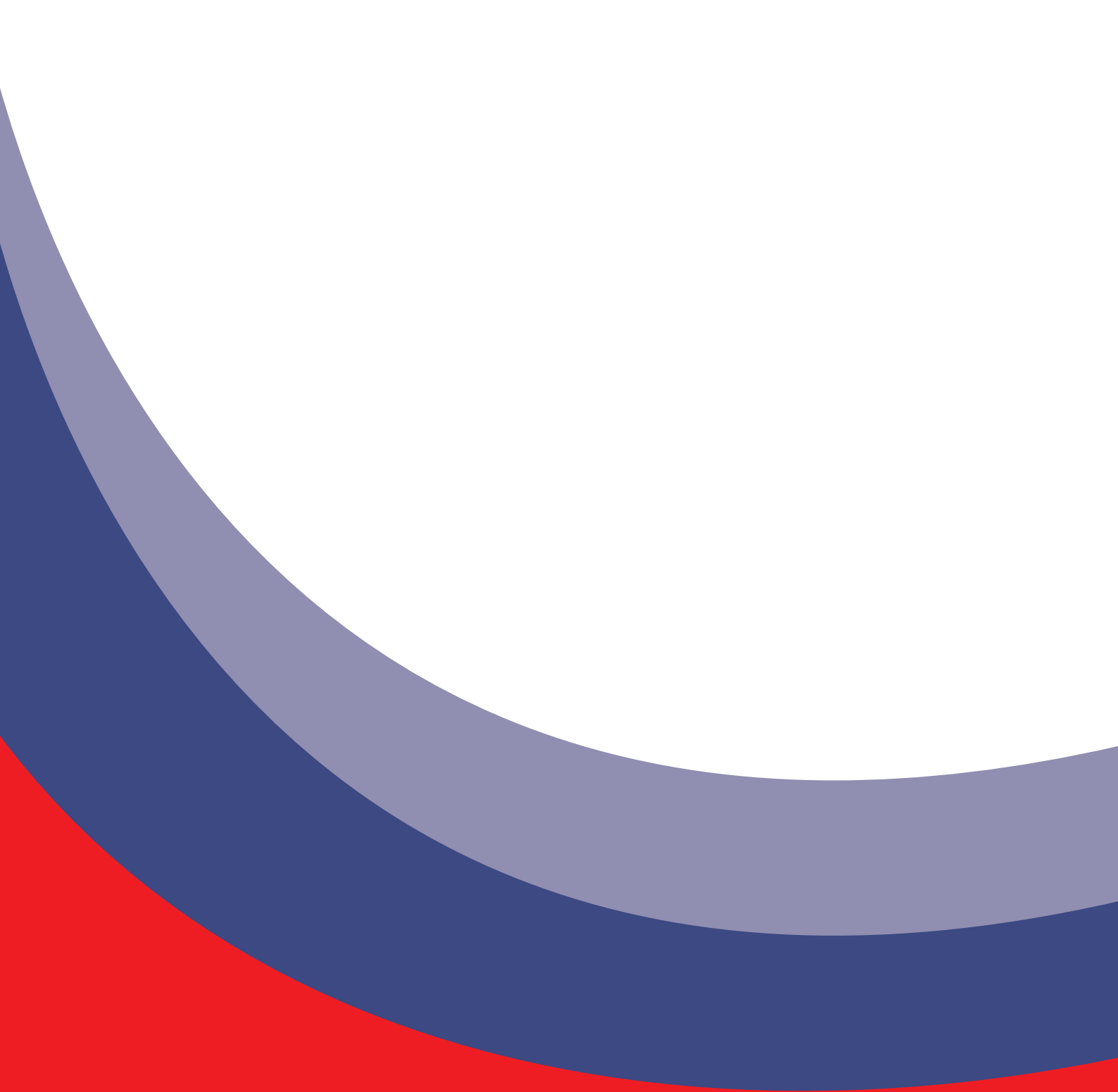
3.2. Dubai 7th Annual Waste Management Middle East Forum at Habtoor Grand Resort



3.3. The 22nd conference of the Parties to the United Nations Framework Convention on Climate Change (COP22) production-Rabat, November 2016

LCPC Participation in Other Events

	Event	Date	Location
1	Supporting the Development of Industrial Parks in Lebanon	26 January 2016	Grand Serail, Beirut
2	MoE Green Room Action Plan for Sustainable Consumption	21 March 2016	Beirut
3	Lebanon Student StarPack 2016	01 June 2016	Adnan Qassar, Beirut
4	National seminar on quality and metrology in agricultural universities in the mediterranean	01 July 2016	Lebanese University, Beirut
5	The role of the national oil company in the oil and gas sector governance	28 April 2016	Movenpick hotel, Beirut
6	Creative Lebanon	12 July 2016	Gemayzeh, Beirut
7	2nd Emigrants Economic Conference	14 July 2016	Movenpick hotel, Beirut
8	Lebanese International Business Council	10 August 2016	Jeita, Byblos
9	National Implementation Plan for Stockholm Convention on POPs in Lebanon	05 November 2016	Beirut
10	Business Opportunities in Lebanon 2016	19 November 2016	Movenpick hotel, Beirut
11	After the Paris Agreements & the Marrakesh calls How Will Lebanon deal with its Commitments on Climate Change	05 December 2016	MoE, Green Room, Beirut
12	Spurring Entrepreneurship and MSME Growth in Lebanon	06 December 2016	Le Bristol hotel





Activities of the Centre for
Innovation & Technology
- CIT

10

FOSTER in Med and the Energy Advisory Unit (EAU) activities

IRI inaugurates the FOSTER in MED BIPV Pilot plant (June 6, 2016)

Under the patronage of HE the Minister of Industry, Dr. Hussein Hajj-Hassan and HE the Minister of Energy and Water, Mr. Arthur Nazarian, and in the presence of Dr. Esmat El Karadsheh, the coordinator of the Eastern Mediterranean Branch Office of ENPI CBC MED, the Industrial Research Institute inaugurated the Building Integrated Photovoltaic Pilot plant that was implemented by EU funded project FOSTER in MED in the framework of the ENPI CBC MED programme.

After a welcome note by the manager of the project in Lebanon, Mr. Naji Abi Zeid, where he stated the managerial and components parts of the project namely its multilayer approach, the event started with a series of speeches that stressed on the significance of such projects in Lebanon.

“We have been working in close collaboration with the European Union in order to explore and test different solutions concerning renewable energy, and the best is yet to come”, said the Director General of the Industrial Research Institute, Dr. Bassam Frenn during the event that gathered key professionals from the construction and renewable energy field.

HE the Minister of Energy and Water Mr. Nazarian, expressed his enthusiasm regarding the emergence of promising projects such as FOSTER in MED, while HE the Minister of Industry, Dr. Hajj-Hassan stressed on the importance of Solar Energy in Lebanon: “We are in dire need of exploiting the sun’s potential, in a country where so many resources are left unexplored.” During the event, Dr. Talal Salem from the Technical and Scientific Committee of FOSTER in MED,



presented the specificities of the pilot project: “We thought of a specific design where the installed solar panels can have many functions at the same time, i.e. offering a cooling shade to the interior of the building and obviously providing the building with solar energy power.” A short video <https://youtu.be/SOhtVhZaFpw> was then released showing in brief the several accomplishments of the project.

The event was followed by a site visit and a meet and greet brunch during which Dr. Elias Kinnab, member of the Technical and Scientific Committee and Info Point Administrator of the project shared technical details of the project with fellow professionals.

“It is our duty to make this project replicable”, commented Dr. Kinnab. “We might be among the first to have exploited the Building Integrated Photovoltaic technology in Lebanon but we definitely don’t want to be the last. One of the main objectives of this pilot project is to be a reference for future projects, and we hope there will be many that will follow”.

FOSTER in MED final conference in Cagliari (June 28, 2016)



The final conference of Foster MED project funded by the ENPI CBC MED was held at the auditorium of Engineering and Architecture Department of Cagliari University.

The event was opened by Antonello Sanna, Director of the Department of Civil and Environmental Engineering, and Architecture (DICAAR) of Cagliari University and Project Scientific Coordinator, Corrado

Activities of the Centre for Innovation & Technology - CIT

Zoppi President of Engineering and Architecture Faculty, Maria Grazia Piras Industry Councilor, and Luca Palazzo from the Joint Technical Secretariat of ENPI CBC MED Programme.

During the event, project representatives illustrated the 5 Building Integrated Photovoltaic pilot projects implemented in Cagliari (Italy), Alexandria (Egypt), Beirut (Lebanon), Tunis (Tunisia), Aqaba (Jordan)

As partner of the project in Lebanon, IRI team represented by Mr. Naji Abi Zeid, Ms Rola Sleiman and Drs Talal Salem and Elias Kinab, under the management of the Centre for Innovation and

Technology (CIT) presented the pilot project implemented at IRI building in Hadat, Lebanon, which consists in the integration of a photovoltaic system of 29.4 kWp, contributing with 36 MWh /Year to the energy needs of the building. As practical demonstration of integration, the pilots aim to encourage the use of solar photovoltaic technologies by replicating the activity in new contexts. On this point, in the three years of implementation, the project included awareness campaigns dedicated to citizens, students and local administrators and training courses dedicated to engineers, architects and installers (SMEs)



Participation of the Centre for Innovation and Technology through the FOSTer in Med project in the ENI information event in Beirut,

9 November 2016

Training on energy efficiency in building design

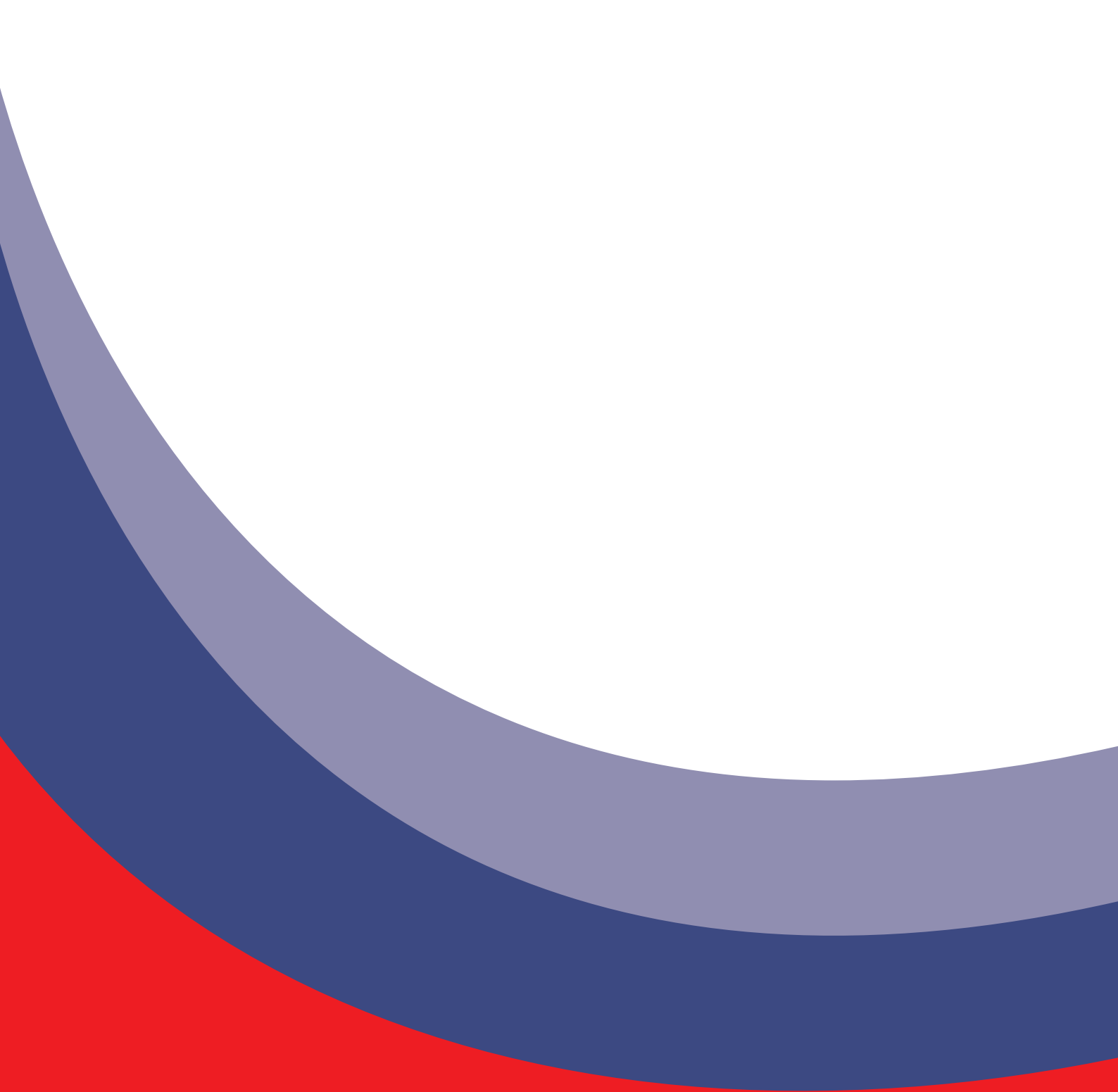
(December 14, 2016):

The training was delivered to around 40 architects, engineers and building professionals with the aims of constituting an introductory course to more advanced sessions to come.

Participation to the launching event of the new ENI call for proposals in Athens, Greece

(December 16, 2016):

Networking and setting the path for a new EU funded project on Microclimates in Mediterranean context.





IRI Cooperation with the
public sector

11

Relation with the public sector

The Institute acts on behalf of the Lebanese government and is authorized by it, to approve negotiations, sign agreements for mutual recognition of certificates of conformity in the trade exchange between Lebanon and other countries.

The Institute was tasked with the issuing of certificates of conformity in the importation of industrial goods, pursuant to the Lebanese decrees of mandatory specifications, and also in exportation operations in accordance with the specifications of the destination countries.

It should be mentioned here that since 2004, IRI has been the only internationally accredited body in Lebanon, as per the international accreditation certificate DIN EN ISO/ IEC 17025. Consequently, the Institute is the only window available for the flow of Lebanese goods, which need laboratory tests and certificates of conformity, to the European and international markets.

Parliament

IRI regularly accepts the invitations of parliamentary committees in the Lebanese parliament, and attends meetings held by them. IRI offers its technical and scientific expertise related to the Institute's scope of work to these committees during the drafting and discussion of bills.

IRI actively participated in the drafting and discussion of the bill on technical regulations and pertinent procedures for conformity assessment, in all stages of the process, with the subcommittee of the joint parliamentary committees, until the bill was approved by this committee at the end of September, 2011. IRI participated in the drafting of the bill regulating drinking water processing, treatment and packaging, with the Committee on Public Health, Labor and Social Affairs.

The bill aims to limit the unregulated and exploding number of drinking water distribution companies in Lebanon, as a result of the growing need of the citizens for water that is otherwise unavailable through public drinking water grids. The bill seeks to subject most unlicensed bottling companies to the laws and regulations in force, in order to ensure the safety of water, that it is uncontaminated, and that it complies with the required specifications to preserve public health.

IRI also participated in the activities of the Public Works and Energy Committee in several areas, including:

- Following up the process of replacing domestic gas bottles, especially the control of the production and exportation of gas bottles before they are used in local markets.
- Providing the necessary expertise and technical analysis related to fuels allowed in private cars.
- Offering opinion and technical analysis related to bills concerning public safety in the use of fuel tanks, with a view to prevent explosion.
- Expressing an opinion about the draft food safety law.
- Expressing an opinion about the draft law on electronic transactions and data of a personal nature

Ministry of Industry

IRI is considered to be the quintessential technical arm of the Lebanese Ministry of Industry, especially as IRI is a subsidiary body of the ministry, and that its Board of Directors is headed by his Excellency the Minister of Industry. IRI is continuously conducting the necessary industrial inspections and studies, as well as feasibility studies aimed at developing existing industries or establishing new ones. This is in addition to conducting studies on the added value of national industrial products and the need for certificates of origin for export clearance. Also, the Institute worked in parallel with the ministry in granting industrial

licenses, pursuant to decree No. 8018 dated 20/6/2002, which assigned the required role for IRI in this regard, and is still working in parallel with the ministry whenever it is required to do so.

Ministry of Agriculture

The Ministry of Agriculture requests IRI to analyze samples from agricultural products or material on a frequent basis. These are usually sent to IRI by the ministry for testing, whether upon importing them, exporting them or their usage. IRI is also tasked with the analysis of fertilizers and pesticide residues in vegetables, fruits and other crops.

Ministry of Economy and Trade

Since its inception, IRI has been cooperating with the Ministry of Economy and Trade, especially the Consumer Protection Directorate and the General Directorate of Cereals and Sugar beets.

A - Consumer Protection Directorate This directorate is tasked with taking samples from local markets on a regular and ongoing basis, and handing them over to IRI for laboratory testing and issuance of the necessary reports, across various sectors. IRI comprises 14 accredited laboratories covering different sectors, in addition to a control and inspection unit, the meteorological calibration unit and the Lebanese Welding Centre.

B - General directorate of Cereals and Sugar beets The Industrial Research Institute manages and operates the work of the central laboratory for grains, flour and bread research on behalf of the Ministry of Economy and Trade. The laboratory is equipped in accordance with highly specialized international cereal laboratories. The laboratory meets all the needs of this directorate by controlling the quality of the imported and the locally produced wheat and wheat products (briefly, monitoring the ingredients that make up the Lebanese bread loaf).

Ministry of Public Health

IRI laboratories are used by the Ministry of Public Health in conducting special tests on bottled water, as a fundamental step in the process of obtaining a license for the water bottling companies, in addition to other tests conducted by the instituted which include,

for example, baby formula, cosmetics, medicine and other items as needed.

The ongoing regulatory campaign launched by the Ministry of Public Health during 2014, required a continuous coordination with the Ministry which was and still sending a large number of samples daily so that the IRI conduct necessary tests and provide technical advice.

In its laboratories, the Institute conducted analysis and tests for thousands of samples brought by the Ministry of Health monitors, and results were given within the required time period, sometimes immediately. The Institute was not surprised by the unprecedented quantity and quality of samples brought by the Ministry of Health monitors.

Ministry of National Defense

The cooperation with the Lebanese army, including its various interests and divisions, has been firmly established since IRI's inception. IRI meets the requests of the committee tasked with the receipt of the analyzed materials and the central reserve committee for foodstuff analyses, the stewardship for uniforms and equipment, in addition to the requests of the corps of engineers, the logistical corps and the military police and other corps as needed. IRI also holds training courses on welding works, solar energy and other scientific topics which IRI proudly provides to this institution.

Ministry of Interior and Municipalities

The Textile, Leather and Rubber Laboratory at IRI is continuously cooperating with the security in analyzing the uniforms of the Internal Security Forces, as well as shoes and equipment, in accordance with their requirements and in order to certify the conformity of these specimens with the specifications established by them, prior to purchasing uniforms and gear.

IRI meets the various requests by the Internal Security Forces in different unmentioned sectors, including for example chemical analyses to identify contraband and other security-related analyses.

Ministry of Justice

The judicial authorities continuously refer legal issues to IRI for technical advice, as IRI is the reference point

for these authorities in what pertains to scientific issues.

Ministry of Energy and Water

IRI works with the Ministry of Energy and Water in different areas, most importantly overseeing the manufacturing of gas bottles and certifying that they conform to the mandatory Lebanese standards. IRI also inspects gasoline tanks in petrol stations, whether for licensing purposes or for maintenance when requested.

In addition, IRI inspects the nominal load of fuel tankers, in addition to other inspections that are conducted at the behest of the ministry.

IRI also conducts studies and offers technical consultation in national issues when requested, issues that fall under the scope of both the ministry's work and IRI's fields of expertise.

Ministry of Environment

IRI continually cooperates with the requests of the Ministry of Environment, whether by analyzing samples to assess their negative environmental impact, or whether by providing the Ministry of Environment with its services in the field of the inspection and auditing of factories, before suggesting the optimal approach in the production process in order to mitigate the latter's negative environmental impact.

IRI also hosts the Lebanese Cleaner Production Centre (LCPC), which was established as a result of the cooperation among the Ministry of Industry, the Ministry of Environment, UNIDO and Austria.

This centre's main objectives include ensuring compliance with environmental standards during the different stages of production, something that is beneficial in terms of reducing costs by keeping waste in check on the one hand, and improving the environment by recycling wherever possible during the production process on the other hand.

Customs

Collaboration with the Lebanese customs is mainly done in the fields of enforcing and verification of conformity with the mandatory specifications required for goods imported to Lebanon, and which are subject to customs restrictions. This is done according to a specific and known mechanism. The Customs

authorities, according to the customary procedure, can send samples to IRI for analysis and for identification of their components, prior to clearing them for entry into the local markets.

Lebanese Standards Institution (LIBNOR)

IRI worked diligently to establish the Lebanese Standards Institution (LIBNOR), which is tasked with issuing the Lebanese standards. In the beginning, this institution was established in the campus of IRI, which incubated its operations until it was reactivated in 1998. Since then, IRI published approximately one thousand national standards for the institution, as per annual contracts that were in force from 1998 until 2004. IRI is currently represented in the institution's Board of Directors, while IRI is permanently represented in the technical committees tasked with issuing and updating the national standards.

The Lebanese Council for Accreditation (Colibac)

Some time ago, IRI realized that the infrastructure of a world-class quality process must include the following items:

Bodies for conformity assessment that implement these specifications. This role is primarily assumed by IRI in Lebanon, not only in the application of national standards, but also in the application of international standards in export operations as IRI is internationally accredited according to Certificate No. 17025 .

A national institution for the issuance of national standards, which in Lebanon is the Lebanese Standards Institution (LIBNOR), a body that is ever striving to improve its role.

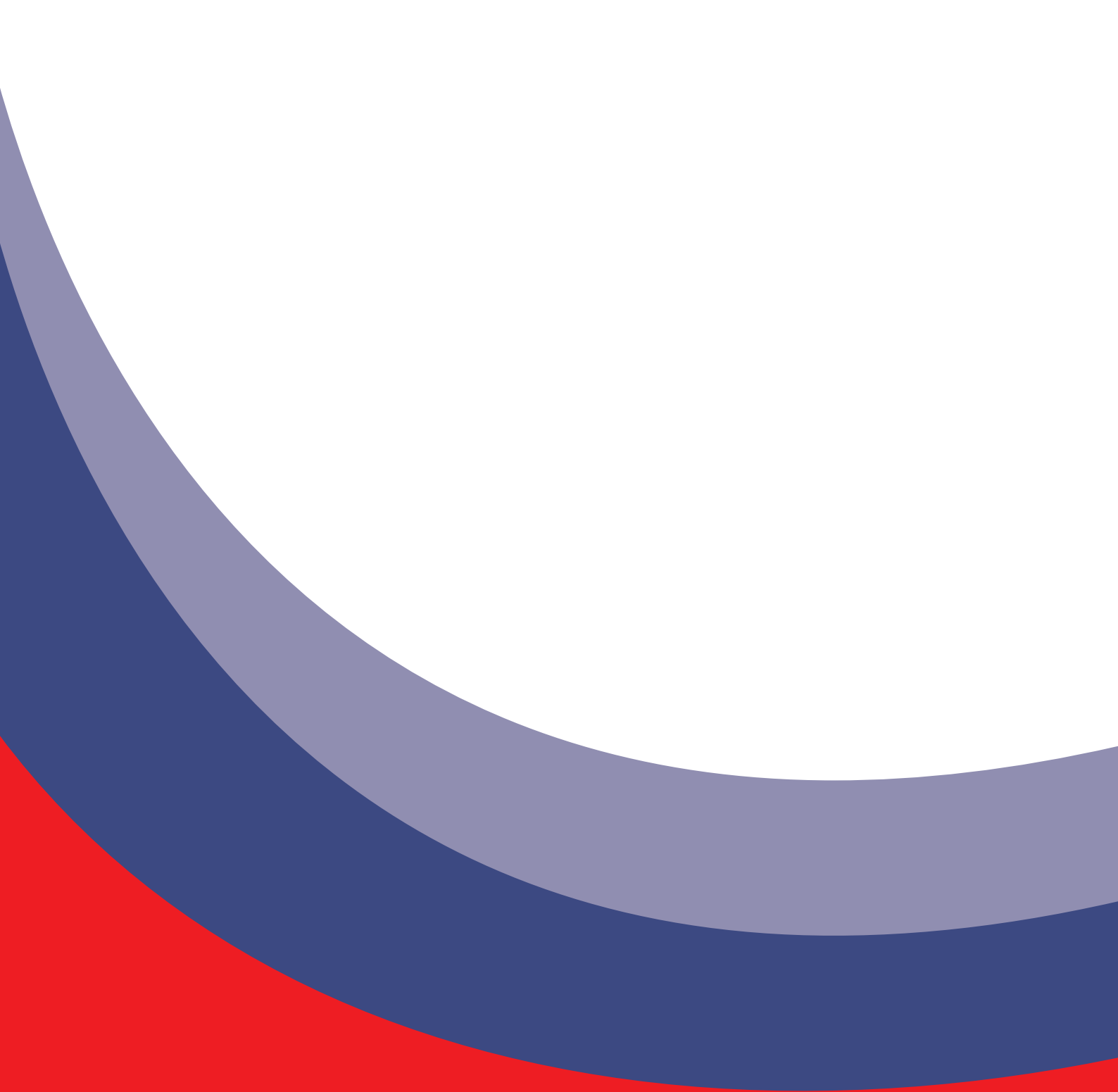
Oversight of the local market. This function is tasked to the Consumer Protection Directorate at the Ministry of Economy and Commerce .

A national council for accreditation, whose tasks include accrediting laboratories, monitoring commissions, conformity assessment for products and processes in the country. This national institution was not yet established in Lebanon, and IRI sought hard to establish it in order to complete the quality

IRI cooperation with the public sector

infrastructure at the level of national institutions, until the decree of its establishment was issued in 2004, while the decree to establish its Board of Directors was issued in 2006. IRI is represented in the Board of Directors of the Lebanese Council for Accreditation (Colibac).

This council is still in the process of drafting its bylaws, which are nearing completion. Work is also underway to speed up the passing of the necessary legislations that will enable the council to start its operations and serve the purpose it was created for.





IRI relations with the
private sector

12

Industrialists

IRI allots great importance to industrialists and industry in Lebanon. Nine years ago, IRI concluded an agreement with the Association of Lebanese Industrialists whereby it granted industrialists a fifty percent discount on the costs of all laboratory analyses, in accordance with the list adopted by IRI more than ten years ago. The services provided by IRI to the industrialists are as follows:

A – Analysis requests with the aim of improving

The quality of production or finding solutions to production problems Any industrialist can head to IRI to request an analysis of a product produced in his factory with the aim of improving its quality, or as a result of a particular problem he is facing during production. At that point, cooperation and follow-up begin with the industrialist.

In most instances, his request becomes a process of applied research with which these analyses either end up in improving the quality of the product or determining the underlying cause of the production problem and subsequently, working on solving this problem.

B – Pre-export Analysis

There are many products that cannot be exported to foreign markets without first being analyzed. As IRI is internationally accredited pursuant to certificate No. 17025, its accreditation is recognized by more than 120 countries, rendering it virtually the sole window through which Lebanese goods that comply with technical specifications can flow into the European and global markets, owing to the certificate of conformity issued by IRI.

Therefore, industrialists head to IRI to conduct the analyses required by the destination countries, in order to obtain certificates of conformity for their products which would give them access to international markets.

C – Product Certification

This is an optional program that any factory that meets the conditions can request, for implementation in its facilities according to a contract with IRI and a specific mechanism at the latter; this would enable the factory to obtain IRI's conformity mark for its products, in an ongoing and continuous manner. IRI would oversee

production through periodical analyses and inspections, before granting the factory certificates of conformity whether for export purposes or for ensuring the conformity of its products to national standards. This takes place in a routine manner, and also on demand, and its cost is factored in into that of the program.

Merchants

There are goods that are subject to mandatory national standards. For this reason, importing such goods is subject to customs restrictions that stipulate their conformity to the mandatory national standards. This is verified by IRI prior to allowing these goods into domestic consumer markets.

Hence, the relation between the importers and merchants on one hand, and IRI on the other hand is constantly evolving. Efforts are underway, on a continuous basis, to facilitate trade exchange on one hand, and to verify the conformity of imported goods following a scientific method on the other hand.

Many merchants voluntarily head to IRI to request tests and analyses of their merchandise and products, in order to determine their conformity with international standards in the case of export, or national standards in case of import, prior to shipping it from the country of origin.

Farmers

IRI's laboratories continuously cooperate with farmers. In truth, many farms voluntarily head to IRI and request their products to be analyzed.

IRI provides analysis for farmers for the following products:

Olive oil

Honey

Vegetables and fruits (pesticide residue)

Irrigation water

Meat and fish

Other agro-food products.

Researchers and scientists

Many researchers and scientists head to IRI to conduct tests and analyses necessary for their scientific research. Most of the time, their requests become applied research projects, as they are aware of IRI's capabilities in this area. This is not to mention the fact

that IRI houses 14 laboratories spanning many complementary disciplines, in addition to the meteorology laboratory, the Lebanese Welding Centre, the Euro-Lebanese Centre for Industrial Modernization, the Lebanese Cleaner Production Centre, and the Centre for Innovation & Technology.

Consumers

The relationship between consumers and IRI is either direct or indirect, through the civil organizations and associations concerned with consumer protection, the environment and other fields.

Direct relationship

Any citizen can go in person to IRI in order to test any product, substance or other items, which is what is often done by citizens to ascertain the safety of what they consume, be it drink, food, supplies, household electric appliances, building materials, petroleum products and other daily items.

Indirect relationship

Consumer protection associations and other civil organizations often head to IRI and request analyses and tests of an environmental or health safety nature. Cooperation with these organizations is done on a continuous basis by IRI, which meets all the former's requests in return for special fees that take into account their conditions in most cases. If these requests were not complimentary, then they would be symbolic, in a bid by IRI to support and encourage these groups to work for the public good.





Exhibitions 13

The IRI participates in exhibitions And uses them to launch scientific activities with developmental goals

Soon enough, the IRI asserted its presence in local and foreign exhibitions, and actively participated in researches, seminars and lectures, which made 2016 a prolific and prosperous year with great results.

Job and Orientation Fair 2016



Under the patronage of their Excellencies, the Minister of State for Administrative Reform Mr. Nabil de Freige and the Minister of Industry Dr. Hussein Hajj Hassan, The Industrial Research Institute participated in the Job and Orientation Fair 2016, held on January 19th at the UNESCO Palace – Beirut.

Project Lebanon

As every year, the Industrial Research Institute participated in the Project Lebanon 2016 fair, with a special stand at this exhibition, showcasing the IRI services, giving a brief about each of its laboratories and the laboratory tests that they provide, introducing the Institute and explaining its role in setting Lebanese specifications, and listing the international agreements reached by the Institute in the last 18 years.

During the fair, the Development and Technology Director, Dr. Imad Hage Shehadeh, lectured on the IRI role and accomplished achievements, as per pursuing control operations and facilitating transactions.



HORECA 2016 exhibition in Lebanon

Under the Patronage of the Lebanese Minister of Tourism H.E. Mr. Michel Pharaon, the Industrial Research Institute (IRI) and The Euro-Lebanese Centre for Industrial Modernization (ELCIM) participated in HORECA 2016, one of the largest annual exhibitions gathering the main hospitality and foodservice experts of the country and the region, held in BIEL- Beirut from the 5th till the 8th of April 2016.

During the event, ELCIM organized, on site, a series of short presentations on topics that are of interest to all food operators, as well as meetings with technical experts in various field of expertise.

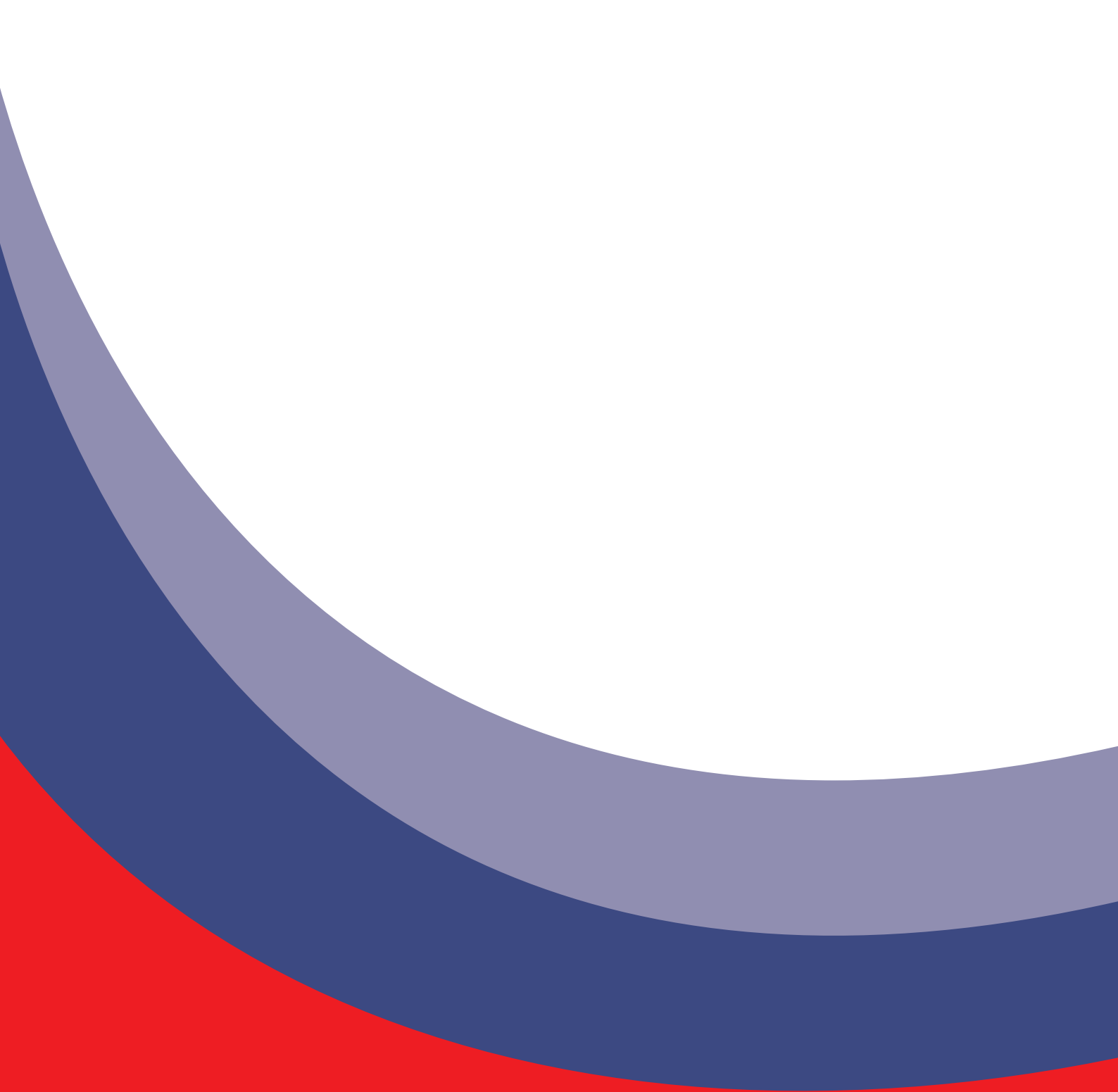


Beirut 7th Energy Forum

The Industrial Research Institute participated in the 7th Beirut Energy Forum, at Hotel Le Royal-Dbayeh, from the 21st to the 23rd of September 2016. The IRI had a special participation at the exhibition, during which it helped introducing to company and importers the latest tests and mandatory decrees implemented by the Insitute through its laboratories. Also, Dr. Imad Hage Shehadeh participated in a seminar and dialogue on “transferring Lebanon towards efficient resources, environmental innovation and lowering CO2 in industry”, and discussed the IRI experience in adopting efficient energy and using renewable sources of energy.

During the seminar, the solar power generator on the roof of the IRI premises was selected to receive the Energy Awareness Award, granted to the most important energy projects in Lebanon.







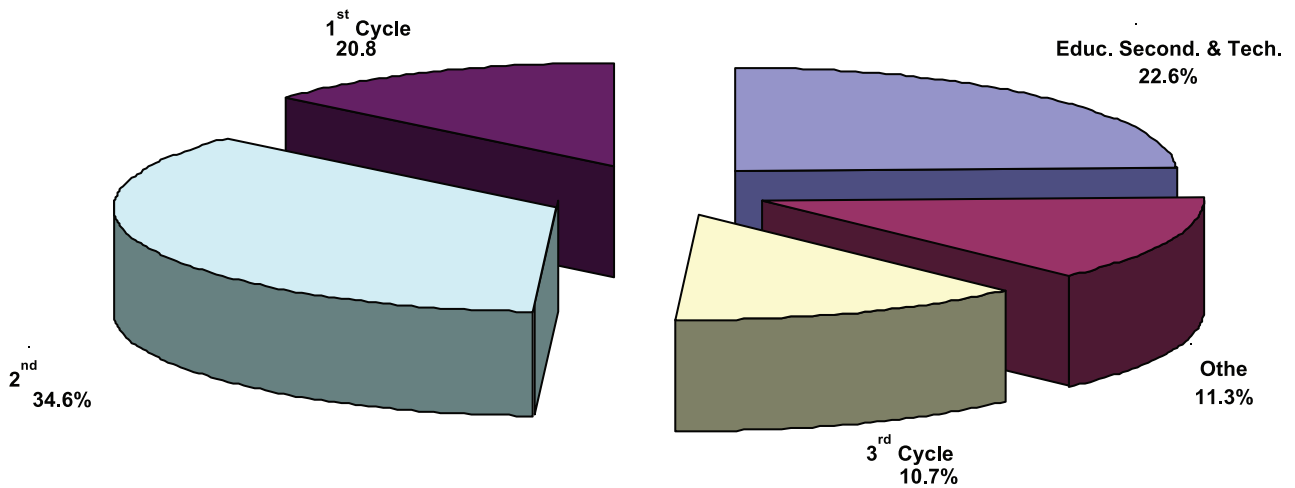
Development of human
resources

14

Human resources development

The human resources are growing in number at the Industrial Research Institute, and has increased, throughout nineteen years, from 32 to 159 employees by late 2016, with a percentage of 70% for men and 30% for women, with a medium age of 34, distributed, in accordance with their educational competencies, as follows:

- 17 holding a 3rd Cycle Diploma
- 55 holding a 2nd Cycle Diploma
- 33 holding a 1st Cycle Diploma
- 36 with secondary and technical education
- 18 various



Educational level	Number	Percentage
3 rd Cycle	17	7.10
2nd Cycle	55	6.34
1 st Cycle	33	8.20
General and technical secondary studies	36	6.22
Various	18	3.11
Median age	Women	Men
	30 percent	70 percent





On-going Employee
Training

15

International Training, Seminars & Workshops

Participant	Organizer	Object/Title	Date	Location
Robert Haddad	The Swedish International Development Agency (Sida)	Quality Infrastructure Development in Support of World Trade	14/02-11/03/2016	Sweden
Naji Abi Zeid	European Commission, TAIEX and Technological Park of Andalucia (PTA S.A.)	TAIEX Study Visit on Applied Research and New Product Development for the ICT sector	7-9/03/2016	Malaga
Edgard Shaaya	Germany's National Metrology Institute (PTB) and Royal Scientific Society (RSS)	Middle East Regional Metrology Training on Medical Devices	20-24/03/2016	Amman-Jordan
Joseph El Helou	Germany's National Metrology Institute (PTB) and the National Institute for Standards (NIS)	Low Voltage Measurement	10-14/04/2016	Cairo-Egypt
Achraf Nasser Eddine	Germany's National Metrology Institute (PTB) and the National Institute for Standards (NIS)	High Voltage Measurement	17-21/4/2016	Cairo-Egypt
Amine Jbeily	International Association for Cereal Science and Technology (ICC)	The 15th ICC Cereal and Bread Congress	20/04/2016	Istanbul - Turkey
Joseph Matta	EUROLAB	EUROLAB General Assembly and Annual Meetings 2016	19-21/04/2016	Scotland
Alaa Ahmad	Germany's National Metrology Institute (PTB) and the National Institute for Standards (NIS)	Middle East Regional Metrology Training on Calibration of Flow Meters	08-12/05/2016	Cairo-Egypt
Elias Maalouf			15-19/05/2016	
Tarek Hakim	The German Society for Non-Destructive Testing	19th World conference on Non-Destructive Testing	13-17/06/2016	Munich-Germany
Siham Youssef				
Joseph Matta	The TAIEX Instrument of the Institution Building Unit of the European Commission	6th Seminar of European Customs Chemists	22-24/06/2016	Amsterdam - The Netherlands
Imad Hage Chehadeh	The Ministry of Commerce, Peoples's Republic of China, The Economic and Commercial Counselor's Office of the Embassy of People's Republic of China in Lebanon	2016 Minestrial Seminar on Solar Energy and Wind Energy Development and Utilization for Developing Countries	8-14/08/2016	Lanzhou, China
Robert Haddad	The Swedish International Development Cooperation Agency (Sida), & The Egyptian Affairs Agency (EEAA)	Follow-up Seminar on Sida international training programme "Quality Infrastructure Development in Support of World Trade" Egypt	21-26/08/2016	Cairo, Egypt
Imad Hage Chehadeh	Germany's National Metrology Institute (PTB) and The Jordan Standards and Metrology Organization (JSMO)	Middle East Regional Steering Committee Meeting and Workshop on Metrology Systems	22-24/08/2016	Amman - Jordan
Selim Kfoury	وزارة الصناعة	الزيارة الرسمية للجمهورية الإسلامية الإيرانية لبحث سبل تطوير التعاون الصناعي بين البلدين	28-30/01/2016	Iran

On-going Employee Training

Robert Haddad	Royal Scientific (RSS) Jordan & Physikalisch-Technische Bundesanstalt (PTB) Germany	Assessment of the metrology laboratory according to the international practices	9-12/10/2016	Amman - Jordan
Elias Maalouf				
Mohamad Haidar	Nîmes Métropole, FITS, Forum International des technologies et de la sécurité, IPSE, Institut de prospective sur la sécurité européenne	Deuxième Forum de Nîmes	11-13/10/2016	Nîmes - France
Mohamad Haidar	Regional Activity Center, SCP/RAC + UNEP	Switch Med Connect	18-20/10/2016	Barcelona - Spain
Mohamad Hajjar	The Ministry of Commerce, People's Republic of China, The Economic and Commercial Counselor's Office of the Embassy of The People's Republic of China in Lebanon	2016 Seminar on Development and Utilization of Clean Energy and Renewable Energy for Developing Countries	26/09/2016 - 16/10/2016	Changsha - China
Hovig Kouyoumdjian	Telemedic sal	Experimental witnessing procedure for microbiological decontamination and deactivation	07-09/11/2016	Moscow - Russia
Elias Maalouf	المنظمة العربية للتنمية الصناعية والتعدين	ورشة عمل حول التوجيه العربي الموحد لأدوات القياس والاجتماع التاسع للجنة الاستشارية للمنتروولوجيا والاجتماع الرابع للجمعية العمومية للمنتروولوجيا الصناعية	8-11/11/2016	Rabat - Morocco
Selim Kfoury	The Italian Ministry of the Environment, Land, and Sea And the WEC Lebanon Committee	Ecomondo 2016	8-11/11/2016	Rimini - Italy
Joseph Matta	European Commission	15th Meeting of the Euromed working group on standards, technical regulations and conformity assessment	08/12/2016	Brussels - Belgium
Joseph Helou	Hydrac S.A. Cameroun	Formation Metrologie Cameroun HYDRAC	12-19/12/2016	Cameroun
Naji Abi Zeid	ENI CBCMED, Programme funded by the European Union and Regione Autonoma de Sardegna	WE MED Connecting the Mediterranean	16/12/2016	Athens - Greece
Talal Salem				
Fady Melhem	Bureau Veritas - Division services aux gouvernements & Commerce International	LCIE Training	18-24/12/2016	Neuilly sur Seine - France

Local Training, Seminars & Workshops

Participant	Organizer	Object/Title	Date	Location
Joelle Adam	Ministry of Industry, Faculty of Engineering UL and LAAS	National Conference of Management and Valorization of waste in Lebanon	12/01/2016	Faculty of Engineering in the Lebanese University-Hadat
Mohammad Hajjar	Chamber of Commerce, Industry & Agriculture of Tripoli and North Lebanon	Supporting RE & EE Initiatives in North Lebanon	25/01/2016	Chamber of Commerce, Industry & Agriculture of Tripoli and North Lebanon
Halim El Bayeh	Ministry of Environment/ Project Management Unit (PMU)	Training Workshop for updating inventory of initial and new POPs	26/01/2016	Green Room - Ministry of Environment
Raymonde Khazzaka	Ministry of Environment/ Project Management Unit (PMU)	Training Workshop for updating inventory of initial and new POPs	26-28/01/2016	Green Room - Ministry of Environment
Imad Hage Chehadeh	لجنة متابعة المعايير والمواصفات اللبنانية في نقابة المهندسين في بيروت	The issued Lift Standards by Libnor in 2015	27/01/2016	Order of Engineers - Beirut
Antoine Faycal				
Dany Tahchy				
Halim El Bayeh	PCB MANAGEMENT in the Power Sector Project	Training Workshop on Environmentally Sound Management of PCBs	01/03/2016	Radisson Blu Martinez Hotel - Beirut
Raymonde Khazzaka	PCB MANAGEMENT in the Power Sector Project	Training Workshop on Environmentally Sound Management of PCBs	02/03/2016	Radisson Blu Martinez Hotel - Beirut
Naji Abi Zeid	The National Council for Scientific Research & The ESCWA Technology Center	Governmental Related Bodies Workshop on Legislations relevant to Innovation and Technology Transfer	03/03/2016	Lebanese Parliament Library
Imad Hage Chehadeh	BIAT (The Business Incubation Association in Tripoli) & CCIAB & LSES	Solar Process Heating in Lebanon Opportunities and Key factors for quick assessments	14/03/2016	Order of Engineers and Architects - Beirut
Bilal Houssein				
Ahmad Hassan				
Fady Melhem				
Achraf Nasser Eddine				
Imad Hage Chehadeh	Berytech	Workshop on Solar Energy	15/03/2016	Berytech Technology Pole - Mar Roukouz
Achraf Nasser Eddine				
Siham Youssef	UNIDO, Ministry of Industry, the Italian Embassy in Lebanon and the Faculty of Agriculture and Food Sciences in USEK	Understanding Hazards from Farm to Fork - Food Safety in Dairy Products	19/04/2016	Jean El Hawa Amphitheater - USEK
Siham Youssef	LIBNOR	The New Borders of CSR Performance & Inclusive Investment	20/04/2016	مقر الاتحاد العام للغرف العربية - مبنى عدنان القصار للاقتصاد العربي
Ziad Moukarzel	IRI and UNIDO	MFCAs workshop	15/04/2016	Lancaster Hotel - Hazmieh
Khawla Ismail				

On-going Employee Training

Bilal Houssein	LIBNOR & ISO	انظمة ادارة الطاقة وفقا للمواصفات الدولية (لا سيما المواصفة ISO 50001)	04-05/05/2016	Radisson Blu Hotel - Beirut
Mohammad Hajjar				
Rana Matar	The Departement of Laboratory Science and Technology of the AUST & The Ministry of Industry	Genetically Modified Food in Lebanon	06/05/2016	AUST - Ashrafieh
Amine Jbeily	Ministry of Agriculture in Lebanon & FAO	FAO Country Programming Framework 2016-2019	16/05/2016	Grand Serail - Beirut
Imad Hage Chehadah	UNDP	UNDP Energy and Environment Programme Meeting	16/05/2016	Radisson Blu Hotel - Beirut
Naji Abi Zeid				
Jihad Hajj Chehade	Lebanese Franchise Association (LFA)	BIFEX 2016 Shaping a dynamic economy	18-19/05/2016	BIEL - Lebanon
Amany Gerges	Ministry of Environment	Support to Preparation of the Third National Biosafety Report to The Cartagena Protocol on Biosafety	20/05/2016	Movenpick Hotel - Beirut
Selim Khoury	معهد باسل فليحان المالي والاقتصادي و المدرسة الوطنية الفرنسية للإدارة	حفل اختتام اللقاءات العلمية المخصصة للكوادر العليا في الإدارات العامة النيابية	26/05/2016	معهد باسل فليحان المالي والاقتصادي
Joseph El Helou	Technoline s.a.l. & Mettler Toledo	Metrology & Weighing practices	29/06/2016	Hilton Beirut Metropolitan Hotel
Achraf Nassereddine	Lebanese University - Faculty of engineering	حفل تسليم الشهادات لخريجي الكلية لعام 2015 2016	15/07/2016	مجمع رفيق الحريري الجامعي في الحدث
Mohammad Hajjar	The Lebanese Center of Energy Conservation (LCEC)	The Draft Energy Efficiency and Renewable Energy Law in Lebanon: Positive and Negative Impacts.	21/07/2016	Crowne Plaza Hotel in Hamra, Beirut
Ziad Moukarzel	معهد باسل فليحان المالي والاقتصادي	الضمان الاجتماعي	19-21-26/07/2016	معهد باسل فليحان المالي والاقتصادي
Hanna Francis	Tabbara General in collaboration with Granstream Morocco	Grandstream Workshop	15-16-17/08/2016	Tabbara General
Mohammad Haidar	Ministry of Industry	ورشة عمل في رحلة حول معالجة تلوث مياه نهر الليطاني وبحيرة القرعون	19/08/2016	Hotel Kadri - Zahleh
Joseph Matta	The Lebanese Standards Institution - LIBNOR & The International Organization for Standardization - ISO	Environmental Management Standards (with Focus on ISO14001 and its relation with Water and Carbon Footprint)	06-07-08/09/2016	Crown Plaza Hotel, Hamra
Elias Dib				
Elie Melki				
Mohamad Zeaier				
Bassam Kabalan	The Ministry of Industry & the "Enhancement of the Business Environment in the Southern Mediterranean" (EBESM)	The Capacity Building Seminar	14-15/09/2016	Golden Tulip Hotel- Beirut
Bilal Houssein	MCE & LCEC	International Beirut Energy Forum 2016	21-23/09/2016	Le Royal Hotel - Dbayeh
Perla Hanna	Gulf Scientific Corporation & Merck Life Science	Merck Life Science Microbial Monitoring Seminar	26/09/2016	The Smallville Hotel - Beirut
	The Ministry of Agriculture & The Holy Spirit University of Kaslik	Protect our wine from climate change	13/10/2016	USEK

On-going Employee Training

Jihad Hajj Chehade (observer auditor)	AB certification	Audit at Daher International Foods	19/10/2016	Mansoura - West Bekaa
Khaled Ghoul	The Lebanese SUDEP	Training and Inauguration Event Lebanese SUDEP-South Project	19-20/10/2016	RMF-Mejdlaya/Ardeh
Joseph Matta	Université Saint-Joseph de Beyrouth (Pôle Technologie Santé)	Première journée scientifique du Pôle Technologie Santé (PTS)	22/10/2016	USJ Beirut
Mahmoud Amhaz	معهد باسل فليحان المالي والاقتصادي والمعهد العربي للتخطيط بالكوييت	اعداد دراسات الجدوى للمشروعات الاستثمارية	28-29- 30/10/2016	معهد باسل فليحان المالي والاقتصادي
Mohamad Haidar	LCPC - IRI and UNCDAT	1st National Stakeholder workshop Lebanon NGER	06-07/12/2016	Movenpick Hotel - Beirut
Sandra Sarkis	The World Intellectual Property Organization (WIPO) and the Ministry of Economy and Trade	WIPO sub-regional intellectual property policies in universities and research institutions	13-14/12/2016	Social and Economic Council - Down Town
Ramzi Bhamdouni				

MISSIONS (Trainers, Experts & Speakers)

Participant	Organizer	Object/Title	Date	Location
Joseph Matta	Ministry of Industry, Faculty of Engineering UL and LAAS	National Conference of Management and Valorization of waste in Lebanon	12/01/2016	Faculty of Engineering in the Lebanese University- Hadat
Joseph Matta	LAAS	Symposium: Université entrepreneuriale	26/01/2016	Université Saint-Esprit de Kaslik (USEK)
Joseph Matta	Ministry of Environment	Hazardous Waste Management	03/02/2016	Movenpick Hotel -Beirut
Joseph Matta	Université Saint-Joseph de Beyrouth & Agence Universitaire de la francophonie	Pour un rôle plus actif dans l'innovation et le transfert de technologie	13/06/2016	Université saint-Joseph
Achraf Nasser Eddine	Notre Dame University - Louaize	Third International conference on advances in computational tools for engineering applications & Third international conference on renewable energy for developing countries	13-14- 15/07/2016	NDU
Joseph Matta	The UK Lebanon Tech Hub	The announcement of the findings and results of the National Report for GEM - Lebanon	15/09/2016	Radisson Blu Hotel
Mohamad Haidar	LCPC - IRI and UNDP	1st National Stakeholder workshop Lebanon NGER	06/12/2016	Movenpick Hotel -Beirut

IRI Seminars / Conferences

Participant	Organizer	Object/Title	Date
Thomas Sabbagh	IRI-UNIDO	Test Training for Service providers	27/01/2016
Elie Dawaliby	Electrical Lab-IRI	Perform Tripping Characteristics for circuit breaker according to IEC 60898	25/02/2016
Mohamad Rizk	GCS Lab-IRI	Testing sanitary ware	02-12/02/2016
Imad Hage Chehadé	CERWAY	Formation des auditeurs et du responsable certification HQE au Liban	15-16/06/2016
Antoine Faical			
Dany Tahchy			
Maya Majdalani			
Ahmad Wehbe	Electrical Lab-IRI	Perform mechanical shock & glow wire test	23/06/2016
Elias Dib	GCS Lab-IRI	New Equipment installation and training Optical Emission Spectroscopy	02-08/08/2016
Mark Tahchy			
Elie Dawaliby	Electrical Lab-IRI	esistance to external forces test according to IT/ELC/34	09/08/2016
Ahmad Wehbe			08/08/2016
Mohamad Hafi	Electrical Lab-IRI	performing the resistance to heat and CFL testing	26/08/2016
Achraf Arabi	GCS Lab-IRI	Initial setting time on cement	21-28/09/2016
Ahmad Hassan	IRI and LCEC	Formation Photovoltaïque autonome	08-11/11/2016
Mohamad Hajjar			
Ahmad Habli			
Elias Dib	GCS Lab-IRI	New Equipment installation and training hydrostatic pressure equipment	10-15/11/2016
Mark Tahchy			
Bilal Houssein	IRI and LCEC	Formation Photovoltaïque raccordé réseau et secours	14-17/11/2016
Fady Melhem			
Ahmad Habli			
Muhi Din Habli	Electrical Lab-IRI	Provision for earthing	23/11/2016
Mohamad Rizk	GCS Lab-IRI	Tensile test using the compression equipment CMP/GCS/02 for testing steel bars	12-15/12/2016
Dany Tahchy	IRI - ELCIM and CIT	Energy Efficiency in Building Design	14/12/2016
Mohamad Hajjar			

LIBNOR

Participant	TC Number	Standard Title	Date
Wadad Daher	NLTC SC 1031	Honey 209	08/02/2016
Dany Tahchy	NLTC 59	Building and Constructions	24/02/2016
Mark Tahchy	NLTC 159	Building and Constructions	23/03/2016
Mark Tahchy	NLTC 2165	Waste water engineering	11/04/2016
Mark Tahchy	TC 59	Buidling Constructions EN 12859:2011 EN 14566:2008	12/05/2016
Hovig Kouyoumdjian	NL 656	لجنة الصحة والسلامة	15/12/2015 07/01/2016 02/02/2016 17/02/2016 03-17/03/2016 07/04/2016 12-19/05/2016 08/06/2016
Raymonde Khazzaka	TC 147	جودة المياه (مياه الشرب) NL 161: 1999	02/04/2014
Hovig Kouyoumdjian			07/05/2014 25/08/2015 27/10/2015 08/12/2015 12/01/2016 25/02/2016 22/03/2016 21/04/2016 24/05/2016 09/06/2016 02/08/2016
Amany Gerges			05/05/2015
Halim El Bayeh			04/02/2016
Mark Tahchy	NL TC 59	Building Construction	12/07/2016 11/08/2016
Mark Tahchy	TC 138	Plastic Piping	13/05/2016 14/06/2016 01/07/2016 03/08/2016 16/09/2016
Halim El Bayeh	NL TC 34 / SC 1008	المضافات الغذائية	16/12/2015 10/02/2016 16/03/2016 29/03/2016 19/04/2016 18/05/2016 07/06/2016 23/11/2016

On-going Employee Training

Raymonde Khazzaka		06/02/2015 15/04/2015 21/12/2015
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Local Meetings, Inaugurations & Exhibitions

Participant	Organizer	Object/Title	Date	Location
Siham Youssef Tarek Hakim Joelle Adam Fady Melhem	IECD and Foyer de la Providence	Job & Orientation Fair 2016	19-20/01/2016	UNESCO palace - Beirut
Siham Youssef Joelle Adam	The Lebanese University - Faculty of Sciences	Annual Job Fair 2016	23-24/02/2016	Lebanese University - Fanar Campus
Naji Abi Zeid Manale Tabanji Talal Salem Sandra Matta Elias Kinab Fadi Fayad Talal Hijazi Richard Skaff Maya El Khatib	Hospitality Services	HORECA 2016	5-8/04/2016	BIEL - Beirut
Ramzi Bhamadouni Siham Youssef Joelle Adam Tarek Hakim Mohammad el Hajjar Edgard Shaaya Elias Maalouf Khodor fawaz Bilal Hussein Joseph el Helou Achraf Nassereddine Mark Tahchy Jean Dib Ahmad hassan Ramzi Bhamadouni Talal Hijazi Alaa Ahmad Elias Kinab Hachem al ali Richard Skaff	IFP	Project Lebanon - Energy Lebanon 2016	31/05-3/06/2016	BIEL - Beirut
Imad Hage Chehadeh Mohamad Hajjar Bilal Houssein Ahmad Habli Carine Slaiby Achraf Arabi Ahmad Hassan Fady Melhem Mark Tahchy	MCE & LCEC	International Beirut Energy Forum 2016	21-23/09/2016	Le Royal Hotel - Dbayeh

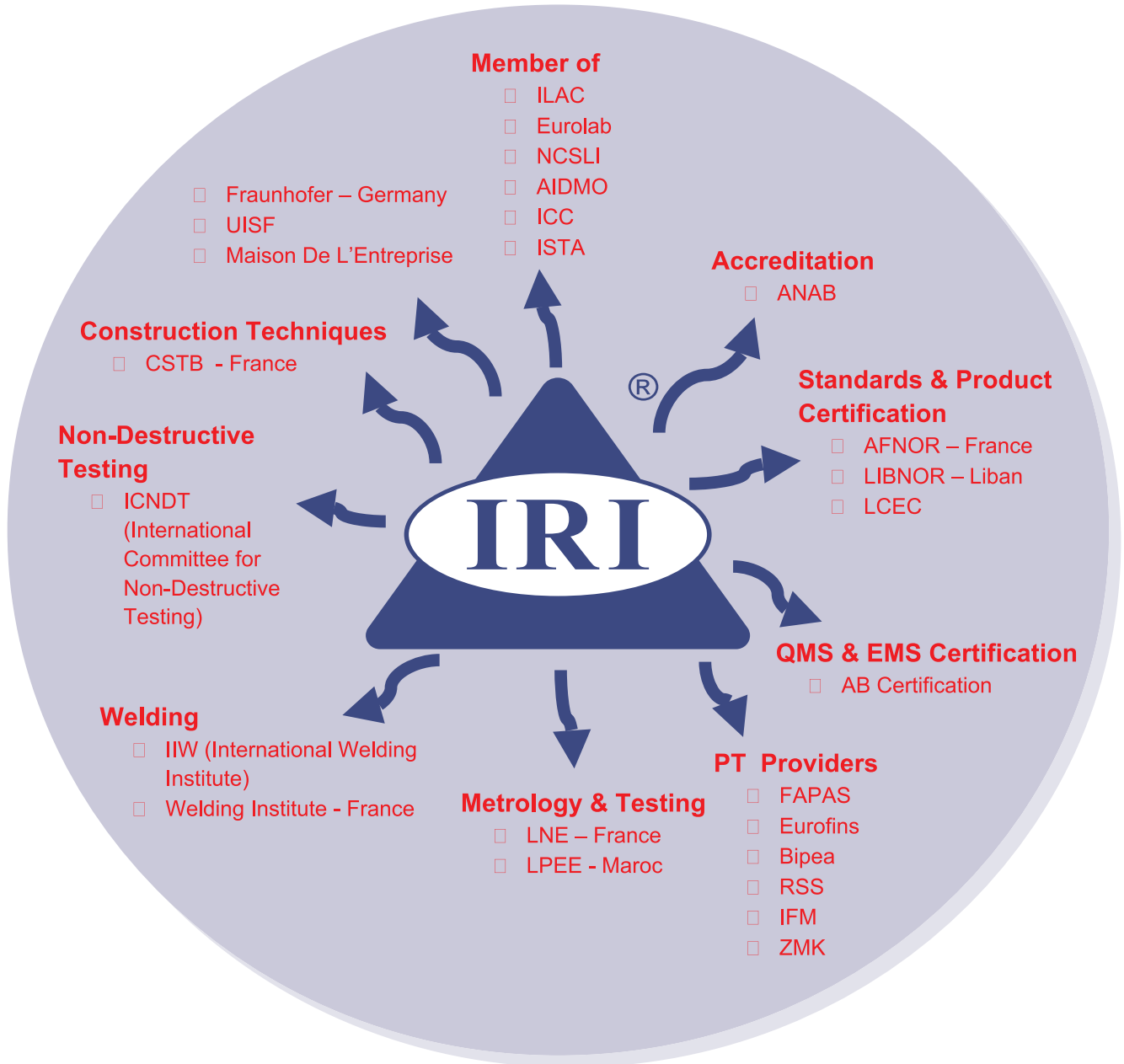




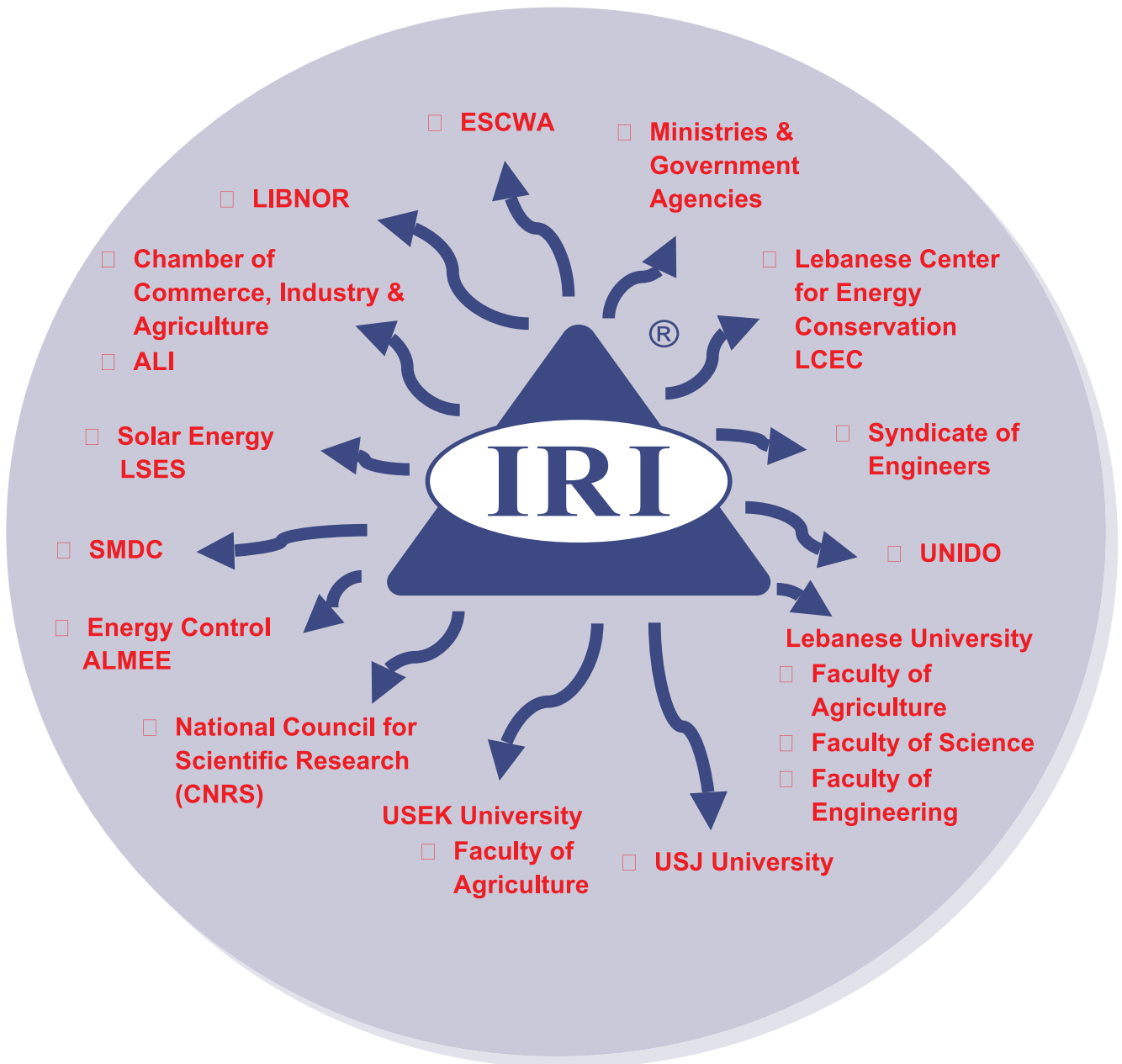
International and Local
Partnerships

16

INTERNATIONAL PARTNERS



LOCAL PARTNERS







Decrees, Laws & Decisions

17

Decisions

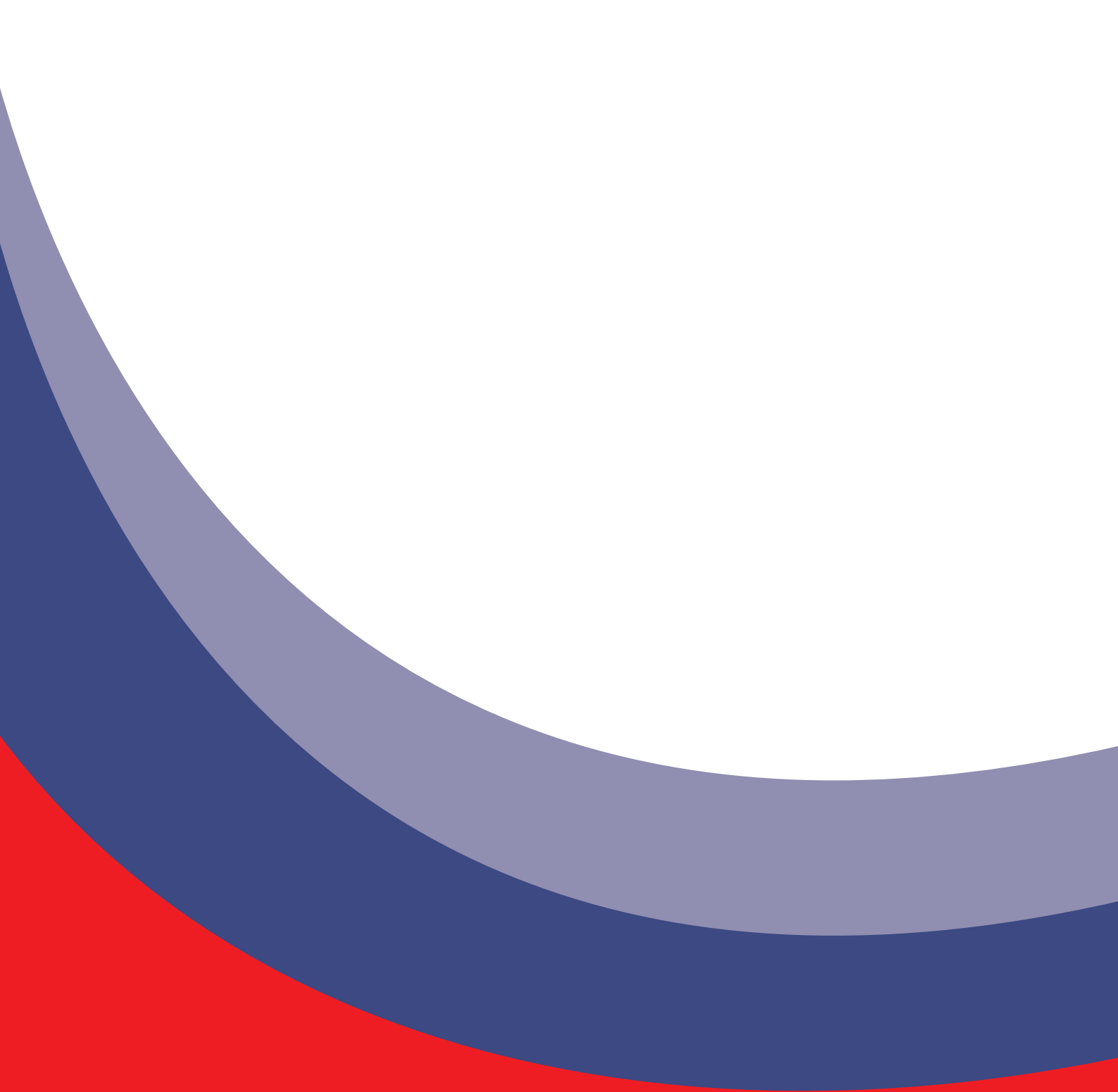
Decree		Official Gazette		Subject
No.	Date	No.	Date	
3054	12/03/2016	13	24/03/2016	Amendment of the Decree No. 8442 dated 13/06/2002 on the specifications of the 92, 95 and unleaded 98 Octane gas, as well as Diesel Oil for use in vehicles
3519	19/05/2016	28	26/05/2016	Amendment of the divisions of the customs tariffs clauses 72.27 & 72.28 on steel exports
3795	30/06/2016	35	07/07/2016	Amendment of the Decree No. 8442 dated 13/08/2002 on the specifications of the 92, 95 and unleaded 98 Octane gas, as well as Diesel Oil for use in vehicles

Decisions

Decisions		Official Gazette		Subject
No.	Date	No.	Date	
1/2	5/1/2016	2	14/01/2016	Amendment of the Decision No. 1/540 dated 15/06/2012 on the conditions for the health registration of warehouses designed for foods of animal origins
1/50	26/1/2016	5	04/02/2016	Imposing a prior authorization on the imports of olives and olive oil
1/106	15/02/2016	8	25/02/2016	Termination of the Decision No. 1/1216 dated 20/12/2015
66	26/02/2016			Draft decree aiming at amending customs tariffs, by amending the divisions of the customs tariffs clauses 72.27 and 72.28 on steel imports
42	04/03/2016	11	17/03/2016	Amendment of the Decision No. 175 dated 15/09/2015 on replacing metalling gas cylinders (butane/propane) present in the local market
64	21/03/2016	15	07/04/2016	Amendment of the Decision No. 175 dated 15/09/2015 on replacing metalling gas cylinders (butane/propane) present in the local market

Decrees, laws & decisions

1/45	29/03/2016	16	14/04/2016	Amendment of the Decision No. 1/33 dated 27/03/2015
1/89	13/04/2016	18	21/04/2016	Mechanism for reviewing environmental check up studies
31/H CH	24/05/2016	30	02/06/2016	Decision No. 31/H CH defining the specifications of the locally produced and imported wheat flour
36/H CH	12/06/2016			Amendment of the Decision No. 31/H CH dated 24/05/2016
1/91	21/06/2016	34	30/06/2016	Termination of the Decision No. 1/45 dated 29/03/2016 and amendment on the Decision No. 1/33 dated 27/03/2015
1/1199	27/06/2016	38	28/07/2016	Correcting a typing mistake in the Ministry of Health Decision No. 1/1199 dated June 27, 2017 on the implementation on the Law No. 178 dated August 29, 2011 and the mechanism for overseeing the addition of iodine to salt
1/98	30/06/2016	36	17/07/2016	Naming two board members at the Industrial Research Institute
125	04/07/2016	35	07/07/2016	Amendment of the Decision No. 175 dated 15/09/2015 on replacing metallic gas cylinders (butane/propane) present in the local market
1/581	04/07/2016	38	28/07/2016	Amendment of the Decision No. 1/502 dated 21/09/2010 (imposing laboratory tests on the wheat imported and set for human consumption)
1/583	05/07/2016	38	28/07/2016	Approved ways for analysing heavy metals, pesticide residues, microbiology and mycotoxins in important wheat set for human consumption
1/587	12/07/2016	38	28/07/2016	Common mechanism between the Ministries of Agriculture and Health for monitoring imported wheat
1/622	27/07/2016	40	11/08/2016	Amendment of the decision No. 1/583 dated 05/07/2016 on approved ways for analysing heavy metals, pesticide residues, microbiology and mycotoxins in important wheat set for human consumption
1/114	08/08/2016	41	18/08/2016	Needed procedures and documents to apply for an industrial certificate for water refining and packaging
1/136	04/10/2016			Constitution of a workteam to follow up on the institutions that gather and stock used vegetal oils
1/174	13/12/2016	60	22/12/2016	Amendment of the decision No. 1/33 dated 27/03/2015





Communication and Media

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Interview with Arab Woman TV

Frenn: Arab countries are violating the conditions of the terms of the Trade Facilitation Agreement (TFA)

There is no exchange of investments that ensures an Arab economic integration

Lebanese products abide by international conditions and flow into non-Arab markets

The Director General of the Industrial Research Institute, Dr. Bassam Frenn, was the guest of the “Economic Dialogue” talk show (Al Hiwar Al Iqtisadi), on Arab Woman TV, presented by TV anchor Ghada Ballout.

Frenn mentioned setbacks that impede the implementation of the Trade Facilitation Agreement (TFA), and do not allow achieving economic results that enhance interregional trade within Arab Countries, which was the theme of the episode.

Dr. Frenn explained that the FTA implementation was impeded, because there is no Arab unity, at least at the level of organizations that are capable of achieving supposed results from the agreement. He provided the European Union success as an example to be followed in terms of industrial integration, where enterprises move freely from one country to another, not to compete with their ilk, but to integrate with other industries.

However, Arab Countries lack integration. They even witness rivalry in the fields of industry and agriculture. Thus, we see a number of countries that manufacture the same products, and this pushes them to protect those products by imposing import restrictions, which contradicts with the terms of the TFA. Sometimes even, these countries impose impossible conditions on Lebanese products. Here it would be enough to mention the various terms imposed on Arab countries willing to import goods, as per the form and packaging of the products, which leads to very high production costs and makes products uncompetitive. Sometimes also, countries are late in circulating the specifications and conditions for introducing imported goods, so these just stay blocked at the customs frontiers.

Dr. Frenn considered that it is impossible to develop strong guided export investments, since Arab countries are investing outside Arab countries, where Arab funds are present in big quantities for investment, but investment results go for the benefit of non-Arab countries.

Frenn wondered about how ready Arab countries are



Arab Woman TV – April 20, 2016

to set goals pertaining to trade facilitation and interregional investments, and to try to achieve them, so we can set industries that comply with the terms stipulated in the mandatory specifications and conformity certificates.

He mentioned that the unified specifications adopted by Arab countries date from 40 years ago and are not applied by those, which rather follow their own specifications. However, these specifications have become old and need to be amended. This is why he called to adopt the ISO specifications.

He said that Lebanon was the fifth country worldwide to create a council of accreditation, which is alas still not functional. He added that Lebanon is the first Arab country to create the Lebanese Center for Cleaner Production, which helped industrials decrease production costs and immunized the industrial environment from pollution and polluting. He also praised Lebanese industrial products that are exported to Europe and the European Union, but whose free flow is inhibited in Arab countries.

He spoke of the necessity of interregional exchange of services, hoping that Arab interregional trade exchange grows in size and value, from 12 and 15 percent to more than 50 percent of the Arab trade exchange volumes.



Launching of the Industrial Research Institute Office at the Chamber of Commerce, Industry and Agriculture of Beirut, and honoring of its Director General, Dr. Bassam Frenn



Launching of the integrated energy project in construction



French Lebanese Forum in Paris



LBCI: The Minister of Industry, and the Minister of Economy & Trade visit laboratories and research centers at the Industrial Research Institute



Tele Liban: Launch of a training platform to use solar energy technologies at the Industrial Research Institute



MTV: Al hall enna



Future Tv: Workshop on the development of clean export



Tele Liban: Health & environmental problems caused by waste incineration



Al Manar: Ochratoxin analyses in wheat



Al Hurra TV: Mycotoxins & cancer



France 3: the waste crisis and evaluation of its impact on health and environment



Mediterraneo: the waste crisis and how to treat it



Al Manar: Carcinogenic substances



MTV: The Industrial Research Institute is a scientific reference



MTV: the Industrial Research Institute interaction and scientific cooperation



MTV: the role of the Industrial Research Institute at the national, industrial, economic, health, environmental and social levels



MTV: Energy awareness Award

