

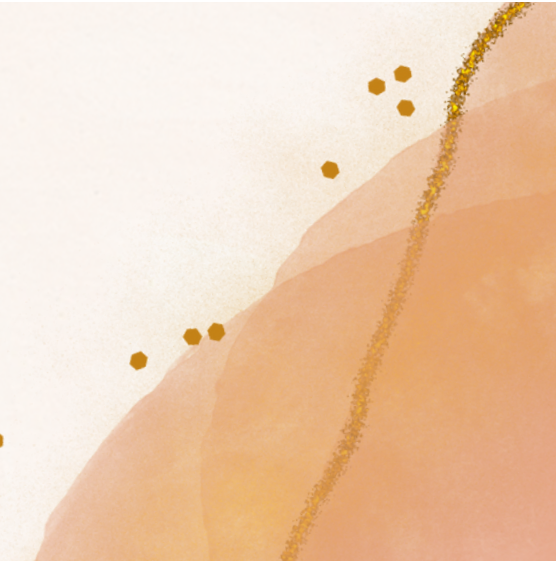



Annual Report 2022



Vision and Mission

The Galilee Society, the National Arab Association for Research and Health Services, was established in 1981. The Galilee Association is considered one of the first Arab non-governmental organizations in Israel. It is known as a non-governmental and non-partisan association, aiming to develop and promote the Arab community in health, environment, science, and development. The Galilee Society stimulates emerging social and economic initiatives in the Arab community and supports grassroots action and initiative programs by strengthening local work and community organization. The Galilee Association operates based on solid and long-term development strategies and programs. It protects and supports human rights in the social, economic, environmental, and health sectors, ensuring fairness





Applied Research Institute:

Established in 1995, the Applied Research Institute, under the Galilee Association, is recognized for its scientific excellence in the Arab community. Supported by the University of Haifa and the Ministry of Science and Technology, the institute focuses on various research domains such as wastewater treatment, alternative energy, and medicinal plant exploration.

Key Objectives:

Address health, environmental, and scientific challenges at local and regional levels.

Motivate the Arab minority towards scientific research and ignite youthful enthusiasm.

Promote biotech initiatives aligning with social growth and environmental safety.



Noteworthy Achievements:

- **Innovative sustainable waste treatment techniques.**
- **Explored healing properties of medicinal plants against pollution-induced health issues.**
- **In 2022, guided three students on their final projects and secured seven grants, leading to 14 research ventures.**

Team & Partnerships:

The institute boasts a diverse team, including eight male and three female researchers, aided by assistants and students. Collaborative ties are established with reputed universities such as Haifa, Tel Aviv, Michigan, and Be'er Sheva.



Highlighted Projects:

- Enhancing sewage and agriculture biosolids treatments.
- Ammonia and odor mitigation from poultry manure.
- Transforming olive wastewater into UV protective substances.
- Developing greenhouse gas emission assessment systems.
- Studying microbial influence on greenhouse gas emissions.

Current Research Focus:

- Harnessing marginal water for animal feed production.
- Advanced wastewater treatment and high-value compound extraction.
- Natural remedies for farm animal diseases using olive mill waste.
- Biofuel production from wastewater sludge.
- Collaborative Water-Energy research with Israel-US CoWERC.
- Innovations in biogas production and decentralized composting techniques.



Articles published in scientific journals in 2022:

- Study on lactic acid production from Carob bagasse. (Image 8)
- Research on constructed wetlands in the Middle East and their performance.
- Study on the effect of Hydroxytyrosol on salt tolerance in maize and wheat. (Images 6 & 7)
- Research on wastewater's phytotoxic effects on maize seedlings. (Image 12)
- Research on capturing nano-plastics using jellyfish mucin. (Image 10)
- Study on phenol removal through an advanced oxidation process. (Image 4)
- Research on the effect of phenolic compounds on mammary epithelial cells.
- Study on engineering microbial technologies for environmental sustainability. (Image 5)
- Research on BTEX degradation in anaerobic microbiota.
- Analysis of decentralized composting. (Image 9)
- Research on the effects of phenolic compounds on the mammary gland.
- Another study on the effects of phenolic compounds on mammary epithelial cells.
- Research on L-Lactic Acid production from Corn Stover.



Three Conferences were organized by the Applied Research Institute in 2022:

- Annual water conference in June 2022 in collaboration with Tal Hai College.
- MocroEco2 Microbial Ecology conference in September 2022, targeting young researchers in collaboration with the Weizmann Institute.
- Annual scientific conference in November 2022 titled "Science, Environment, and Health."



Conference Presentations:

- K. Baransi-Karaby, I. Sabbah. EuroMembrane 2022, Italy, Nov 2022.
- M. Haj-Zaroubi, et al. Sustainable Chemical & Environmental Eng., Greece, Sep 2022.
- M. Haj-Zaroubi, et al. Solid Waste Management, Greece, June 2022.
- K. Baransi-Karaby, et al. Energy from Biomass and Waste, Italy, Nov 2022.
- H. Azaizeh, S. Awwad. Cost Action CA16230, Greece, Mar 2022.
- H. Azaizeh, et al. Renewable Energy Systems, Turkey, May 2022.
- H. Azaizeh, et al. Solid Waste Management, Greece, June 2022.
- H. Azaizeh, G. Peer. Sustainable Chemical and Environmental Eng., Greece, Aug 2022.



Guest Speakers in 2022 at the Applied Research Institute of Galilee Association:

- Dr. Somaya Falah: "Estimation of PM2.5 concentrations by fusion of satellite products." 26/05/2022.
- Prof. Ali Fattom: "Who needs a new Omicron-Specific Covid-19 vaccine?" 04/07/2022.
- Prof. Shimon Gepstein: "Cytokinins & yield under environmental stress." 15/09/2022.
- Dr. Hamoudi Khalaily: "Motza Excavations & Discovery of a Mega site." 27/10/2022.
- Prof. Moshe Gophen: "Hula valley & Lake Kinneret: Ecological Co-Existence." 28/11/2022.
- Prof. Dr. Samir Droby: "Harnessing the fruit microbiome for bio-control technologies." 12/12/2022.



Applied Social Research Center “Rikaz”

- The "Rikaz" Applied Social Research Center is a specialized statistical center that studies various socio-economic, health, and environmental phenomena in Palestinian society. These studies are comprehensive and aim to shape future developmental plans. Key achievements of "Rakaz" in 2022 include:
 - Research on obstacles and opportunities in using digital medical services in the Arab community. This was funded by the Qatari Center for Health Policy and Services Research and led by Dr. Mohammad Khateeb.
 - A study on the "dual harm" during the COVID-19 pandemic in the Arab community and its relation to health disparities, led by Dr. Osama Tanous and managed by Ashwaq Mandia.
 - In-depth studies on Palestinian youth in Israel, focusing on topics like nutrition patterns and the effects of racism on mental health. Multiple scientific articles were produced based on these studies.



Activities of "Rikaz" Applied Social Research Center:

- New Researchers: Dr. Ahmed Badran (sociologist), Dr. Mohammad Badarneh (psychologist), and Ms. Ashwaq Mandia (public policy studies) have joined.
- Recognition: "Rikaz" is officially recognized by the Central Statistics Department as a state institution for social research.
- Collaborations: In 2022, a student from the University of Michigan conducted research on Palestinian women in Israel using Rakaz's data. Dr. Mohammad Khateeb also mentors students from the University of Haifa.
- Research Services: Rikaz provides research services to various institutions. They've overseen data collection for several studies, including surveys in the Arab community and data on industrial services in Arab local authorities.
- Health Projects: "Rikaz" completed strategic health planning for Umm al-Fahm, presenting a comprehensive five-year plan. This initiative, led by Dr. Mohammad Khateeb and consultant Fathi Marshood, is pioneering in the Arab community in Israel. The plan involved consultation and participation from all local sectors in Umm al-Fahm and was showcased to key stakeholders, including the municipality and the Ministry of Health.

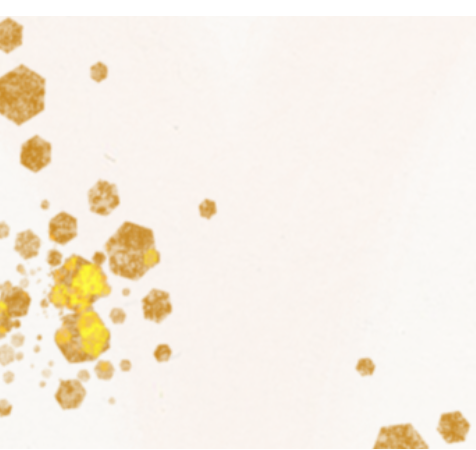



Environmental Justice Center

The Environmental Justice Center views environmental security as a fundamental human right, essential for all citizens equally, ensuring a dignified life in a sustainable environment. Thus, the center promotes environmental values and behaviors among the public and fosters awareness, capabilities, and advocacy for the environmental rights of the Palestinian community in the country.

Initiatives:

The "Local Resilience to Climate Change" project focuses on the rising threats from climate changes, particularly in Arab towns, with Shfaram serving as a model resilient city. Collaborating with the University of Haifa, the initiative boosts local governance and civil society's capabilities. This year, the team expanded the project, influenced government policies, secured budget allocations for Arab communities, and raised awareness through media interactions, conferences, and workshops.





The Galilee Society launched a digital platform on climate change in Arabic. To bolster Shfaram municipality's climate planning, training was conducted for its employees, and various activities to enhance community engagement were carried out. Emphasizing the role of local communities in climate resilience, the project in Shfaram focused on awareness and training programs. A committee of 16 volunteers was formed for climate action, and numerous lectures and workshops were held for different groups, including students. Tours in Shfaram gauged citizens' opinions and needs, reinforcing trust between the municipality and its residents. Partnering with the University of Haifa, a study was undertaken to assess climate sensitivity in Shfaram. The findings, to be published in 2023, indicate visible climate impacts on Shfaram, linking climate adaptation to broader issues like poverty and waste.




Climate justice project

Addressing global warming urgently requires reducing greenhouse gas emissions. Developed countries contribute most to this crisis, but vulnerable communities bear the brunt. Global efforts are needed for a just transition to renewable energy, considering these communities. The project, involving institutions from countries like Israel, Brazil, Colombia, and others, aims to:

1. Research countries' emission reduction policies and their fairness.
2. Enhance institutional capacities, share expertise, and advocate locally and internationally.
3. Examine how nations implement international climate commitments, share related information, and ensure a just transition to renewable energy.

Findings revealed a lack of comprehensive climate laws and limited long-term government initiatives. The full report will be available in 2023.






"ScienTech"

Supporting emerging initiatives in the fields of biology and the environment

"ScienTech" is an Arab tech business accelerator, the first of its kind, focusing on biology and climate. Supported by the US Department of State's MEPI, it's managed in partnership with the Galilee Association and the Technion Institute. ScienTech aids Arab researchers in developing their technological ideas, converting them into viable projects. The program offers tools, training, and initial "Pre-Seed" investment opportunities. The accelerator's advisory committee comprises prominent figures in science and business.

The "ScienTech" initiative successfully graduated its first batch and is now preparing for its second. At a conference, participants showcased projects in biology and environmental sciences. ScienTech was also selected by the Innovation Authority and the Economic Development Authority for Minorities as one of six high-tech winners, partnering with the Knowledge and Innovation Center at the Technion.






Scientific Education

In 2019, the Galilee Society established a Scientific Education Center to spread scientific knowledge and promote research among the youth. The center offers educational activities for educators, students, and municipal staff through workshops, conferences, and training. Its facility was set up as part of a biodiversity project funded by the European Union.

Scientific Education Center Initiatives:

In October 2022, an international conference titled "Living in Peace and Harmony with Nature" was held. It was organized in collaboration with several institutions and discussed challenges of biodiversity and human diversity in the modern era.





- Laboratory and research activities aiming to introduce various scientific topics:

Computer-based activities utilizing software and educational modules.

Group activities for sharing ideas on significant educational topics.

A lab equipped with the latest technology for students and teachers.

- Educational stations around the center focusing on scientific and educational principles. Scientific research projects involving competition among primary and preparatory schools.
- Educational seminars were held at the center, attended by 25 teachers.
- The center participated in the "Gaven" project, creating several educational plans to enhance learning in various scientific areas.
- Student Visits: The center hosted students from various education levels, including Al-Qasimi College and Tal Hai College.



- **Teacher Training:** The center conducted two courses for 22 teachers each on scientific education, and orientation sessions for 20 guide candidates.
- **Researcher Reception:** The center welcomed eminent researchers, leading to collaborative plans both locally and internationally.
- **Academic Research:** Collaboration discussions with institutions like Haifa University and Technion resulted in a joint proposal to the American Spencer Fund.

Engaging University Students: The Scientific Education Center collaborates with university students in education, especially master's candidates, for joint research. Many undergraduates also show interest in partnering for research



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- **University Collaboration:** An information exchange initiative with Haifa University has been established, leveraging university infrastructure for the center's projects.
- **Ministry of Education Partnership:** The center has fortified its ties with the Ministry of Education, with an emphasis on guiding student scientific research in alignment with ministry guidelines.
- **Environmental Outreach:** The center is actively promoting environmental awareness in Arab schools and kindergartens. In 2022, they expanded their work to several Arab towns, emphasizing the importance of environmental responsibility.