“We live in an age of science and education. Education and work are our only means of progress and development within the context of our Islamic civilization.”

Sultan Qaboos bin Said bin Taimur
May Allah bless his soul with eternal peace in Paradise
“On top of our national priorities is the education sector, with all its types and levels. It will receive full attention, and it will be provided with the supporting environment which motivates research and innovation. We will also provide the means for empowerment, since it is the base upon which our children will be able to participate in meeting the requirements of the coming phase of development.”

His Majesty Sultan Haitham Bin Tarik
May Almighty Allah bless him
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First and foremost, may Allah bless the soul of the late Majesty Sultan Qaboos Bin Said Bin Taimur with eternal peace in Paradise. He was always a great supporter of research progress and activities; raising the Sultanate’s reputation for reinforcing and promoting research, innovation and development. While we continue to pursue the course of our late Sultan, we pledge our support to His Majesty Sultan Haitham bin Tarik, May Allah bless him, to continue building and accomplishing more achievements for Oman and its great people.

Throughout 2019, The Research Council continued with the great efforts to build the national capacities in the fields of research and innovation through our various programs, the National Research Strategy 2020, and the National Innovation Strategy. This has been carried out with the aim to adopt active partnerships with government, private and academic institutions, as well as collaborations with the regional and international organizations and the leading innovation and research institutions.

In view of the completion of the mandate of the National Research Strategy 2008-2020, the concerned cadres of The Research Council delivered the National Strategy for Research and Development 2020-2040. The strategy is implemented in accordance with Oman Vision 2040, and integrated with the plans and sectoral strategies of the other institutions in the Sultanate. In addition, wide community partnerships have played various roles within the Strategy preparatory stages, with the draft finalized at the end of 2019. The Strategy draft is now undergoing the final approval and preparation of the implementation plans.

Furthermore, the projects initiated by The Research Council have been performed successfully, with 266 research projects funded in 22 government and academic institutions through our Block Funding Program. In addition to executing many activities to build research and innovational capabilities, and to provide a stimulating environment through the National Research Award, GENO Business Forum, Oman Chamber of Commerce and Industry (OCCI) Innovation Award, Falling Walls Lab Competition, and other initiatives.

The Research Council continued the efforts in urging various institutions to activate their initiatives within the National Innovation Strategy, and to align different efforts for genuine reflection of the innovation inputs and outputs of the Sultanate with the global index. This will contribute positively to making the Sultanate a regional hub and a pioneering country in innovation, products and services.

As part of the partnership initiatives with the various sectors, The Research Council focussed on developing partnerships with the private sector to contribute towards the support of a number of initiatives and projects; the major ones being Ejaad, Oman Research and Education Network (OMREN), Upgrade program, Masader and other stakeholders. The Research Council also promoted its partnerships with the government, academic and civil society institutions.

To conclude, I would like to express my thanks and sincere appreciation for the continuous efforts of the Council’s staff and partners from the public and private sectors, the researchers and the innovators, and TRC Board members. I ask the Almighty to grant His Majesty Sultan Haitham bin Tarik, May Allah bless him, good health, happiness and a long life, and to crown these efforts with success for the good of Oman.
TRC Board

HH Sayyid Shihab bin Tarik Al Said
Advisor to His Majesty the Sultan
Chairman of The Research Council

HE Dr. Rawya bint Saud Al Busaidi
Minister of Higher Education - Deputy TRC Chairman

HE Dr. Mohammed bin Hamad Al Rumhi
Minister of Oil and Gas

HE Dr. Ahmed bin Mohammed Al Saidi
Minister of Health

HE Dr. Madeeha bint Ahmed Al Shaibani
Minister of Education

HE Sheikh. Mohammed bin Said Al Khalbani
Minister of Social Development
TRC’s Major Activities in 2019
محمد الصلتي
In 2019, work began on the project to prepare the National Strategy for Research and Development (NSRD) 2040, with a focus on research priorities in line with the Oman Vision 2040 and its objectives across the various sectors. The NSRD is informed by global experience and local needs, and aims to activate the wide national participation in the preparation of the Strategy. Raising awareness of the notion and role of research and development culture and its importance in the transformation towards the knowledge-based economy is another core objective behind the preparation of the NSRD 2040.

The Strategy included three theme clusters of national priority:

- Socio-economic empowerment
- Food-energy-water nexus
- Intellectual capital and knowledge wealth

Work mechanism:

- Periodic meetings of the working teams
- Specialized panel discussions
- Meetings targeting different levels
Preparatory Activities of the Strategy

- 3 national workshops with 1065 participants
- 15 interviews with high-level officials
- 3 preparatory discussion sessions, attended by 62 people
- 4 weekly specialized sessions entitled ‘Strategy Clinic’
- 8 weekly thought sharing sessions ‘Strategy hour’
- 3 sessions of decision-makers’ dialogues

- 9 youth dialogue sessions, covering various governorates of the Sultanate
- 15 specialized scientific sessions to build the working team’s capability
- 50 interviews with specialists and experts
- Presentation of the NSRD 2040 draft at a national symposium on December 15, 2019
- Submission of the draft to the concerned entities for the approval
The 6th Annual Research Award 2019

TRC’s major annual scientific event, the 6th Annual Research Award, was held in late 2019 and was attended by researchers and research enthusiasts from throughout the region.

The Forum Objectives

- Activating research by encouraging researchers to submit their research proposals to TRC.
- Exchanging experiences and knowledge between researchers from within and outside the Sultanate.
- Honoring researchers who have won the National Research Award.
- Hosting researchers who have benefited from the Research Support Program.
- Presenting the outputs of the Undergraduate Research Grants (URG) program.

The Forum included

- Presentation of the best published research projects to win the National Research Award in its 6th cycle.
- Scientific poster’s exhibition.
National Research Award

For the main event of the Annual Research Forum 2019, TRC announced the winning projects of the National Research Award in its two categories:

- PhD holders
- Young Researchers (Non-PhD holders)

Along with the NRA winning projects, TRC announced the best six research projects within the Undergraduate Research Grant Program.

The Winners of the National Research Award 2019

The First Category: PhD holders or equivalent

Dr. Said bin Salim Al-Ismaily
Sultan Qaboos University

Education and Human Resources
Progressing from Direct Instruction to Structure and Open Inquiry-based Teaching in a Bachelor of Soil Sciences Program: Experience at the National University in Oman.

Dr. Chefi Triki
Sultan Qaboos University

Information Systems and Communication Technologies
Heuristic Methods for the Periodic Shipper Lane Selection Problem in Transportation Auctions.

Statistics and figures

162 research projects received
110 PhD Holders
52 Non PhD Holders
Applications received made an increase of 20%
Dr. Noura bint Salim Al-Zeheimi
Sultan Qaboos University

Health and Social Service
Neoadjuvant Chemotherapy Alters Neuropilin-1, PlGF, and SNAI1 Expression Levels and Predicts Breast Cancer Patients Response.

Dr. Osama Abu Zaid
Sultan Qaboos University

Cultural, Basic, and Social Sciences

Dr. Alaa Al-Muhtaseb
Sultan Qaboos University

Energy and Industry
# The Second Category

**Young Researchers**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Research Title</th>
<th>Researcher’s Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and Human Resources</td>
<td>Development of Curriculum-based Measurements in Mathematical Computations for Arab-speaking Fourth Grade Students.</td>
<td>Safiya bint Abdullah Al-Shehhi</td>
<td>Ministry of Education</td>
</tr>
<tr>
<td>Information Systems and Communication Technologies</td>
<td>New Modification Version of Principal Component Analysis with Kinetic Correlation Matrix Using Kinetic Energy.</td>
<td>Sara bint Khamis Al-Ruzaiqi</td>
<td>Higher College of Technology</td>
</tr>
<tr>
<td>Cultural, Basic, and Social Sciences</td>
<td>Career Decision-Making and its Relationship with Intrinsic Motivation of 10th Grade Students in the Sultanate of Oman.</td>
<td>Fatma bint Khalfan Al-Fori</td>
<td>Ministry of Education</td>
</tr>
<tr>
<td>Environmental and Biological Resources</td>
<td>Modelling Spatiotemporal Patterns of Dubas Bug Infestations on Date Palms in Northern Oman: A Geographical Information System Case Study.</td>
<td>Dr. Khalifa bin Mohammed Al-Kindi</td>
<td>University of New England – Australia</td>
</tr>
<tr>
<td></td>
<td>Home Gardening in Muscat, Oman: Gardeners’ Practices, Perceptions and Motivations.</td>
<td>Ahmed bin Khalfan Al-Mayahi</td>
<td>Sultan Qaboos University</td>
</tr>
<tr>
<td>Health and Social Service</td>
<td>Home Gardening in Muscat, Oman: Gardeners’ Practices, Perceptions and Motivations.</td>
<td>Dr. Hanan bint Mustafa Al-Lawati</td>
<td>Ministry of Health</td>
</tr>
</tbody>
</table>
Undergraduate Research Grant Program Award 2019

Cultural, Basic, and Social Sciences
Ibra College of Technology

Education and Human Resources
Ibra College of Technology
English Communication Skills for Employability: The Perspectives of Employers in Oman: An Exploratory Study.

Environmental and Biological Resources
Sultan Qaboos University
From Garbage to Cabbage: Utility of Fish Wastes for Agricultural Fertilizer.

Energy and Industry
Dhofar University
Sustainable Development of Renewable Energy Technology to Produce Clean Fuel (H2) from Water.

Information Systems and Communication Technologies
Sultan Qaboos University
Tour-Guide Robot for Omani Museums.

Health and Social Service
A'Sharqiyah University
Are we Aware How Contaminated Shopping Carts are with Pathogenic and Drug-Resistant Bacteria?
Oman Science Festival

The Research Council participated in the second season of the Oman Science Festival 2019, by organizing a number of interactive activities that promotes research and innovation culture. The festival was well received by the attendees.

TRC Corner
Virtual Reality and 3D printing experiences
OAPGRC Corner

Prototyping Center (Makers Oman) Corner
Interactive Competition (Alfalaj)
Ejaad Corner

Family Hackathon
Talent Hackathon
panel discussions

Family Hackathon with the participation of 43 families

First Day
Second Day
Third Day
Third Day
Fifth Day

Talent Hackathon with the participation of 96 person, divided into 30 teams

YouTube
Virtual Reality and Augmented Reality
3D Printing
Internet of Things
Artificial Intelligence and Machine Learning

4 teams
5 teams
5 teams
13 teams
3 teams
4 papers were covered within the Oman Science Festival panel discussions, including the following topics:

- The National Strategy for Research and Development (NSRD) 2020-2040
- Can H2 be the Future Green Energy?
- Artificial Intelligence and its Future Applications
- Renewable Energy Resources in Oman
Awareness Dissemination

TRC increased media efforts across the various media platforms to support the events and activities executed by TRC during 2019, with the National Strategy for Research and Development 2040 and the Sixth Annual Research Forum being the significant activities of the year. The media platforms used have varied from press releases, radio and television to social media and exhibitions. In addition, increased visual content has been introduced by producing short films and videos as part of awareness dissemination of TRC efforts of research and innovation.

Media and promotion activities during 2019

- **Journalistic Activity**: 345 press news and reports
- **Radio Activity**: 99 radio interviews and reports
- **TV Activity**: 45 episodes of ‘Dialogue with a Researcher’
- **Films and videos**: 77 press releases, interviews and reports
- **Films and videos**: 57

- **Press News and Reports**: 345
- **Radio Interviews and Reports**: 99
- **Episodes of ‘Dialogue with a Researcher’**: 45
- **Press Releases, Interviews and Reports**: 77
- **Films and Videos**: 57

- **5 Students Delegations Visit TRC**: 95 participants
- **Social Media Posts**: 4,121 in all social media platforms
- **Media and Promotion Support for the Events**: 161 editions
- **Scientific Insights**: 4 editions
Media and promotion activities in various social media platforms in 2019

Total followers and posts until 2019

<table>
<thead>
<tr>
<th>Platform</th>
<th>New followers</th>
<th>Total followers</th>
<th>Posts during the year</th>
<th>Total posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twitter</td>
<td>7142</td>
<td>36751</td>
<td>2751</td>
<td>12310</td>
</tr>
<tr>
<td>Facebook</td>
<td>343</td>
<td>1892</td>
<td>658</td>
<td>2716</td>
</tr>
<tr>
<td>Instagram</td>
<td>727</td>
<td>2147</td>
<td>558</td>
<td>1725</td>
</tr>
<tr>
<td>YouTube</td>
<td></td>
<td></td>
<td></td>
<td>672</td>
</tr>
</tbody>
</table>

Views:
- Twitter: 27752
- Facebook: 121299
- Instagram: 153
- YouTube: 121299
International Collaboration

The Research Council has strengthened its role in the field of international collaboration with the various global research institutions, and actively participated in international research and innovation forums. The following are the major TRC participations for 2019:

- The 13th Gulf Water Conference: Challenges and Innovative Solutions
- The Regional Meeting of the Global Research Council in the MENA Region
- The 22nd Forum of the Committee Concerned with Science and Technology Development
- The Eighth Annual Meeting of the Global Research Council
- The 36th International Association of Science Parks and Areas of Innovation
- The Regional Meeting on the Global Innovation Index (GII)
- The Sixth UNESCO UNITWIN Conference 2019

TRC Board Meetings

The TRC Board held several meetings in 2019, during which it worked to strengthen the Council’s efforts in supporting the areas of research and innovation in the Sultanate, as highlighted below:

- The progress reports of the preparation of the National Strategy for Research and Development (NSRD) 2040. The NSRD progress reports contained the stages of the project, outputs of the workshops, efforts made to align the priorities of the NSRD with Oman vision 2040 and the future steps planned towards delivering the final draft of the strategy in December.
- TRC Board reviewed a report on the efficiency and applicability of the Block Funding Program.
- A presentation was delivered on the progress and work outputs of the youth values research project under the Social Observatory Research Program (SORP).
- TRC Board approved the project of organizational restructuring of the General Secretariat of The Research Council in order to enhance the integration within TRC and in other institutions, in addition to developing the efficiency of performance in TRC in harmony with current and future variables.
- TRC Board approved the Strategic Research Program for Food Safety and Quality.
- TRC Board approved the Non-Communicable Diseases (NCD) Strategic Research Program.
Human Capital

From the 248 TRC employees, as of 2019:

- Employees currently studying their PhD and MA degrees: 21
- Employees graduated: 9
- PhD degree: 1
- Master degrees: 6
- Bachelor degrees: 2

Training programs:
- Training programs: 18
- Employees were involved: 149

The development fields covered:

- Courses 71%, Conferences 13%, on-the-job training 12%, on-line courses 4%.
- Training of 10 students from various academic institutions according to the new policy of training to be conducted only during summer break.

The restructuring project ended successfully and will be initiated in January 2020.
TRC
Initiatives
There were 17 joint industrial academic projects, through EJAAD, as of the end of 2019.

**Services through EJAAD E-platform (as of the end of 2019):**

- **46** Industrial challenges
- **24%** Services
- **29%** Studies
- **47%** R&D

- **150** research proposals in response to the 46 industrial challenges
- **17** joint industrial academic projects signed
- **5** of the **17** signed projects have been completed

The research work was carried out in the Sultanate’s research centers and in partnership with relevant international organizations.

**Equipment and Facility Database:**

10 institutions have been linked, including 8 universities and two industrial institutions to the Equipment and Facility Database system, where data will be provided on the research devices and facilities of these institutions, and it is expected that the activation of the first five institutions will be completed by the beginning of 2020.

**International Collaboration:**

6 Memorandums of Understanding for Collaboration were signed with international companies and universities.
Consultative studies by EJAAD:

- A study by PDO on the impact of the Fourth Industrial Revolution on oil and gas sector jobs.
- A consultative study of PDO on improving energy and water efficiency on the company contractors’ community in Fahud Industrial Area.
- A Study on the feasibility of introducing hydrogen as an alternative energy source in Oman.
- A Feasibility study for establishing a large-scale unit for planting and processing seaweed in the coastal areas of Oman.
- A large-scale consulting study on the impact of the application of IoT technologies on the workflow and workforce of the Oman LNG Company and in the industrial sector in general.

Establishment of excellence centers:

EJAAD is working on establishing a number of Excellence Centers, comprising of the following major efforts:

- Establishing a center for chemical and biological services, in cooperation with (PDO).
- A complex for advanced technology and innovation in food industry, in cooperation with Oman Food Investment Holding Company.
- A research and development platform in the water field, in cooperation with (PDO), Haya Water Company and Majis Industrial Services.
- An Advanced Plastics Technology, Research and Innovation Centre with Oman Oil Company and Orpic.

EJAAD Leadership Forum

EJAAD 2nd Leadership Forum was organized in October 2019, during which they discussed challenges, achievements and future visions, in the presence of more than 200 high-level representatives, CEOs, heads of academic institutions & research centers and strategic planners.
Upgrade - The Program of Transforming Graduation Projects into Start-ups

Upgrade was successful in achieving its annual target of transferring at least 1% of technical graduation projects into start-ups.

**Upgrade Topics:**

The program is concerned with graduation projects related to the 4th Industrial Revolution, made up of the following:

- Big data
- Smart Cities
- Information Security
- Artificial Intelligence
- BlockChain
- Internet of Things (IoT)

**Upgrade statistics of 2019**

- 125 advanced technical projects in 2019
- 71 projects qualified for the first phase
- 13 projects qualified for the second phase
- 3 projects won the support and incubation in 2019 for a period of 3 years
- 252 students enrolled in Upgrade
- 17 local and one international educational institutions participated in the third cycle of Upgrade.

**Upgrade incentives**

- External training in the way start-ups operate.
- A group of training courses in leadership and professional skills.
- OMR 12,000 s as an initial funding to transfer the graduation project into a start-up.
- An integrated program of incubation and support at the SAS for Entrepreneurship Center.
The research project: Renewable Energy Management System for a Smart City (REMS)
The project aims at building a mechanism for utilizing surplus energy from solar panels. The surplus energy will be stored in batteries and sold to the electricity distribution companies.

Researchers: Othman Amur Al Qasmi, Abdullah Ghulam Al Balushi, Mohammed Abdullah Al Adwani.

The academic institution: Sultan Qaboos University

The research project: Development of E-Voting System Based on Blockchain Technology
Using Blockchain technology platforms, such as (Hyperledger), this project aims at developing an electronic voting system for the various government institutions.

Researchers: Said Juma Al Sulti, Ahmed Juma Al Sulti, Safiya Juma al Sulti, Mohammed Juma Al Sulti, Manal Juma Al Sulti

The academic institution: Sultan Qaboos University

The research project: IoT Water Quality Monitoring and Notification System for Red tide
Developing a device that monitors water features and warns the competent authorities of marine pollution sites by connecting the device to the web, in addition to early warning of changes in seawater’s characteristics.

Researchers: Zahra Hareb, al Yarubi, Ahmed al Busaidi, Ameera Said al Dhamri

The academic institution: Middle East College

The research project: IoT Water Quality Monitoring and Notification System for Red tide
Developing a device that monitors water features and warns the competent authorities of marine pollution sites by connecting the device to the web, in addition to early warning of changes in seawater’s characteristics.

Researchers: Zahra Hareb, al Yarubi, Ahmed al Busaidi, Ameera Said al Dhamri

The academic institution: Middle East College
London International Youth Science Forum (LIYSF)

London International Youth Science Forum (LIYSF) targets youths in the areas of science, technology, mathematics and engineering. This year seven Omani students from the local higher education institutions have represented the Sultanate in LIYSF 2019. The students presented their scientific projects along with their counterparts, in addition to attending lectures, workshops and field visits to Oxford Cambridge and Imperial College London universities, and visits to scientific laboratories, institutes and international companies, with the participation of more than five hundred researchers and students from around the world.

Students research projects participating in the Forum:

- **Bashaier Al Balushi**
  Higher College of Technology
  Increasing the efficiency of solar panels by cooling using phase change materials PCM and a heat exchanger

- **Alaa Al Harrasi**
  Higher College of Technology
  Thermoelectric Air Conditioner

- **Sara Al Kalbani**
  Sultan Qaboos University
  A polymer extracted from a new species of fungus

- **Noor Al Riyami**
  Sultan Qaboos University
  Utilization of fish waste to produce a commercial and marketable organic fertilizer

- **Arwa Al Maskari**
  Sultan Qaboos University
  A solid-state sensor based on a poly-tyramine surface film decorated with gold nanoparticles for the potential application on norepinephrine

- **Sara Al Hosni**
  Sultan Qaboos University
  An augmented reality tourism application

- **Omar Al Maskary**
  Ibra College of Technology
  An intelligent bracelet used by workers in the field and construction institutions to predict and reduce.

Sponsors:

- **Oman Air**
  
- **The Aga Khan Society**
  
- **34 students participated in LIYSF 2019**
In order to promote building research capabilities, motivating young scientists, and transferring scientific knowledge, two young Omani researchers participated in the 69th Lindau Nobel Laureate Meeting for the fourth consecutive year. Abdulrahim Rashid al Balushi, a PhD student in Theoretical Physics at the University of Waterloo in Canada, and Dr. Sausan Al Riyami, Renewable Energy Researcher at (TRC), were the Sultanate’s representatives in the Lindau Nobel Laureate Meeting 2019, with this year’s theme dedicated to physics.

The Research Council is an academic partner of the Lindau International Organization.
Salalah Award for Water and Wastewater

The Research Council launched for the first time the Salalah Award for Water and Wastewater, funded by Salalah Sanitary Drainage Service (SSDCO) as an initiative to support research and innovative activities in the water field. The number of applicants reached 61 participants, comprising of 27 teams in the various fields of water and wastewater.

5 research teams have been announced to qualify for the final stage with financial support to produce their innovations and studies. The winners will be honored in March 2020.

The award aims at:

- Supporting and encouraging distinguished initiatives from students and academic research teams
- Finding innovative solutions to meet the challenges of water and wastewater
- Transforming the ideas into products that can be marketed locally and globally

Award’s fields:

- Techniques of wastewater and rain water disposal and harvesting
- Management of water and wastewater systems
- Wastewater treatment techniques
- Ways to reuse and store treated water and solid waste

5 research teams have been announced to qualify for the final stage with financial support to produce their innovations and studies. The winners will be honored in March 2020.
TRC
Projects
April 24, 2019
Issuance of the Royal Decree No. 27/2019 on the exemptions and incentives offered by the Science Parks of The Research Council.

June 3, 2019
Accrediting Innovation Park Muscat as a Science Park.

**Construction work:**

- Completion of the IPM’s building, on an area of approximately 32,000 square meters.
- Completion of the 450-meter gas pipeline project.
- Completion of the street leading to IPM, from Al Khoudh area, with a length of 1950 meters.
- Initiation of the fire pump project.
- Preparing the design of the pumping station for the sewage system with a capacity of 5235 cubic meters per day.
Completion of construction work to equip the Prototyping Center with an area of approximately 1165.5 square meters, with an amount of approximately OMR 120,000.

Signing of a financing agreement for 3 additional items of manufacturing equipment for the Prototyping Center, with Oman LNG, for the amount of OMR 241,000.

Completion of the new identity for the Prototyping Center to be Makers Oman.

Assigning the operation and management of the prototyping center for a period of 5 years to a local SME (a partnership between Rekaaz and EnCata Gulf).

Arrival of 99 machines covering 5 specifications: rapid prototyping, electronics, wood, blacksmithing, designing and program training, with a space for events.

Preparation for the official operation and opening of the Makers Oman Center for the public in the beginning of 2020, with an expected membership of 4,000 in the first year.

Makers Oman - The Prototyping Center

Major activities

Organizing a promotional corner for the IPM

Attending 10 local and international activities and events aimed at introducing the IPM’s components and services.

Participation of a number of officials and employees of the IPM in local and foreign training programs for professional development.

Receiving 15 local and foreign delegations and presenting introductory presentations.

Events

Oman Science Festival 2019

the 6th Annual Research Award Forum

he exhibition accompanying the 2nd workshop of the National Strategy for Research and Development.
Oman Research and Education Network (OMREN)

OMREN organized 23 different events and workshops locally during the year, focusing on introducing the network’s most important achievements and services, in addition to spreading awareness of the importance of research and education networks in the Sultanate.

OMREN services:

- **85%** reduction of the internet cost for the member institutions. The internet speed and other provided services doubled.
- **93%** of researchers at colleges and universities benefit from the network services.
- **85%** of higher education students benefit from the network services.

Activities and international cooperation:

OMREN organized 23 different events and workshops locally during the year, focusing on introducing the network’s most important achievements and services, in addition to spreading awareness of the importance of research and education networks in the Sultanate.

OMREN participated in a number of international conferences:

- The TNC19 conference in the Republic of Estonia
- The Asia Pacific Advanced Network (APAN) meeting
- The Islamic Educational, Scientific and Cultural Organization (ISESCO) in Morocco, in order to view the latest developments and issues related to the field of research and digital networks and publicizing the achievements of OMREN

50 members
the total number of the network’s members.

42
Masader joined the International Federation of Library Associations and Institutions (IFLA) and participated in the IFLA conference in Luxembourg.

Organized a training workshop at Sultan Qaboos University on the use of new databases (ICE, IGI, IET and Dar AlMandumah).

Masader participated in the IFLA General Conference and Assembly in Athens, Greece.

Participated in COMEX 2019.

Masader witnessed an increase in the members of academic institutions, reaching 48 institutions.

Participation in the 2019 Frankfurt International Book Fair, during which several meetings were held with some international publishers.

Obtained approval to add the global publisher (IEEE) within the electronic research sources.
The joint committee of the project’s management was launched in May 28, 2019.

Completion of the cooperation agreement between the committee and the various institutions of the Sultanate, with approval from The Research Council.

Signing a cooperation agreement with the University of Nizwa and Sohar University, and will be signed with the other institutions, respectively.

The committee held its first meeting on June 13, 2019.

Completion of policy and guidance book.

Initiation of indexing materials and entering them to the database in full text.

Completing the repository database and adding all identifying and marketing data.

Providing a full presentation on the Repository project in some institutions.

Signing a cooperation agreement to complete and develop Oman Research Repository Project (Shuaa) with Sultan Qaboos University.
محمد الصلتي
In 2019, The Research Council funded 266 research projects from various government and private academic institutions out of 435 received proposals, with a total of OMR 1.5 million, with 22 institutions benefitting from the program. An amount of OMR 199,799 of the total funding was allocated for the support of indirect research costs.

### 2019 Program Statistics

<table>
<thead>
<tr>
<th>Category</th>
<th>Proposed Projects</th>
<th>Funded Projects</th>
<th>Maximum Funding Amount</th>
<th>Total Fund Provided</th>
</tr>
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<tbody>
<tr>
<td>PhD Degree</td>
<td>172</td>
<td>74</td>
<td>OMR 20,000</td>
<td>OMR 998,292</td>
</tr>
<tr>
<td>MA Degree</td>
<td>43</td>
<td>27</td>
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<tr>
<td>Bachelor Degree</td>
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<tr>
<td>Self-funded PhD students studying abroad</td>
<td>13</td>
<td>13</td>
<td>-</td>
<td>OMR 27,534</td>
</tr>
</tbody>
</table>

In September 2019, TRC also announced the opening of applications for research proposals for 2020, with the deadline set for April 2020.
The Social Observatory Research Program continued its research efforts in promoting and activating social indicators, as well as implementing a number of research studies, panel discussions and specialized conferences.

**Completed Researches**

- **Youth Values Project**
- **Factors Affecting the National Identity Project**
- **The Effects of Social Media Networking Sites on the Values of Citizenship among Young Omanis: A Mixed-Approach Investigation**
- **Happiness resources for Omani women, and its relation to demographic and psychological variables**

- **4 Courses and workshops**
  - Workshop on writing research on social sciences
  - A course on the Mendeley program, which is used to manage and share research papers and generate bibliographies for scholarly articles
  - A panel discussion on dialogue culture within Omani families
  - A panel discussion on child abuse and violence, and its impacts on the community

- **9 Local and international conferences.**
Scientific Publication

Research Capacity and Capacity Building

- Preparation of a database of the social workers in Oman
- Research support for the researchers in the field of social sciences by providing statistical data and scientific resources

Social Indicators

Out of

135

Data of

94

Representing

70%

of the total social indicators. The rest of the indicators are currently undergoing the update process.

41 Indicators finalized to be published within TRC website.
In 2019, the number of research projects funded by TRC within the Undergraduate Research Grant Program has increased, reaching 152 research proposals compared to 111 research proposals in 2018.

The Program targets the Bachelor degree students enrolled in higher education institutions in the Sultanate in order to train and qualify a generation of researchers with the necessary skills in the various scientific institutions.

**The Program’s Statistics:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Funded Projects</th>
<th>Benefited Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>99</td>
<td>12</td>
</tr>
<tr>
<td>2016</td>
<td>41</td>
<td>18</td>
</tr>
<tr>
<td>2017</td>
<td>58</td>
<td>19</td>
</tr>
<tr>
<td>2018</td>
<td>111</td>
<td>18</td>
</tr>
<tr>
<td>2019</td>
<td>152</td>
<td>16</td>
</tr>
</tbody>
</table>
The Oman Smart City Platform (SCP) is a knowledge-sharing consortium with the aim to drive smart city initiatives in Oman. The objective of the platform is to provide a knowledge-sharing, collaborative and networking environment among smart city stakeholders. The platform functions as an enabler and facilitator for smart city innovations through funding research and hosting innovation competitions.

Research and innovative projects funded by the Program

- 6 Research Projects
- 5 Benefited Institution
- 31,000 OMR total funding

Awareness dissemination and capacity building

1. A workshop on smart city applications in the Student 6th Cultural Week at A’Sharqiyah University
2. Participated in a workshop on smart cities and its impact in the economy - future
3. Participated in Comex 2019
4. Participated in the 4th Duqm forum: “Smart Cities Economy”
5. Present a workshop on “Future Cities” in the Omani Youth Day

Smart City Platform

The Oman Smart City Platform (SCP) is a knowledge-sharing consortium with the aim to drive smart city initiatives in Oman. The objective of the platform is to provide a knowledge-sharing, collaborative and networking environment among smart city stakeholders. The platform functions as an enabler and facilitator for smart city innovations through funding research and hosting innovation competitions.

Major activities

Sohar Hackathon

in collaboration with the ASYAD Group, comprised of the following working teams:

- 10 teams in the Logistics Sector
- 5 teams in the Environment Sector
- 5 teams in the Tourism Sector

Total 97 participants

The winning projects

1. Place IOT logistics Solutions project
2. Place QUARTZ project
3. Place Digital Arch project

Best Idea in Environment Sector
EnviromentAll Team

Best Idea in Tourism Sector
Ruhaal Project
Hackathon Salalah

Hackathon Salalah was organized to develop state-of-the-art smart solutions to help transform ‘Salalah City’ into a responsive and smart city.

20 Teams participated in the Hackathon, made up of 89 participants;

- 6 Tourism teams
- 1 Conservation of Heritage and Historical Sites teams
- 7 Logistics and Transportation teams
- 6 Environment and Water teams

The winning projects

1 place: Intilaqa App
2 place: DHOFAR 360 Team
3 place: Marsa Team
Award of recognition: ECOSORBENT Team

Smart City Platform Ambassadors Initiative

The goal of this initiative is bring together practitioners, researchers, academics, scholars, students, or any individual interested in Smart City to share and co-create knowledge and state-of-the-art smart solutions.

- The initiative attracted over 300 Ambassadors from various governorates of the Sultanate.
- The number of registered speakers within the initiative is 187 in all covered areas.

Topics covered within the initiative:

- Block Chain
- Artificial Intelligence and Machine Learning
- Big Data
- Aircrafts and Self-driving cars
- 3D Printing
- Internet of Things

Smart Platform website: www.smartoman.om
Omani Cultural Heritage Strategic Research Program

The Program continued its research activities in the funded projects by identifying and analyzing the current demands of the Omani cultural heritage field.

The Program also announced the opening of applications for the project of Omani Figures working in Trade and Industry.

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Research Project

<table>
<thead>
<tr>
<th>Myths and Legends related to Places</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collecting and Documenting Myths and Legends related to Places in Ad Dakhiliyah Governorate.</td>
</tr>
<tr>
<td>2. Collecting and Documenting Myths and Legends related to Places in Al Batinah North Governorate.</td>
</tr>
</tbody>
</table>

Research Studies

<table>
<thead>
<tr>
<th>Omani Linguistic Heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agricultural terms in the dialect of the people of Rustaq: a lexical study.</td>
</tr>
<tr>
<td>2. Inventorying and documenting inscriptions, drawings and archaeological writings on rock walls: tombstones and building walls in Wilayat Al Amarat, Muscat Governorate.</td>
</tr>
<tr>
<td>3. Documentary research of the Kumzari language spoken vernacularly in the Sultanate of Oman.</td>
</tr>
</tbody>
</table>

In 2019, the program held 3 seminars:

- Introductory seminar for the project of Omani Figures working in Trade and Industry with the collaboration of the Oman National Commission for Education, Culture and Science.
- Spoken Languages and Dialects in Oman Seminar with the collaboration of the Ministry of Heritage and Culture.
- Cultural Heritage: Investment and Sustainable Development.

The Program also announced the opening of applications for the project of Omani Figures working in Trade and Industry.
Integrated Pest Management for Dubas Bug Research Program

- The Research Council approved the funding of a research project proposed by the Ministry of Agriculture and Fisheries Wealth related to the socio-economic impacts of the Dubas Bug.

- The Program finalized the project of “Concepts in Biology and Ecology of Dubas bug Ommatissus lybicus de Bergevin and its Native Natural Enemies”.

- The Program finalized the project of “Who’s Eating the Dubas bug? Characterization of Biological Control through Molecular Gut Analysis”.

- Presentation of the two project’s outcomes in the Integrated Pest Management for Dubas Bug Research Program Workshop.
The program held a number of activities and initiatives in the field of energy in Oman.

1. The Electrical Energy Conservation Competition

- 30 schools from the five governorates participated at the Electrical Energy Conservation Competition, including Al Batinah North, Ad Dakhiliyah, Ad Dhahirah, Ash Sharqiyah North and Ash Sharqiyah South.

- The Competition was in collaboration with the Ministry of Education and funded by the Oman LNG company.

- The idea of the competition was to compare the monthly electricity bills of the participating schools of March 2018 with March 2019. The school with the least electricity consumption was announced the winner.

The Competition results:

- A decrease in electricity usage of 221,000 Kilowatts of power, which is the equivalent to OMR 6500, in just one month.

- A decrease of 135,000kg of carbon emissions in March 2019 compared to March 2018.
2. A collaboration with EJAAD to establish an energy efficiency center.

3. Attendance at 8 events related to renewable energy:

1. Oman Energy and Water Exhibition and Conference 2019
2. The panel discussion on energy efficiency with the collaboration of Nama Group
3. The Open Cultural Day of University of Nizwa
4. The innovation event in Iibri College of Applied Science
5. The innovation event in the International Maritime College of Oman, Sohar
6. The workshop of energy efficiency in Salalah in August 2019
7. The workshop of Injaz Oman and the National Youth Commission
8. The GCC Power Conference and Exhibition 2019
Strategic Program for Water Research

The Research Activity:

1. Signing of a memorandum of cooperation between Sultan Qaboos University and Ministry of Environment and Climate Affairs. The cooperation aims at implementing the outcomes of the research project “Aqueous Fingerprint Database: An innovative technology for pollution early warning and source identification” by Dr. Mingjie Chen from Water Research Center of Sultan Qaboos University, which has been approved by the Strategic Program for Water Research.

2. Signing of research agreement within the Strategic Program for Water Research entitled “Use of End-of-life Reverse Osmosis Membranes to Treat Waste-water for Industrial and Agricultural Use” by Dr. Jauad El Kharraz from the Middle East Desalination Research Center (MEDRC). In addition, MEDRC and Majis Industrial Services Company signed a memorandum of cooperation to implement the research outcomes.

3. The Strategic Program for Water Research was granted the approval to implement an experimental plant for the 3rd place winning research project within the Innovation Category of the Research and Innovations Award in Water Science, by Eng. Shamsa bint Masoud Al Saadi. The project has been also patented.

The results of the third round of the Research and Innovations Award in Water Science 2019

Scientific Publications Category

- PhD’s Holders:
  - The first Place
    - Dr. Azizallah Izady and his research team from Sultan Qaboos University.
  - The first Place (shared)
    - Dr. Rengaraj Selvaraj from and his research team Sultan Qaboos University.

- Young Researchers:
  - The first Place
    - Faisal bin Rashid Al Marzoqi and his research team from Sultan Qaboos University.

Innovation Category

- The first place
  - Dr. Farooq Sabari from Sultan Qaboos University and Dr. Mohammed Abdulhakim Al Saadi from University of Nizwa.
- The second place
  - Eng. Shamsa bint Masoud Al Saadi from The Research Council.
- Withheld
### Young Innovators Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Position</th>
<th>Winner’s Name</th>
<th>Title</th>
<th>Institution</th>
</tr>
</thead>
</table>
| Young Innovators   | 1st place| Emad bin Amur Al Rumaimi
Albara bin Khalfan Al Badawi | Bio-filtration Tube             | Azzan bin Tamim School          |
| Category           | 2nd place| Dhuha bint Khalid Al-Amri
Mithaa bint Khalid Al Sa’idi | Water Consumption Monitor       | Baraka Bint Thalaba School       |
|                    | 3rd place| Noor bint Mohammed Al Maashani
Balqis bint Mohammed Al Maashani | Conserve Water                  | Shehait Girls School            |
|                    | 4th place| Rahma bint Said Al Barwani
Al-Reem bint Salim Al Habsi | Smart Pump                      | Al Zahraa Al Suqatriah School   |
|                    | 5th place| Jinan bint Abdulbasir Al Farsi         | Save Water... Save Money        | Shati Al Qurum Girls School              |
Research Centers

Oman Animal and Plant Genetic Resources Center (OAPGRC)

OAPGRC has witnessed many achievements within the fields of animal, plant, marine and microorganism’s resources:

Scientific Publishing

- Launching a smartphone application called Tajmee in Android and IOS, to document and share genetic resources in order to feed the biological databases, educate the local community and to serve as a reference for students.
- Updating the Plant Genetic Resources Platform with up to 1,000 description points of Omani wheat and barley.

Electronic Documentation

- Preparing a scientific paper in cooperation with the University of Nizwa on the antibiotic properties of seaweed and collecting samples of two types of soft coral to test active antibiotics for cancer.
- Publication of a book about shallow water echinoderms of Oman, which contains 79 species, written by Dr. Michel R. Claereboudt.
- Publication of an article in a scientific magazine featuring the discovery of a new species of fungi in Oman, in cooperation with Sultan Qaboos University.
- Preliminary analysis to study the urban impact on plant diversity in Dhofar Governorate.
Manafa’a Ideathon

OAPGRC organized the second cycle of Manafa’a Ideathon, where more than 15 teams competed, resulting in the following four new project ideas:

- **Almaysim**
  a project to produce natural laundry liquid from a species of wild tree in the Sultanate

- **PlamDF**
  a project to produce MDF panels from palm waste

- **Neem Line**
  a project to produce Oil from the seeds of the neem tree for cosmetic and pest control purposes

- **Menna**
  a project to manufacture bitter cucumber tea bags as a useful dietary supplement for diabetics

Collecting and preserving samples

- Collecting more than ten samples of medicinal plant seeds from Muscat and Al Batinah South Governorate.
- Analysing the results and data of phenotypic description of local wheat and barley varieties.
- Collecting local varieties of banana from all regions of the Sultanate, in cooperation with the Ministry of Agriculture and Fisheries Wealth, and kept at the Agricultural Research Station in Wadi Hibi.
- Completion of 80% of seed’s genetic bank preparation at the University of Nizwa.
- Preserving blood and genetic samples for the genetic diversity project and preserving the Arabian gazelle clans in the Sultanate.
- Finalizing the initial draft of the strategy for the conservation and utilization of Oman’s domesticated animal genetic resources.
- Identifying 54 species of diatoms (marine algae) as part of the preliminary survey project for diatom communities on invertebrates in Omani coastal waters in cooperation with Sultan Qaboos University.
Agreements and cooperation programs

- Signing an agreement with the Ministry of Agriculture and Fisheries Wealth, represented by Marine Science and Fisheries Centre.
- Signing cooperation programs with the Oman Food Investment Holding Company.

Workshops and conferences

- Strategy for the conservation and utilization of Oman’s domesticated animal genetic resources
- Isolation and documentation of the DNA of phytoplankton from fresh water
- Microbial Culture Collections for Preservation of Economically Important
- Animal mummification in the Sultanate
- Local sugarcane

Science Café

OAPGRC organized seven sessions within the Science Café event, which are:

- Aquaculture: Moving towards Sustainability.
- Just like our grandma used to make: Wheat’s it all about?
- The real treasure chest at the bottom of the ocean
- Bug Burger: Future type of Food?
- Welcome to our web!
- Beauty and the Beast (The Beauty of Bacteria)
- Superheroes: the Omani Goat and Confronting Climate Change
Innovation Support
The work on the National Innovation Strategy (NIS) project advanced significantly in 2019, as the Supreme Steering Committee of the NIS project, supervised by TRC, reviewed the Follow-up Report on the Implementation of the NIS, including the analysis report of the Sultanate’s performance on the Global Innovation Index (GII), which was prepared by the National Team for the Follow-up on the Implementation of the NIS. The Supreme Steering Committee of the NIS recommended the following:

- Submit the Follow-up Report on the Implementation of the NIS to the Council of Ministers.

- The Research Council was granted a number of powers by the Council of Ministers that enable it to follow the indicators and initiatives of the NIS as a national observer for innovation, and to perform the following tasks accordingly:
  - Directing the various relevant institutions to implement the NIS and notifying them that TRC has been mandated with responsibilities as the national observer for innovation until 2020.
  - Directing the relevant entities to provide all updated data of their GII with justifications for the extent of progress or delay in the time specified by the National Observer for Innovation.
  - Directing the various institutions to put the initiatives of the NIS in the list of priorities within the strategic plans, which will contribute to achieving the Oman Vision 2040.
  - Directing concerned entities to focus on marketing and enhancing the Sultanate’s innovative identity in national, regional and international forums in coordination with the National Observer for Innovation.

Local efforts:

- The national team of the NIS continued to promote and publicize the vision and goals of the NIS and following-up its indicators through media and field visits.

- Working to harmonize the vision of the NIS with the Oman Vision 2040, as the GII was included among the vision indicators and with the same goal.

- Visiting more than 30 governmental institutions, including private stakeholders and actors, to enhance the innovation system and emphasize the importance of providing accurate data at the right time.

- Communicating with the National Competitiveness Office to analyze and follow up the indicators and their relationship with the indicators of the International Competitiveness Report, and the indicators of the Sustainable Development Goals (SDGs).

- Cooperating with the Implementation Support and Follow-up Unit Team on indicators related to the business environment.
The National System for Research and Technological Innovation continued its efforts to link the academic, government institutions, and private sectors, and in 2019, awarded the academic institutions of Sohar University and the Middle East College with OMR 20,000 to establish their own Technology Transfer Offices.

The academic institutions funded to establish a Technology Transfer Office:

- 2018
  - College of Applied Sciences Sohar
  - Al Musanna College of Technology

- 2019
  - Sohar University
  - Middle East College

The institutions joining the National System for Research and Technological Innovation:

- 5 of applied sciences colleges within the Ministry of Higher Education
- 7 of technology colleges within the Ministry of Manpower
- 1 Rustaq College of Education
Global Innovation Index (GII) 2019

The Sultanate’s overall ranking on the Global Innovation Index (GII) has dropped by 11 this year, to 80th place, due to a decline in the innovation outputs as shown in the graph below; however progress has been made in a range of other significant indicators across the GII.

The local and international activities related to the innovation index:

- TRC, in collaboration with the World Intellectual Property Organization (WIPO), organized Oman Global Innovation Index (GII) Workshop.
- The Sultanate participated in the Arab States Regional Meeting on Global Innovation Index (GII), which was organized in Cairo, Egypt, by the World Intellectual Property Organization (WIPO) in collaboration with the League of Arab States (LAS).
- The GII is the global benchmark that enables measuring countries to progress in innovation and helps policymakers stimulate and promote innovation and creativity in their countries.
- The Sultanate considers it as a tool of measuring the progress of its national innovation system initiatives, and as an index to measure Oman Vision 2040.
The Sultanate of Oman ranked:

**Advanced:**
- Globally in the Graduates in the Science and Engineering Fields indicator
- Globally in the Higher Education pillar
- Globally in the Gross Capital Formation indicator
- Globally in the Applied Tariff indicator
- Globally in the Electricity Output indicator

**Declined:**
- In the Creative Goods Exports Percentage indicator
- In the Intensity of Local Competition Percentage indicator
- In the University/Industry Research Collaboration indicator
- In the Government’s Online Service indicator
- In the National Feature Films indicator

- In the Ease of Starting a Business indicator
- In the Scientific and Technical Articles Publications indicator
- In the Ease of Getting Credit indicator
The Research Council announced the winning projects of the Oman OCCI Innovation Award 2019

<table>
<thead>
<tr>
<th>Place</th>
<th>The Winning Project</th>
<th>The Project’s Idea</th>
<th>Principal Investigator</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Smart Solutions to Address Medical Errors</td>
<td>To create a system for the doctor that provides the accurate pharmaceutical information about the patient.</td>
<td>Dr. Zahid bin Abdullah Al Manthari</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>2</td>
<td>Rubber Dragon Project</td>
<td>Transforming Wasted Tyres into Insulating Materials of Heat, Sound and Water for Buildings.</td>
<td>Shehab bin Hamed Al-Shafai</td>
<td>Al Musanna College of Technology</td>
</tr>
<tr>
<td>3</td>
<td>Nano-filtration of Microorganisms in Urinary Tract Catheters with Polymeric Filter Membranes</td>
<td>A product used as an anti-inflammatory in the urinary tract.</td>
<td>Faris bin Abdullah Al Farsi</td>
<td>Sultan Qaboos University</td>
</tr>
</tbody>
</table>

- **505** is the number of proposed projects
- **10%** increase from the first edition of the Award
- **7** evaluation centers
- **15** projects were displayed in the final ceremony
- **3** winning ideas
TRC announced the best three breakthrough ideas of the Falling Walls Lab Competition.
The award for the best idea went to Said Al Farsi for his idea titled ‘Breaking the Wall of Plastic’. The award for second best went to Hasina Al Rajaibi for her idea titled ‘Breaking the Wall of Natural Anti-fog’. Zeyad Al Ghrabi’s idea titled ‘Breaking the Wall of Date Recognition- Bidar’ received the award for the third best idea in this year’s competition.

Winners of the first and third places participated in the Falling Walls Lab Finale in Berlin on November 8, 2019, and attended the Falling Walls Conference on November 9.

<table>
<thead>
<tr>
<th>135</th>
<th>20</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>projects</td>
<td>projects were qualified in the pre-screening phase</td>
<td>winning projects</td>
</tr>
</tbody>
</table>
At the heart of innovation