

The Boris Mints Institute
for Strategic Policy Solutions to Global Challenges
The Gershon H. Gordon Faculty of Social Sciences
Tel Aviv University

THE BORIS MINTS INSTITUTE

FOR STRATEGIC POLICY SOLUTIONS TO GLOBAL CHALLENGES

5th Annual Report | **2020**



SUSTAINABLE
DEVELOPMENT



INEQUALITY



RENEWABLE
ENERGY



INEQUALITY



WATER



CONFLICT
RESOLUTION



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-  **BMI Conferences:** Armenia, Finland, Georgia, Italy, Malta, Montenegro

Table of Contents

Letter from Founder and President, Dr. Boris Mints	2
Letter from Head of BMI, Prof. Itai Sened	3
BMI Vision	4
BMI Structure	5
Steering Committee	5
International Academic Committee	6
International Advisory Board	7
Management	9
Research Grants and Support Scholarships	10
Sustainable Development Lab	10
Water Lab	12
Inequality Lab	17
Conflict Resolution Lab	19
Renewable Energy Lab	22
Updates within the Labs activities	24
Support Scholarships	24
The 2020 BMI Prize	25
BMI Conferences	26
Conflict Diplomacy in the Digital WorldLink Campus University, Rome, 18.09.1919-20.09.19	26
BMI 2020 Research Conference, Zoom Webinar, 09.07.2020	27
Other BMI Activities	28
Continued support for Engineers without Borders	28
Sustainable Development Seminar, October 27 th –31 st , 2019	28
Renewable Energy Seminar, February 23 rd –27 th , 2020	28
Youth Innovation Forum	28
Prof. Sened visit to Bologna, October 2019	29
Prof. Sened visit to St. Gallen, November 4 th –6 th , 2019	29
Conference: Smart Contracts, Social Institutions and Blockchain Technology, November 21 st , 2019	29
<i>icipe</i> Visit, January 13 th –18 th , 2020	30
Visiting Scholars	31
Future Activities	33

LETTER FROM FOUNDER AND PRESIDENT, DR. BORIS MINTS



The past year has been very successful in some aspects and difficult in others for the Institute, as well as for the globe. The globe has been facing many challenges, including the recent and perhaps the most impactful – the Covid-19 Pandemic, which the world is still adapting to. Nonetheless, the efforts to solve some of the challenges at hand have been extended and are constantly bearing fruit. The work on the main projects of the Institute have continued and expanded, as for example the collaborative effort with TATA Trusts in India. Moreover, it was very pleasant to see that our partners from ICIPE, Kenya came to Tel-Aviv for a visit at the university and discussed future potential projects and programs. Another very significant event that has happened within the past year is the conference together with Link Campus University that took place in Rome, Italy. This session of the Institute was attended by the world-renowned members of academia, prominent political figures and others, thus resulting in many interesting discussions to be applied to the future of conflict resolution. On November 2021, BMI is hoping to have a conference in Vienna, marking the 160th anniversary of the birth of Theodore Herzl, titled: “National Revival in the 21st century” – the conference has been postponed by a year in the hope that by 2021 the circumstances of the pandemic situation will allow it.

On May 2020 we have awarded the annual BMI Prize to Prof. Sabina Alkire of Oxford University during a Zoom conference, however we are hoping to meet her in person and discuss ways to cooperate with the Oxford Poverty and Human Development Initiative, directed by Prof. Alkire. BMI has also conducted its annual conference through a Zoom webinar in July 2020, which was very insightful into all of the activities that the Institute conducts. We have also announced the opening of the new lab that will focus on the contemporary challenges in the field of Demography, led by Dr. Isaac Sasson from the TAU department of Sociology.

Overall, this year has been very productive, even considering the fact that the challenges that have been imposed by the Covid pandemic have certainly affected the natural order of things. Hopefully, next year will be even higher yielding in terms of the results achieved by the Institute’s work. I would personally like to thank Prof. Ariel Porat, President of TAU, Prof. Itai Sened, Head of BMI, our wonderful partners and every student, researcher and member of the BMI team for the work put in throughout the past year, while looking forward towards seeing what the future brings.

A handwritten signature in blue ink, appearing to read 'Boris Mints'. The signature is fluid and stylized, with a long horizontal stroke at the end.

Dr. Boris Mints

Founder and President of the Boris Mints Institute for Strategic Policy Solutions to Global Challenges

LETTER FROM HEAD OF BMI, PROF. ITAI SENED



I would like to start by thanking Dr. Boris Mints, yet again, for his initiative and generosity in offering to fund and then, hand in hand with all of us, put together this significant research institute, that has grown, in only five years, to become a world renowned and highly respected research institute of great global significance.

This year was once again, marked by a very significant growth not only of the institute itself but by everything the institute has touched upon in the five years of its very fruitful and fertile existence.

From within, this is the first year that the Institute has raised more funds than its annual budget was set to be by the generous gift of Dr. Boris Mints. Funds came from a very competitive grant environment. The institute has won significant grants from the Israeli Ministry of the Environment, from the Rothschild foundation, the Matanel Foundation and the Yad Hanadiv Foundation, all based in Israel, but also from the internationally prominent TATA and the Gates Foundations. Its activity reached new sites in Africa and India and its research new heights, with three graduating Ph.D. Students and numerous publications and prizes won by its young scholars

Outward looking, the Institute has helped dozens of young scholars to further their education, contributing in the process to finding great inwards towards addressing global challenges.

The institute continues its work in India, helping poor farmers significantly improve their quality of life. Its contribution to the ongoing project in Africa, helped locals deal with the devastation brought by the fruit flies and their worms that devastate the mango crops as well as the Fall Armyworm on Maize that devastates the maize crops all around the globe. In this context, BMI hosted, together with the entire leadership of Tel Aviv University, the entire management team of *icipe* headed by Dr. Segenet Kelemu to structure the future collaboration of the two institutes.

Next year promises to be just as exciting – we will inaugurate the Matanel Green Wall structure at the back of the Naftali Building, our teams will continue our research effort on all fronts, we will lay the foundation cornerstone of the new TAU International Graduate School of Social Sciences for which we will serve as the research and development arm and we will inaugurate a major new lab on the current demographic global trends headed by Dr. Itzhak Sasson.

We hope to extend our sustainable agriculture effort with further funds from the Gates foundation and support from the Government of Angola as soon as the COVID-19 pandemic recedes, to allow us to get back to traveling. With the inauguration of the new MA program for Developing Countries that grew out of our initiative to foster sustainable agriculture in India and Africa, we will have a much larger team of about 30 students at any given time to help meet that challenge head on.

With my outmost gratitude to all of you for joining the team effort,

A handwritten signature in black ink that reads "Itai Sened".

Professor Itai Sened

Dean of the Gershon H. Gordon Faculty of Social Sciences

Head of the Boris Mints Institute for Strategic Policy Solutions to Global Challenges

BMI VISION

The Boris Mints Institute was founded with the intention of encouraging research, planning and innovative thinking in order to promote significant positive changes in the world. BMI is focusing on designing strategic innovative plans to enhance the welfare of communities around the globe.

The world is thirsty for innovative and groundbreaking policy solutions to promote environmental sustainability, ensure food security, health and energy to all, and eradicate poverty. Yet, there is a dearth of applied, practical, policy-directed research on these issues. BMI addresses these challenges by operating on two levels: extending research grants and scholarships to research students and organizing conferences focusing on contemporary global challenges.

BMI supports applied, practical and solution-driven research, conducted by M.A and Ph.D. students under the supervision of internationally renowned senior scientists. The Institute ensures that no good idea goes to waste due to lack of funding and brings Israeli technologies to the world's neediest populations – harnessing Israel's startup mentality in the service of humanity.

As a globally influential research institution, Tel Aviv University is committed to applying its know-how and experience toward solving real-world problems. As a result, Tel Aviv University is uniquely positioned to be the home base of BMI. Yet, BMI is mostly an international organization with a very wide reach globally.

BMI's DNA requires that its innovative ideas be transferred in real time to policy makers. BMI has already held several academic events and extended significant support to research projects in food security, renewable energy and conflict resolution worldwide.

Steering Committee



Dr. Boris Mints, President

Dr. Mints has been one of the most influential businessmen in Russia in the 2004 – 2017. Currently Boris Mints is the Vice President of the World Jewish Congress, which is one of the largest and most significant organization that represents Jewish people from over 100 countries, representing their plurality. He is also the Chairman of the Council of Patrons of the Conference of European Rabbis (CER), which is the primary Orthodox rabbinical alliance in Europe. Awarded the Dashkova's Prize "Philanthropist of the Year" and Honorary Fellow of Tel-Aviv University.



Prof. Milette Shamir, Vice President for Foreign Affairs at Tel Aviv University

Milette Shamir's research focuses on U.S. literature and culture in the nineteenth century. She is the author of *Inexpressible Privacy: The Interior Life of Antebellum American Literature* (Penn University Press, 2005) and the editor of *Boys Don't Cry? Rethinking Narratives of Masculinity and Emotion in the US* (with Jennifer Travis, Columbia University Press, 2002). Her work appeared in several journals and essay collections devoted to the study of American literature and cultural history. Shamir is the editor-in-chief of the journal *Poetics Today* (with Irene Tucker of UC Irvine). From 2015 to 2019 she served as Vice Dean of the Humanities for Academic Affairs. She co-founded TAU's American Studies program in 2006, and served as its head for thirteen years.



Prof. Tami Ronen-Rozenbaum, Former Dean of the Gershon H. Gordon Faculty of Social Sciences at TAU and the Founding Head of the MA program in Developing Countries

A researcher in the field of the Cognitive Behavioral approach and Positive Psychology. Her research focuses on the function of self-control skills, positive emotions and social support as a way of overcoming stress and developing happiness. In her work, Prof. Ronen-Rozenbaum links a complex theoretical model of understanding human strengths and coping abilities to techniques for developing useful interventions in the field.



Mrs. Irina Buylova, Representative of BMI President

Executive director of the Yegor Gaidar Foundation (Russia), a prominent journalist and internationally recognized expert in building effective interaction models for Russian and international NGOs—including educational, economic and social development institutions. In the 1990s and 2000s she reported on social policy and development issues in the context of the turbulent Russian economic and political transitions.



Prof. Itai Sened, Head of BMI, Founding Head of the School of Social and Policy Studies at TAU and the incoming Dean of the Gershon H. Gordon Faculty of Social Sciences

Prof. Sened is the new Dean of the Gershon H. Gordon Faculty of Social Sciences at Tel-Aviv University. He returned to TAU after serving for 12 years as director of the Institute for New Institutional Social Sciences at Washington University, which was established by Nobel Laureate Douglass C. North. He is the founding head of the Boris Mints Institute for Strategic Policy Solution to Global Challenges and the founding Head of the School of Social and Policy studies at TAU.

International Academic Committee



Prof. Yossi Rozenwaks, Dean of the Faculty of Engineering, TAU.

Prof. Rozenwaks is a leading researcher in various fields, including nanotechnology, electrostatic force microscopy, atomic force microscopy, nanoscale charge injection in memory devices, solar cells, organic semiconductor devices, biological field effect transistors, charge carrier dynamics in semiconductors, and recombination processes.



Prof. Miranda Schreurs, Professor of Environment and Climate Policy, Bavarian School of Public Policy, Technical University of Munich

Previously the director of the Environmental Policy Research Center and professor of Comparative Politics at the Freie Universität in Berlin and an associate professor in the Department of Government and Politics at the University of Maryland. Prof. Schreurs' focuses on comparative environmental politics and policy in Europe, the United States, and East Asia. She is a member of the German Advisory Council on the Environment.



Dr. Segenet Kelemu, Director General of the International Center of Insect Physiology and Ecology (ICIPE) Nairobi, Kenya

Dr. Kelemu is the Director General of the International Center of Insect Physiology and Ecology (ICIPE) in Nairobi, Kenya. She is a molecular plant pathologist whose work focuses on the elucidation of molecular determinants of host-pathogen interactions, development of novel plant disease control strategies—including genetic engineering—biopesticides, pathogen population genetics and dynamics, and endophytic microbes and their role in plant development. She has first-hand experience with both the challenges and successes associated with African agriculture, from tending to fields to directing world-class laboratories.



Prof. Itai Sened, Head of BMI, Founding Chair School of Social and Policy Studies at TAU and Dean of the Gershon H. Gordon Faculty of Social Sciences

Prof. Sened's specializes in the study of institutions and how they affect policy at all levels. These institutions include not just formal institutions at the national and local level, but also the informal institutions which determine social norms and cultural habits and may enhance or impede economic development and social prosperity. In recent years his research has become less technical and more applied to the fields of renewable energy and institutions that protect the growing inequality in income and assets around the globe.

➤ International Advisory Board



Mrs. Joelle Aflalo, Co-Founder of the Matanel Foundation

In 2006, she founded, together with Mr. Gad Boukobza, the Matanel Foundation. This charitable institution encourages social entrepreneurship and is a testament to Mrs. Aflalo's sense of responsibility, spirituality, dedication to philanthropy, and constant desire to help create a better world.



Prof. Armen Darbinyan, Chairman of the Board, Rector of the Russian–Armenian University, *Yerevan, Armenia*

Prof. Darbinyan is an initiator of economic and political reforms in Armenia, including the development of the private sector and the formation of new governmental institutions. He led important reforms in the fields of telecommunication, agriculture, infrastructure and tourism. In addition, he is the author of national legislation regarding banking, stock companies, anti-trust provisions, and state regulation of public services. He is renowned as an international expert on transition economies and was granted the Young Global Leader award by the World Economic Forum.



Dr. Simeon Djankov, Director, Financial Markets Group, London School of Economics

Dr. Djankov was declared “Bulgaria’s Most Successful Politician” and awarded the President’s Award of the World Bank. He is a visiting professor at the London School of Economics’ Department of Finance and was previously a visiting fellow at the Peterson Institute for International Economics, Washington DC. In addition, he has served as Deputy Prime Minister and Minister of Finance of the Republic of Bulgaria.



Prof. Sergei K. Dubinin, Chairman of Supervisory Council, Chairman of the Remuneration and HR Committee – *VTB Bank*

Prof. Dubinin is an economist and professor at Lomonosov Moscow State University. In addition to positions in the Russian government, he served as chairman of the Russian Central Bank from 1995-1998. In addition, he has served on the board of governors of several banks and leading financial institutions.



Prof. Jacob A. Frenkel, Chairman, TAU Board of Governors, former Governor of the Bank of Israel

Prof. Jacob A. Frenkel serves as the chairman of the TAU Board of Governors and chairman of JPMorgan Chase International. In addition, he serves as Chairman of the Board of Trustees of the Group of Thirty (G-30), a private, non-profit, consultative group on international economic and monetary affairs. In addition to filling executive positions for international investment and financial services companies, Prof. Frenkel is also the former head of the Bank of Israel.



Hon. Václav Klaus, Former President of the Czech Republic, Head of the Václav Klaus Institute

An economist by training, Prof. Klaus was forced out of the Czechoslovak Academy of Sciences after the Soviet invasion in 1968. He returned after the Velvet Revolution of 1989 as one of the founders of the Civic Forum Movement. He was the country's first non-Communist Finance Minister and served from 1992 to 1997 as Prime Minister of the Czech Republic. In 2003 Klaus was elected President of the Czech Republic and won reelection in 2008. Since 2012 he has headed the institute which bears his name, a think tank based in the Czech Republic. He is a member of the Mont Pelerin Society, has published more than 30 books, and is the recipient of numerous honorary degrees and international awards.



Igor Luksic, Former Prime Minister of Montenegro, South East Europe Public Sector Director, PwC

Mr. Luksic was an official candidate for the position of UN Secretary General in 2016 and served as Prime Minister of Montenegro from 2010-2012, Deputy Prime Minister and Minister of Foreign Affairs and European Integration from 2012-2016, Minister of Finance from 2004-2010, Member of the Parliament of Serbia and Montenegro from 2003-2006 and Member of the Parliament of Montenegro from 2001-2003. Today, Luksic is the south-east Europe public sector director of PwC. Dr. Luksic holds a Ph.D. in economics and is an associate professor at the University of Donja Gorica Podgorica (UDG). Dr. Luksic is an advocate for transparency and dialogue in a proactive approach to both internal and foreign relations. During his time as Prime Minister, Montenegro opened accession talks with the EU and completed accession to the WTO.



Prof. Itamar Rabinovich, Founder and President of the Israel Institute, Former Ambassador of Israel to USA and President Emeritus of TAU

Prof. Itamar Rabinovich is the president of the Israel Institute (Washington and Jerusalem), Israel's former Ambassador to the United States and the former president of Tel Aviv University (1999-2007). He is professor emeritus of Middle Eastern History at Tel Aviv University, Distinguished Global Professor at NYU and a Distinguished Fellow at the Brookings Institution. Prof. Rabinovich has been a member of Tel Aviv University's faculty since 1971 and served as the Ettinger Professor of the Contemporary History of the Middle East, chairman of the Department of Middle Eastern Studies, director of the Dayan Center for Middle Eastern and African Studies, Dean of the Humanities Faculty, and Rector.



Seppo Remes, Co-Founder and Chairman of the Board, EOS Russia

Mr. Remes is a Finnish citizen and holds a Licentiate of Economics degree from the Turku School of Economics. Working in Russia from 1993-2015, he is the former CEO of the Investment Company Vostok Energo and director of Vostok Nafta, both of which operate in the Russian energy sector. He was selected as the Director of the Year in 2013 by the Independent Directors' Association and the Russian Council of Industrialists and Entrepreneurs. In 2007 he was among the founders of the EOS investment firm and has been company chairman since its inception. He was awarded an honorary Doctorate from the Plekhanov Academy of Economics in Moscow and Turku School of Economics in Finland. He was member of Boards of UES, Rusnano, Rosseti, OMZ, Sollers and Sibur Holding. He was member of Boards of UES, Rusnano, Rosseti, OMZ, Sollers and Sibur Holding.

➤ Management



Prof. Itai Sened, Head of BMI, Founding Chair School of Social and Policy Studies at TAU and Dean of the Gershon H. Gordon Faculty of Social Sciences

Prof. Sened is the new Dean of the Gordon Faculty of Social Sciences at Tel-Aviv University and founding head of the Boris Mints Institute for Strategic Policy Solution to Global Challenges and the Academic Institute for Structural Reforms. In addition, he heads the TAU Center for Renewable Energy.



Dr. Alexander Pesov, Representative of BMI President

Dr. Pesov hold a Ph.D. in biology and is the author of several scientific publications. Dr. Pesov has previously worked as a journalist, writer, and editor of several top journals and newspapers and served as vice president of the International Press Center in Moscow. From 1998 to 2012 Dr. Pesov was an advisor to the prime minister of the Russian Federation Eugene Primakov, chief of staff of the Ministry of Agriculture of the Russian Federation and vice governor of the Voronezh region.



Dr. Haim Ben-Yaakov, Representative of TAU President

Ben-Yaakov is a senior executive for regional development and public affairs at Tel Aviv University. He served as CEO of the Euro-Asian Jewish Congress, head of the Jewish Agency for Israel in Russia and the Baltic States and as an educational adviser for the Jewish Agency for Israel.



Ayelet Fishman. Adv., Administrative Director of BMI

Mrs. Fishman received her LL.B. from the Hebrew University in Jerusalem as well as an M.A. in Public Policy, with distinction, from Tel Aviv University. She formerly served as the Israeli Ministry of the Interior's National Elections Supervisor.

➤ Sustainable Development Lab



Lab Head: **Dr. Ram Fishman**, Department of Public Policy

Dr. Ram Fishman, head of the Sustainable Development lab, received a research grant from the Rothschild Foundation and is currently applying for the second phase of the Gates Foundation grant, together with *icipe*.

Yalon Perlman, BMI Fellow

Academic advisor: Dr. Ram Fishman, Department of Public Policy

BMI-TATA Collaboration Operation Project

Adoption of technological innovations in agriculture has attracted considerable attention in developing countries. New technology seems to offer an opportunity to increase production and income sustainably, but the introduction of many new technologies has met with only partial success as measured by observed rates of adoption (Feder, G., Just, R. E., & Zilberman, D. 1985). It is essential to conduct field experiments and pilots for technologies in the fields of agriculture and water-saving. Field experiments bridge the gap between the existing knowledge and technologies and their feasibility and implementation in the field, so that farmers can significantly increase their income. In this research, the economic impact of technologies and knowledge on smallholder farmers in rural India is examined: **Is it possible that proven technologies are economically unfeasible for vegetables smallholder farmers?** Given the current market conditions, combined with the information and ability accessible to the farmers, it is difficult to find economic feasibility for the tested technologies. Many factors may affect the adoption of technologies among smallholder farmers. In this study, we show through five field trials with small vegetable farmers, that the economic feasibility of the technologies tested does exist but is very limited and influenced by other factors that may thwart its adoption. Additionally, we underscore the complexity of the growing chain, which impedes the willingness to adopt technologies, despite their significant contribution to crop growth, maximal fields utilization, and reduced use of water and other inputs. The innovation in this study lies in the cooperation between a non-governmental organization (TATA Trusts) and academia to establish a methodology for data-based philanthropy.

Karel Finkelstein and David Shurman, BMI Fellows

Academic advisor: Dr. Ram Fishman, Department of Public Policy

Breaking New Ground in Indo-Israeli Agricultural Technology Transfer

The purpose of the 'Indo-Israeli innovation villages' is to increase the income of Indian farmers that suffer from low productivity, malnutrition and food insecurity by finding innovative solutions and creating a platform for integrating and adapting Israeli technologies to the Indian rural reality. Israel's experience and expertise in agriculture holds tremendous potential for Indian agriculture, only a small part of which are successfully implemented in developing countries. Barriers to technology transfer are not only technical/agronomical, but mainly economic and social. After one year of operation, a group of 8 students from a wide range of disciplinary backgrounds – economy, public-policy,



physics, statistics, architecture and anthropology – stayed in the different districts of the Indian state of Andhra Pradesh for prolonged periods of time, during which they personally engaged dozens of small holder farmers and visited remote rural areas. This was the first full cycle of the project. In this visit, out of a list of 52,282 potential farmers, a little more than 500 farmers were chosen for baseline surveys. 274 of them were found eligible for an intervention, out of which 50 were randomly chosen for high intensity monitoring and experimentation, while the others were chosen as a control group. Eight agro-economic experiments were completed and analyzed, designed to measure the economic and agronomic impact

of basic technologies such as drip irrigation and yellow mulching, together with ongoing agronomical advice and PoP (Package of Practice) given by Israelis and Indian experts. From these experiments and the sample selections process designed specifically for this research, we gained many insights that were taken into consideration during the preparation for the 2019–2020 cycle.

On the Water conservation front, a 2-year tech-pilot was conducted with ‘Tal-Ya agricultural solutions’, offering multi-use soil cover that protects the plant’s root system, directing water and fertilizer straight to the root, while protecting the earth around the root from weeds and extreme temperatures. The pilot is currently ongoing and is expected to be concluded by the end of 2020. The pilot is monitored regularly, and though it is too early to determine whether it is successful, we can say that as of now it seems promising. Another experiment, carried out in Krishna district, was concluded with great success. The results showed that the plants from the Tal-Ya plot yielded significantly more than the other plots. Consequently, we expanded the experimentation with vegetables under this technology to 20 more farmers in the cycle of 2019-20. Furthermore, in order to prevent post-harvest damages to the crops, we approached the Israeli Agritech company Amaizz, which claims to provide a chip post-harvest solution. During this pilot we’ve encountered many difficulties, caused mainly (but not exclusively) by a poor performance of the product and company. It was closely monitored and rigorously analyzed, and was deemed unsuccessful in most aspects.



In Collaboration with the Water Center at TAU and Amrita University in India



Lab Heads:

Prof. Dror Avisar, Head of TAU Water Center, Faculty of Exact Sciences

Prof. Hadas Mamane, Head of the Environmental Engineering Program, Faculty of Engineering

Patricia Akao, BMI Fellow

Academic Advisors: Prof. Dror Avisar and Prof. Hadas Mamane

Microalgae Utilization for Removal of Organic compounds from Wastewater: Circular Economy Concept



During the last year, three more sets of experiments were performed, (1) using primary effluent from "Shafdan", (2) using synthetic wastewater (Fig.1) and (3) in Thapar University in India, using wastewater from the villages pond (Fig.2).

At Fig. 3 demonstrates the biofilm growth at the sponge. These biofilms were analyzed by confocal microscopy to verify the presence of microalgae. The chlorophyll was measured, and it we demonstrated and confirmed the microalgae presence. More confocal microscopy needs to be performed to identify bacteria in the water. The water quality parameters were measured

during the entire experiment. Analysis showed that only one day of treatment with aeration and sponges reduced COD_t significantly (Fig.4). Aeration together with SB are the most effective treatment, play a very fast role on CODs decline, removing 69% at the first day, independently of the SB presence, control NA removed 29% and SB NA 47%. At 4 and 7 days there were no significant difference on the results.



Fig. 1

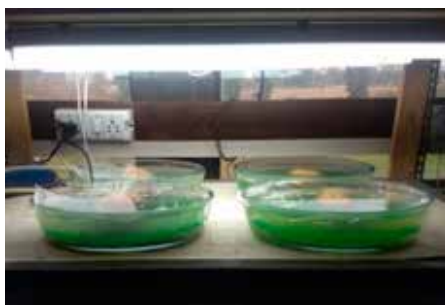


Fig. 2



Fig. 3

The use of aeration together with SB can improve the COD removal with a retention time (RT) of one day, however pumping air into the ponds increases the costs of the treatment by 30%. The retention time of 4 days presented same COD_t removal without pumping air, showing that the SB can help to remove the COD_t without any additional cost, only increasing the RT. Without air neither SB was only possible to remove 40% with 7 days RT.

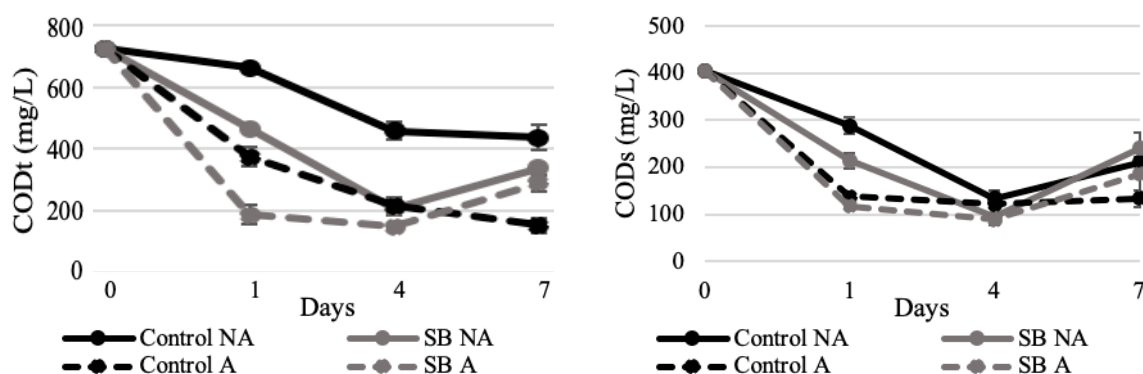


Fig. 4

The joint study with Thapar Institute (TIET) continues. The goal is to improve the quality of the wastewater ponds coming from the villages in the countryside of India to reach the standards for crop irrigation. Among the 4 types of supports used, the sponges showed better results, so the next experiments were carried out using only sponges in incubator.

Adi Zilberman, BMI Fellow

Academic Advisors: Prof. Dror Avisar, Prof. Hadas Mamane and Yaal Lester,
Environmental Engineering, Azrieli College, Jerusalem

Removal of Micro-Pollutants from Hospital Wastewater



In this study, we treat the pharmaceutical residues in the source, thus decreasing their concentration in the effluent and by that contribute to food security and environmental sustainability. We expect that the removal of carbon, phosphorus and nitrogen will be carried out by the biological activity of the aerobic, anoxic and anaerobic bacteria, and that in the first stage the drugs we are investigating will not be dismantled. This study investigates methods to remove micro-pollutants from the aquatic environment coming from hospital effluents. The six drugs we chose in this research are resistant to the conventional biological secondary treatment currently available in WWTP, and as a result, the effluents that comes out from WWTP despite their high quality, contain residues of drugs that have been proven to be harmful and some also carcinogenic.

By March 2020, Adi's biological system was balanced and reached total acclimation and she was about to start the ozone experiments. Unfortunately, at this time the Covid-19 outbreak was everywhere, so going to "Tel Hashomer" hospital to bring wastewater to feed the system was very problematic. Hence, Adi had started working with artificial effluent, to which the six chosen drugs are added. Adi had conducted did a few experiments to follow each drug degradation in ozone and also followed their by-products. The plan for the next phase of the research is to determine the right amount of ozone and to add peroxide to create radicals and check the results in an indirect method of ozone. The process before ozonation, after ozonation will be monitored, analytical tools will be used to follow the degradation of the drugs and their by-products and toxicity test to make sure that the added treatment indeed reduces the toxicity of the mixture.

Water research in India – Developing water quality survey tool



A single community may have a broad range of drinking water sources, each with different qualities, time-dependent accessibilities, economic models and price points. This complexity is further compounded by communities' range of knowledge, attitudes and practices with the water they do collect, all of which have direct effects on the quality of the water they drink, and their likelihood to contract water borne disease in the short and long term. The goal of this research is to develop a simple tool for understanding drinking water quality in rural areas, by creating a water quality survey (WQS) which will ask the participants to predict the technical quality of their

water. Correlation will be investigated between their predictions and their actual water quality – chemical, physical and biological analysis. The research presents a tool for the accurate collection of this data, combining both objective water quality data and a subjective social data collected through questionnaire. For any water quality intervention, subjective elements such as health risk perceptions, willingness to pay & access to an intervention (e.g., standard filter), community-specific water access needs, water treatment & storage practices are all essential determinants.

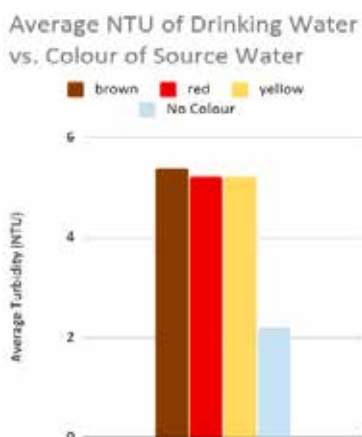


Fig. 5

Given the high cost of physical and chemical testing relative to collecting survey data, possible correlations between these datasets could demonstrate the utility of survey data to predict results from more expensive physical and chemical methods. For example, we examined the general perceptions of people about the color of their drinking water in Kollam district, Kerala, India. Water can only display a color because of dissolved constituents or because of suspended solids. Turbidity is somewhat proportional to the amount of suspended solids in a water sample, thus a more turbid sample is more capable of both scattering light and displaying color (see Fig. 5).

At another part of the study, we examined the community perceptions regarding the safety of drinking water using a Likert scale, where 37% of the sample community believed that the water they were drinking was safe, 32% thought that it was satisfactory, 28% of the sample people found that their water is good and can be improved. Only 3% of the respondents believed that the water they are drinking today were unsafe. The participants

mentioned that their feeling of safety is because they treat their source water and only then use it for drinking purposes. When it came to source water, 83% stated that they would not drink water directly from the source.

When asked why they wouldn't drink from a source directly, 63% of the population considered illness to be the prime reason. In comparison, 14% of the respondents cited their "habit" and "routine followed in years" as a reason for not drinking directly from the source.



Fig. 6

Asaf Pras, BMI Fellow

Academic Advisor: Prof. Hadas Mamane

Water research in India, continued in Israel: β -lactamase biosensor

In rural areas in developing countries, many communities have no water treatment at all, and rely on bore wells, shallow wells and natural bodies of water, all with high levels of a range of dangerous contaminants. Some of those contaminations are due to the wastewater and sewage which are neither treated nor collected, and in many cases, they are dumped into the water sources. One of the key indicators for the presence of wastewater in drinking water, is the presence of E. coli. Beta-lactamases are enzymes produced by bacteria, that provide multi-resistance to β -lactam antibiotics which may be found in water, such as penicillin, cephalosporin and others. Therefore, these enzymes are a clear indicator of wastewater and sewage pollutants in water.

Our goal in this research is to develop a low-cost, rapid, in-situ β -lactamase biosensor, in order to ensure safe drinking water in rural areas. Initial work on smart water storage tanks had led to the search for a rapid, low-cost, and in-situ pathogen sensor, which we found that does not currently exist. As pathogens are one of the most common and dangerous water contaminants in developing countries, due to the lack of sewage systems, it is most important to test for the presence of them to maintain good water quality.

The easiest way to look for this contamination is by taking a sample to the lab and conduct an E. Coli count. The process requires 24 hours in the lab, in addition to the time it takes to deliver the sample to the lab. Faster methods are available, but are extremely costly, which makes them unsuitable for rural areas. Hence, water sources in these areas are left without regular monitoring or even unmonitored altogether, thus exposing the users to a high risk of health hazards. The sensor we wish to develop should meet the following criteria: (1) Detect E. coli – presence and count; (2) Could be able to work in the field – in capacity in dimensions; (3) Should have the ability to connect to Arduino.

By now, several important steps had been taken. Aiming to assure the feasibility to detect β -lactamase of E-Coli (TEM-1), we are finalizing the calibration protocol, and are about to conduct the experiments for this part. Additionally, the calibration protocol will be executed on a wide range of pathogens to test if classification can be done by using this method. Finally, we will focus on downscaling the size and the price of a self-made prototype, without affecting the resolution of detection. This step will start in parallel to the classification in order to have a prototype within 6 months.

Michale Goldberger, BMI Fellow

Academic Advisor: Prof. Hadas Mamane

Real-time, Low-cost Nitrate and Ammonium Detection in Wastewater

The research is focused on developing cheap and simple sensors for detection of nitrates and ammonium in water. The sensor will measure the conductivity of the water, using microfluidic sensing, and interface with the internet to send information about water contamination to the consumers. By monitoring their water, consumers could refrain from consuming polluted water, as well as determine their need for a more complex purification system. Electrochemical techniques are an effective way of measuring the conductivity of a solution, however it is difficult to measure conductivity of a specific ion. In order to measure specific ionic content, we have created a membrane coating for our electrodes, using an Ionosphere, which selectively allows specific ions to pass through the membrane. In addition to creating the electrodes with the membrane coating, we have begun to measure electric current in synthetic wastewater solutions. Our electrochemical methodology thus far has been mostly cyclic voltammetry (CV). Using CV, we have been able to detect the presence of various ions, using uncoated electrodes. We have detected

changes in current, as a result of concentration differences in the solution. We have also detected ammonium in solution using membrane-coated electrodes. However, these results have been relatively inconsistent, and we are working on making our system more consistent. Given the micro-size of our electrodes, we have had many physical barriers in progress. Electrochemical techniques at all are sensitive to the surface area interface between the electrode and solution and given the micro-size of our electrodes, small manufactured differences in electrodes can create significant differences in recorded output. We are working on improving the consistency of our results. This involves much trial and error of different setups and techniques.

Clean Water for India – February 2020

According to UNICEF, universal access to safe drinking water is a fundamental need and human right. Climate change, population growth, rising standards of living and uneven distribution of water supplies are the main causes for competition over water resources, water scarcity, poor water quality and variability of hydrological events. Only a small fraction of the world's population enjoys a continuous water supply, and it is projected that the world is heading toward a dark period of lack of safe water. To meet the challenges, it will be necessary to develop interventions with decentralized, effective, scalable and adaptive technologies to address the enormous diversity in water-quality parameters and targets. The government of India has announced "The Jal Jeevan Mission" in order to follow a decentralized approach and develop models that are at once cost effective, scalable and adaptive to the enormous hydrological and social diversity of India. Mechanical and Electrical students from the faculty of Engineering together with law and public policy, joined BMI's Nitsan lab and Water-tech lab for a research field trip in South India, and worked in close collaboration with the elite Amrita University in Kerala. The proposed joint research will support the Jal Jeevan mission through a joint, first of its kind effort by Indian and Israeli universities that involves innovative, integrated, cross-disciplinary approach; rooted in a research partnership with a proven, year-long track record of joint research and education.



During monsoon of 2018 and 2019, Kerala received more than its share of rain, resulting in devastating floods. One of the main problems caused by floods is the contamination of water sources, thus even if there is water, it is non-drinkable. This is the setting for our collaboration with Amrita university. The Indian-Israeli team worked on a variety of projects relating to drinking water, developing: (1) a hybrid social/empirical research methodology; developing automated water treatment technologies; and (2) a system for the removal of heavy metals from polluted water bodies. The Israeli academic and engineering rigor was complimented by the deep socio-cultural understanding and field research know-how of their Indian partners. Much of this research and development revolved around NUF, a patented sustainable low-cost water treatment technology developed at TAU. This collaborative relationship, led in Israel by Prof Hadas Mamane and Dr. Ram Fishman, represents just the start of an ongoing productive academic partnership between Amrita and TAU. By working together, the combined team is working on a number of papers, proposals, and projects, to develop and implement the very best the field of sustainable engineering has to offer.



TAU and AMRITA students

> Inequality Lab

In collaboration with the Academic Institute for Structural Reforms



Lab Head:

Prof. Itai Sened, Dean of the Gordon Faculty of Social Sciences and Head of BMI



ACADEMIC INSTITUTE
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REFORMS

מכון
האקדמי
לרפורמות
מבניות

Eve Guterman, BMI Fellow

Academic Advisor: Professor Itai Sened

Wicked Problems in the Information Age: Decentralizing for Equality



Throughout history, social institutions have been designed to overcome five fundamentally wicked problems inherent in human society: (1) The creation and protection of property rights; (2) The [re]distribution of wealth; (3) The Principal-Agent problem; (4) The management of natural commons; and (5) How to make choices pertaining to the social collective, as such. We have yet to overcome these persistent problems with institutional solutions, primarily because our man-made institutions suffer from the same inherently human faults from which these problem emanate to begin with. The root source of all of these problems is the shared

underlying monopoly problem (Figure 7).

A new class of digital institutions based on distributed ledger technologies, allows us to overcome these problems, particularly under the conditions of the information age. Recent literature concludes that “there is no scientific ‘best solution’ to a wicked problem,” emphasizing ways to manage the problem, rather than getting to the root cause of these problems in an effort to find innovative solutions (Head, 2018, 183).

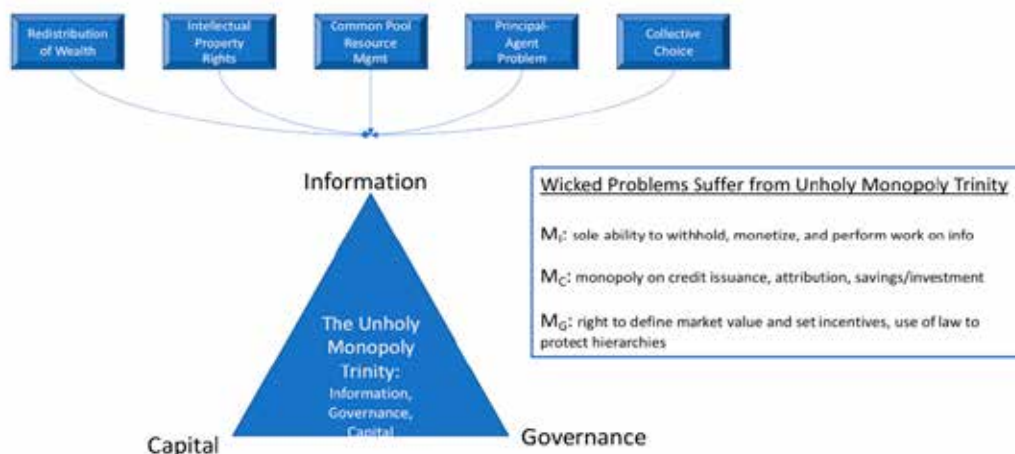


Fig. 7

Eve focuses on developing a narrower definition of the most persistent “wicked problems” for evaluation, namely those that meet the following two criteria: (1) they have been mathematically shown to be unsolvable, and (2) they stem from generic characteristics of human behavior. For each of the four problems thus classified, this study will offer ‘non-human’ technological solutions that overcome the mathematical impossibility of bypassing the ‘all too human’ root cause of the problem.

The 2008-2009 financial crisis and the COVID-19 global pandemic are two examples of the persistence and increasing cost of wicked problems, and clear evidence of our failure to solve them, even with complex institutional structures. In the United States, as millions of citizens claimed unemployment and experienced economic shocks threatening to push them into poverty, eight (8) billionaires saw their wealth grow by over \$1 billion USD (Collins, Ocampo, and Paslaski, 2020). We see that the institutions intended to help individuals weather shocks via the distribution of public goods actually facilitated reverse distribution, leaving the individual worse off, at the hands of the elite. These events highlight the dynamics of multi-dimensional poverty (Alkire, 2015), and the way the wicked problems continue to extract significant value from individuals and society by reducing market competition, slowing economic growth and eroding social welfare. This result is enhanced by information asymmetries, dissemination of false information, thus causing a massive loss to society – of capital, assets, and lives.

This work aims to prove, in the coming semesters, that under general conditions of decentralized value generation, governance, transparency and immutability, the wicked problems will subside, neutralizing the principal-agent problem, offering new management mechanisms to protect public goods, new automated solutions to create and protect intellectual property rights, and, most importantly, new sources of value creation as well as mechanisms for redistribution of wealth via economic expansion instead of the failing centralized governance systems we currently have – see figure 8 below:

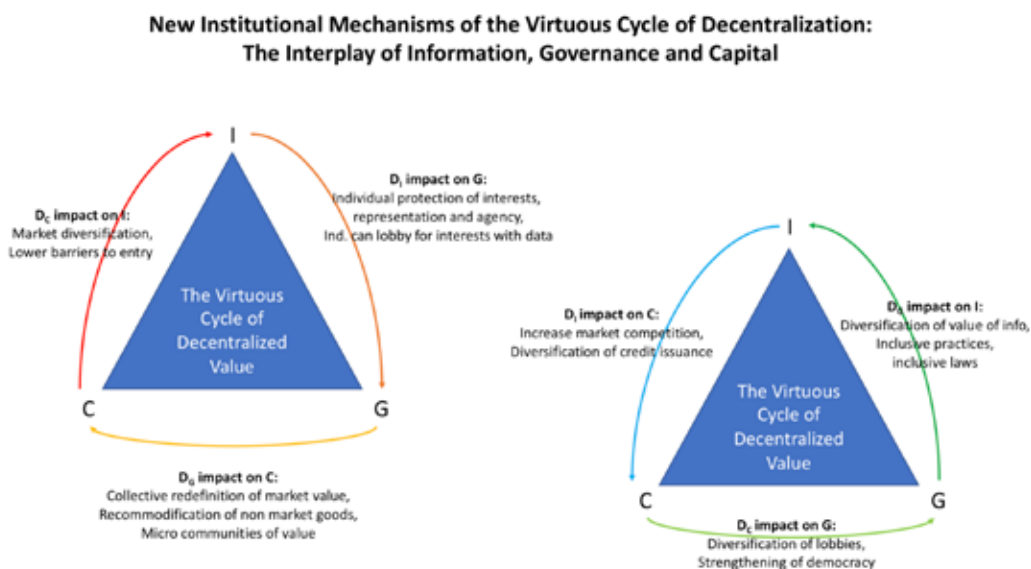


Fig. 8

➤ Conflict Resolution Lab

In collaboration with the Evens Program in Mediation and Conflict Management and the Academic Institute for Structural Reforms



The Evens Program
in Mediation and Conflict Management
The Gershon H. Gordon Faculty of Social Sciences
Tel Aviv University



Lab Head:
Dr. Sami Miaari,
Department of Labor Studies,
Faculty of Social Sciences



Dr. Sami Miaari had recently been accepted as a member of the Global Young Academy.

Karen Umansky, Graduating BMI Fellow

Academic Advisor: Prof. Itai Sened, Head of BMI

While German Shepherds Were Sleeping: How Mainstream Parties Created a Fertile Ground for the Electoral Success of the German Radical-Right AfD



In this research, Karen shows how populist radical parties (PRPs) maximize political gains by seizing an opportunity to proclaim “legitimate” enemies and transform collective beliefs. While holding office has been shown to have a “taming effect” on these parties, their real impact on the political sphere results from their interaction with mainstream parties, regardless of whether or not they assume power de facto (Minkelberg 2001; Mudde 2007). In a battle for their electorate’s support, mainstream parties may use accommodative, adversarial and dismissive strategies (Meguid 2005, 2008). While adversarial strategy, which implies opposition to the issue

emphasized by PRPs, was shown to increase the issue salience and boost public support for PRPs, accommodative and dismissive strategies were found successful in undermining the position of PRPs (Meguid 2005, 2008). In this research, Karen aims to contribute to the growing body of literature that assesses the impact of PRPs on mainstream parties’ rhetoric on immigration and asylum (e.g. Han 2015; Wodak 2015).

The findings corroborate the second hypothesis of this research – the FPÖ stayed attuned to public concerns by attending to the issue of the environment to an unprecedented degree in its history. However, the analysis yielded interesting and unexpected results in terms of the FPÖ’s influence on other parties’ positions and strategies. The ÖVP’s stance on immigration changed most radically, compared to other parties, spiraling down from a favorable attitude to blaming immigrants and asylum seekers for the increasing crime rate, unemployment and putting the social system under a heavy strain. Portraying (Muslim) immigrants and refugee seekers as “legitimate” enemies contributed to the electoral success of the ÖVP in 2017, when the issue of immigration was highly salient (Umansky and Kohlenberger 2020). However, the party’s negative attitude to immigration and its variants and the use of the “legitimate” enemy strategy in 2019, when immigration ceased to be the most salient issue, might indicate an ideological radicalization of the Austrian political sphere, rather than an opportunistic political strategy.

Although, the FPÖ lost much of its public support in 2019, it succeeded to change the way the mainstream parties refer to immigration. The loss of the votes for the FPÖ can be connected to the Ibiza scandal, but also to the loss of the party's exclusive dominance over the issue of immigration and the adoption of the "legitimate" enemy strategy in this regard by other parties. What Meguid (2005) refers to as "accommodative strategy" has worked well for the ÖVP who succeeded to undermine the FPÖ's previously irrefutable dominance in the domain of immigration.

Amit Loewenthal, Graduating BMI Fellow

Academic Advisors: Dr. Sami Miaari, Department of Labor Studies, and Prof. Itai Sened, Head of BMI

The Political Economy of the Israeli-Palestinian Conflict



This research provides insight into the role which economic inequality and other economic conditions play in political conflicts. Many political conflicts, violent and non-violent, are attributed to economic grievance, a global phenomenon of political radicalization in an environment of rising intra-country inequality and economic resentment by people feeling left behind. Existing studies focus on cross-country analysis, and do not study the effect of economic inequality on political radicalization. To the best of our knowledge, this is the first research to address these issues. The research analyzes the conflict-inequality nexus within the scope of a single political entity, using the Israeli-Palestinian conflict (IPC), one of the longest lasting political conflicts, as

a case study of great significance. Using a unique combination of datasets on Palestinian socioeconomic condition and public opinion, the research explores the relationship between economic conditions and political preferences of Palestinians regarding the IPC.

Amit has found evidence showing that residents of districts with greater wage inequality within the district will be more likely to support radical factions, all other factors being equal. This effect, however, is relatively weak compared to other factors, such as working in the public sector, which is negatively associated with radicalization. Amit suggests two mechanisms that turn economic inequality into political radicalization: (1) inequality causing social discontent and increasing government mistrust; and (2) inequality strengthening Islamic identity, where the most prominent radical party is Islamite.

It is also found that residents of districts that receive greater assistance from charities are less likely to support Fatah (a relatively moderate Palestinian movement) and likelier to support Hamas (a more radical Palestinian movement). In comparison, residents of districts who received greater support from the Palestinian National Authority agencies are likelier to support Fatah, except in post-2007 Gaza Strip, where they support Hamas. These support patterns, as well as the socio-economic characteristics of the supporters, are in line with the religious club theory. The theory described armed religious groups as club goods providers, requiring costly sacrifices in the form of religious practices and prohibitions, making them effective in the coordination of high-risk insurgency and suicide attacks. He extends this theory to the political sphere and show that the same mechanism is used to affect political preferences.

Recent publication:

Loewenthal, Amit, and Sami H Miaari. "Male-Female Wage Differential in the West Bank: A Gender-Based Analysis of the Israeli-Palestinian Conflict." *Defence and Peace Economics*, 2020: 1-18.

Amit won the **Horowitz Institute Doctoral scholarship** in the field of Economic and Social Development, for his research of the relation between economic conditions and political violence. For further details: Horowitz Institute: <https://en-social-sciences.tau.ac.il/horowitz>

Nora Meissner, BMI Fellow

Academic Advisor: Prof. Adriana Kemp, Head of the School for Social and Policy Studies

Refugees in Town: Assessing the “Local Turn” of Forced Migrants’ Integration



This research project examines how cities deal with the social and economic incorporation of forced migrants. The research focuses on the challenges and the opportunities that local governments face as they mediate between national migration control policies and the influx of asylum seekers in precarious socio-legal situations. In addition to a qualitative extensive case study analysis of two central cities in Israel (Tel Aviv and Jerusalem), this year, Ms. Meissner expanded the research to Haifa as a third central city in Israel, to elicit variation of how different localities exhibiting characteristic differences in dealing with “aliens” or unclassifiable others within the nation-state (see previous report). Haifa is also examined as a case study by itself, due to the relatively low numbers of refugees residing there and the new evolving situation on the ground. Following Çağlar and Glick Schiller (2015), Nora seeks to contribute to the literature by creating a “multi-scalar perspective” on relationships between migration and localities, by researching cities that are not central gateways to migration and yet are important for grasping new dynamics of refugees’ dispersal, such as in Haifa.

As the COVID-19 pandemic hit Israel in mid-March, and resulted in a closure of the economy, administration and public transportation during the preparations for the field work of this study, the research was re-oriented for the second half of the academic year 2020. Nora decided to utilize the research cooperation that was established with the organization ALEF (an NGO who supports refugees) in order to focus on the situation of asylum seekers and the work of civil society actors in Haifa during and in response to the pandemic. By including new emergency situations such as those summoned by COVID-19 into the study of asylum seekers’ integration in particular localities, we will be able to further our understanding of how pandemic emergencies impact on populations that are already in precarious conditions.

➤ Renewable Energy Lab



In collaboration with the Renewable Energy Center



Lab Heads:

Prof. Yossi Rozenwaks, Dean of the Faculty of Engineering,
Prof. Abraham Kribus, Faculty of Engineering

Tamir Yeshurun, BMI Fellow

Academic Advisor: Dr. Gideon Segev, Faculty of Electrical Engineering, Physical Electronics
Department

Development of a method for extracting spatial photon recycling efficiency of solar energy conversion devices



An increasing effort is being made towards developing new materials for high efficiency solar energy conversion systems. The performance of a solar energy conversion device is greatly affected by various loss mechanisms and different charge transport properties. Further and in-depth understanding of loss and charge transport mechanisms could be key in establishing potential new materials for the use in future solar energy conversion devices. This research aim is to develop a nondestructive technique for quantifying efficiency loss mechanisms, and to provide insights on devices performance under relevant operating conditions. Photo-generated

charge carrier's recombination processes define the possible collection of current from a device. These recombination interactions release energy in the form of heat or through light emission in a process termed photoluminescence (PL). The probability for a charge carrier, generated at a specific point in the device to contribute to the photoluminescence is defined as the spatial photon recycling efficiency (SPRE). Obtaining spatial photon recycling efficiency in different materials and solar cells, could shed light on different loss mechanisms throughout the cell, and lead to development of higher performance solar cells.

In order to investigate the properties of the photoluminescence of a sample over a range of excitation wavelengths, we position the sample in an integrating sphere – an internally diffusive and reflective sphere, that allows light emitted inside the sphere, to be collected by an output port using an optical fiber. By using an integrating sphere, we are able to read the faint photo-luminescent signal emitted by the sample. Tamir has performed preliminary measurements of a photoluminescence signal when the sample is excited by various wavelengths. Figure 9 shows measured photoluminescence quantum yield results from the measurements using an undoped InP wafer, with different excitation wavelengths.

The plan for next year is to perform PLQY measurements and obtain the spatial photon recycling efficiency of different materials and solar cells. For future development of the technique, he intends to place the sample on a 2D translation stage and obtain a depth profile of the photon recycling efficiency at multiple points in the sample. This would allow

Tamir to create detailed 3D maps of different loss mechanisms throughout the material or device. Our results would contribute to further understand of loss mechanisms and to promote the development of better performance solar energy conversion devices.

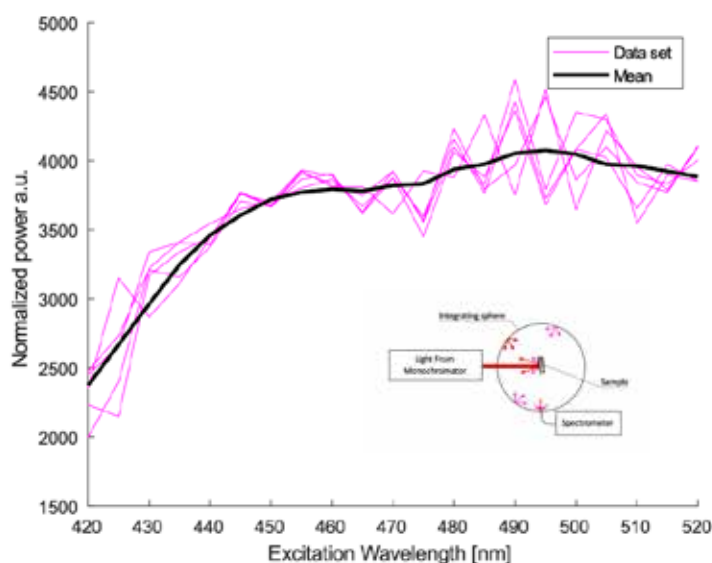


Fig. 9. Photoluminescence quantum yield measurements results using various excitation wavelengths on an undoped InP sample, positioned inside an integrating sphere. The sample is excited using an LED white light source. The inset shows the schematic illustration of the PL measurement experiment, depicting red excitation wavelength

Hadar Traugott, BMI Fellow

Academic Advisors: Prof. Alexander Liberzon, School of Mechanical Engineering and Dr. Alexander Golberg, Porter School of Environmental and Earth Science

Intensified Off-Shore Production of Biomass (Macro-Algae) for Bio-Energy: Mixing and Nutrients Transport Studies



During the last year, Hadar performed cultivation experiments in two experimental systems, one for measurement of the hydrostatic pressure effects, and the other for the turbulent hydrodynamic effects on biomass and chemical composition of macroalgae. In addition, she was involved in writing and submitting three manuscripts, which summarize the experimental results and conclusions carried out in the past years. All these manuscripts were published. Furthermore, she was involved in writing book chapters on macroalgae biorefinery, (1) feedstock, (2) downstream processing, and (3) application. For the next months, Ms. Traugott plans to continue performing experiments, which will test the effect of mechanical stimulation (hydrostatic pressure, shear stress, turbulence) on macroalgae growth rate and chemical composition.

Recent publications:

- Ingle, K.N., **Traugott, H.**, Golberg, A. "Challenges for marine macroalgal biomass production in Indian coastal waters." *Botanica Marina* published online in January 2020.
- Zollman, M., **Traugott, H.**, Chemodanov, A., Liberzon, A., Golberg, A. " Deep water nutrient supply for an offshore *Ulva* sp. cultivation project in the Eastern Mediterranean Sea: experimental simulation and modeling." *Bioenerg. Res.* **12**, 1113–1126 (2019)
- **Traugott, H.**, Zollman, M., Cohen, H., Chemodanov, A., Liberzon, A., Golberg, A. "Aeration and nitrogen modulate growth rate and chemical composition of green macroalgae *Ulva* sp. cultured in a photobioreactor." *Algal Research-Biomass Biofuels and Bioproducts*, **47**, 101808 (2020).

- Macroalgae Biorefinery, the first book draft, was submitted and planned to be published by World Scientific, Imperial College press.

Grants:

- Ms. Traugott was involved in preparing a successful application for a grant from The Gordon Center for Energy Studies (total \$4,000), on the topic "Influence of hydrodynamic mechanical stimuli on biomass and chemical composition of macroalgae for the design of biorefineries."

Updates within the Labs activities

1. Starting at the 2020-2021 academic year, we will have a new research lab that will be focusing on the contemporary challenges of **Demography**, which will be led by **Dr. Isaac Sasson**, of the Department of Sociology and Anthropology.
2. A new researcher is joining our Inequality lab: **Dr. Oren Danieli** of the Department of Economics. His research uses Big Data for Poverty and Inequality research.
3. Following the prolific work of the activity of the Sustainable Development lab – TAU has opened a **new Master's program in Developing Countries**. The program will be led by Prof. Tami Ronen-Rosenbaum, the outgoing dean of the Faculty of Social Sciences.

We are happy and proud to have supported our fellows who graduated this year

- **Sagit Azari-Viesel**, PhD student, Inequality lab. Dr. Sagit Azari-Wiesel, until recently a Boris Mints Institute Fellow, is currently a senior researcher in the research department of the Israeli Welfare Ministry, and as such, is taking a part of building Israel's exit strategy of the Covid-19 crisis, focusing on unemployment assessment.
- **Karen Umansky**, PhD student, Conflict Resolution lab. Karen Umansky, whose Ph.D. thesis is about to be approved, had just been accepted to the prestigious Postdoc program at the University of Potsdam, Germany.
- **Carl Yonker**, PhD student, Conflict Resolution lab
- **Amit Loewenthal**, PhD student, Conflict Resolution lab
- **David Sherman**, MA student, Sustainable Development lab
- **Karel Finkelstein**, MA student, Sustainable Development lab
- **Yalon Perlman**, MA student, Sustainable Development lab

Support Scholarships

The annual scholarship ceremony took place on January 24th, 2020. Boris Mints Institute and the School of Social and Policy Studies extended 30 support scholarships to M.A. students who come from disadvantaged groups of the Israeli society. The keynote speaker at this impressive event was Professor Elyakim Rubinstein, Former Justice of the Israeli Supreme Court.



Prof. Sened giving a speech at the Ceremony

THE 2020 BMI PRIZE

The Boris Mints Institute for Strategic Policy Solutions to Global Challenges annually awards a \$100,000 Prize to an outstanding members of the international academia, whose work – both theoretical and practical – has made a substantial impact on global societies. The prize was previously awarded to such renowned scientists as Prof. Jeffrey Sachs from the University of Columbia (2017), Prof. Michael Kremer of Harvard University, 2019 Nobel Prize Laureate (2018), and Prof. Peter H. Gleick, Pacific Institute (2019). This year was no exception – the Prize Laureate was **Prof. Sabina Alkire, director of the Oxford Poverty and Human Development Initiative.**

The 2020 BMI Prize Selection Committee was consisted of Prof. Wim Van Oorschot, KU Leuven; Prof. Janet Gornick, City University of New York and chaired Prof. John Gal, Hebrew University of Jerusalem. The committee unanimously nominated Prof. Alkire for the award.



Prof. Sabina Alkire (photo credit: BRIGHTLENSUK (WWW.BRIGHTLENS.ORG) FOR BSG AND OPHI)

Prof. Alkire is widely known for the creation of the Multidimensional Poverty Index and the Alkire-Foster method which she has created with Prof. James Foster. Her efforts have been globally recognized and used by many decision makers. As the world is currently suffering through the Covid-19 Pandemic, resulting in the inability to travel, the prize was awarded through a zoom webinar which took place on May 14th, 2020.

In her acceptance lecture, Prof. Alkire had emphasized the dramatic effect of the current pandemic to the increase of global poverty and inequality. Prof. Alkire had already published practical policy recommendations for the reduction of poverty and inequality caused by the pandemic.

Moreover, Prof. Alkire has shared valuable lessons on ways of combating poverty, the main one of which is the combination of multidimensional data on the issue, enabling policy makers to see who is deprived of what and where exactly most of the deprivation is located, in order to create and implement a more effective policy. It is the combination of theory and practice that determines the positive outcome of any work done in the field. Prof. Alkire's lecture was followed by a Q&A session, attended by BMI International Advisory Board Members as well as Prof. Michael Kremer, 2018 BMI Prize and 2019 Nobel Prize Laureate.

Prof. Alkire's presentation and a recording of her lecture and the entire ceremony can be found here:
https://www.youtube.com/watch?v=l-kWV6Q1Qpl&feature=emb_logo

The annual international gatherings of BMI focus on pressing world policy challenges by inviting a handful of leaders to join a small and carefully selected circle of members of BMI's international board and a small number of outstanding scientists to discuss a particular issue. In these exclusive meetings the global challenges are discussed in-depth and new ideas are encouraged and carefully assessed. The various presentations as well as photos of the events are available on our website: <http://www.bmiglobalsolutions.org/>

Conflict Diplomacy in the Digital World Link Campus University, Rome, 18.09.19-20.09.19



Dr. Mints address at the opening of the conference in Rome

The modern world faces many challenges, one of the most significant of which is conflict resolution. This was the subject addressed at the 2019 BMI Conference: "Conflict Diplomacy in the Digital World". The conference took place in Rome between 18th–20th of September 2019, thanks to a collaborative effort of BMI and Link Campus University in Rome, hosted by **Prof. Vincenzo Scotti**, President of Link Campus University, Former Italian Minister of Interior, of Cultural Heritage, of State Holdings and Former Mayor of Naples.

The conference has brought together key decision makers, former ambassadors, negotiators, prime ministers, foreign and defense ministers, as well

as prominent members of International Academia from Israel, Italy, Egypt, the Palestinian Authority, Czech Republic, Austria and others. **Prof. Itamar Rainovich**, Member of BMI Advisory Board; Founder and President of the Israel Institute; Former Ambassador of Israel to USA and President Emeritus of Tel-Aviv University; Ambassador **Prof. Maurizio Melani** of Link Campus University, Former D.G. in the Italian MFA and Ambassador to Iraq, to the Political and Security Committee of the EU and to Ethiopia; **Prof. Itai Sened**, Head of BMI; Founding Head of the School of Social and Policy Studies at Tel-Aviv University; **Dr. Ahmed Abdelwahed**, Chairman of the Academy for International Development – Middle East and North Africa AID-MENA; **Dr. Hussein Agha**, Senior Associate Member, St. Antony's College, Oxford; **Prof. Daniela Giannetti**, Faculty of Political and Social Sciences, University of Bologna and **Prof. Wolfgang C. Müller**, Department of Governance, University of Vienna were among the prominent speakers.

During the conference, through six panels – major global geopolitical issues were discussed, such as the conflict in Colombia, which is one of the longest lasting conflicts that was resolved; the Israeli–Palestinian Conflict, its' roots and origins, as well as the prospects of the two states solution; the general situation in the Middle East and how it affects the modern world; the current state of diplomacy and how hard it is to negotiate, with such a rapid spread of information as well as the dimension of "fake news" that only makes it harder to keep peace intact, and lastly – the current state of the European Union, after the recent elections to the European Parliament, investigating how the EU is slowly radicalizing its' governing bodies with populism on the rise. On the side of significant former or current decision makers, the list of participants included **Prof. Shlomo Ben-Ami**, Vice President, Toledo International Center for Peace and former Foreign Minister of Israel; **Mr. Sergio Jaramillo Caro**, Former High commissioner of Peace, Colombia; **Prof. Massimo D'Alema**, Link Campus University, President of the Italianeuropei Foundation, Former Prime Minister and Minister of Foreign Affairs of Italy; and **Dr. Elisabetta Trenta**, former Minister of Defense of Italy.

The conference paved the way for new and innovative solutions to the conflicts which plague the contemporary geopolitics. Such solutions will be tailored to the realities of the dynamic and rapidly changing society in which we live and stand to improve the quality of life throughout the world.

For the Conference report:

https://1e77aae8-7794-4927-85e4-bc314e1d90f5.filesusr.com/ugd/2ea2a4_732fddb3afd94901b3810f140c4150db.pdf

BMI 2020 Research Conference

Zoom Webinar, 09.07.2020

During the 2020 Covid-19 pandemic our researchers and fellows kept working almost as usual, and our annual research conference was held in the form of a Zoom webinar. Nonetheless, with the current global challenge of the Pandemic it was very encouraging to focus on the groundbreaking work that is currently being done by BMI researchers in many areas.

The projects presented at this webinar range from agriculture-related to those that are helping eradicate global poverty and inequality. As a part of the plan to make the Naftali building, the home of BMI, energy neutral, a green wall will be built and the building's grey water will be used. The project is supported by the Matanel Foundation and will serve as a living lab for researchers and students, headed by Prof. Hadas Mamane.

Other interesting research projects were also shared: Poverty in the Ultra-Orthodox Jewish society – Dr. Nechumi Yaffe; Contemporary demographic challenges – Dr. Isaac Sasson; Failure of public institutions – Eve Guterman; and the Locust crisis in Africa – Prof. Amir Ayali. All of these research projects put together demonstrate BMI's vision and practice of addressing contemporary global challenges. The ability to look at such issues through a multidisciplinary scale and various angles has always been at heart of BMI's vision and it was truly seen at the Webinar, marking another successful year of the institute's operation.

For the recording of the webinar and the presentations:

<https://www.bmiglobalsolutions.org/single-post/2020/07/09/The-Boris-Mints-Institute-2020-Research-Conference>

OTHER BMI ACTIVITIES

Continued support for Engineers without Borders



TAU EWB delegation in Tanzania

A student delegation of EWB, supported by the Boris Mints Institute and other TAU units, continued the water/energy activities in Tanzania in October 2019. The team installed a new water purification system for an elementary school of 1,000 students and found the system that was installed in a regional high school last year intact and operating well/ The program for future activity is to expand the activity to other schools and train local students in installing and maintaining similar systems in the future.

Sustainable Development Seminar, October 27th–31st, 2019 Renewable Energy Seminar, February 23rd–27th, 2020



For the 4th year, a heterogeneous group of students of different academic disciplines (Public Policy, Engineering, Environmental Studies and Conflict Resolution) spent a week at the Arava desert, to study the fundamentals of Sustainable Development and Renewable Energy, learn from experts and entrepreneurs and experience practical solutions. The seminar is carried out in collaboration with the Eilat-Eilat Renewable Energy Association and the Afeka College for Engineering.



Students at the Seminar in Arava

Youth Innovation Forum



The Boris Mints Institute supported the activity of the newly established student group – Youth Innovation Forum (YIF). This association of students from all TAU faculties encourages a model in which students are invited to exchange ideas and cross-fertilize a variety of academic disciplines in our gatherings. The YIF vision is set on establishing a thriving source of novelty within the ecosystem of ideas at Tel-Aviv University. Such a platform offers a learning environment to its members (students of Tel-Aviv University) with the intention of complementing their studies, give a start for their future research, and develop renowned projects that will aim to solve a variety of local and global challenges. Like BMI, YIF believes in an interactive educational approach and, hence, shapes a semi-informal academic atmosphere in its forums. In every session, the organization aspires to contemplate new ideas for evolving the various disciplines in academia. YIF also supports young researchers, such as PhD fellows, members of junior faculties, CEOs, professors, decision-makers, and public figures by promoting their own innovations and research in a format of symposiums: brief presentations followed by inclusionary discussions.

Prof. Sened visit to Bologna, October 2019

Prof. Sened spent several weeks in the University of Bologna as a visiting scholar and was hosted by Prof. Daniela Giannetti of the Department for Political and Social Sciences.



Prof. Sened visit to St. Gallen, November 4th–6th, 2019



Prof. Sened taught at the annual renewable energy Ph.D. seminar held at the University of St. Gallen, alongside his old-time research partner, Prof. Rolf Wustenhagen, Chair of Management of Renewable Energies. One of Prof. Wustenhagen's M.A. students is currently completing her thesis research at TAU as a visiting student.

Conference: Smart Contracts, Social Institutions and Blockchain Technology, November 21st, 2019

BMI hosted a conference that was focused on the Blockchain technology, bringing together by researchers, practitioners and entrepreneurs from the field. The main themes discussed at the conference was the concept of Smart Contracts, as well as the applicability of the Blockchain technology for social institutions.

For further information: <https://www.bmiglobalsolutions.org/single-post/2019/11/21/Conference-Smart-Contracts-Social-Institutions-and-Blockchain-Technology>



Prof. Itai Sened opening the Session

icipe Visit, January 13th–18th, 2020



One of our prominent international research partners is *icipe* – International Center for Insect Physiology and Ecology, set in Nairobi, Kenya and headed by Dr. Segenet Kelemu, a member of BMI's Academic Board. As a part of this collaboration and with the mutual intention to make it even wider and deeper, BMI hosted the *icipe* management team for several days of discussions, exchange of knowledge and field tours.

Many life forms have disappeared, there is an exponential growth of the human population, and we are facing the first human-induced climate change. In order to save the globe right now – Academia, decision makers and businesses need to come together to fight the challenges. The concept presented by *icipe* is that insects should be the starting point in the path of achieving food security. An example of such a step forward could be the cycle in which worms eat waste, and then fed to various farming animals, therefore reducing the waste and progressing within the framework of sustainable development. People need to think differently, and the only way to achieve the UN's Sustainable Development Goals (SDGs) is to create inter-disciplinary and multinational projects. Insects, animals, that are often unnoticed in the food chain, can be used for various purposes, such as oil extraction for various purposes, food additives and protein consumption by humans. *icipe*, with some of its' projects and the new technology, aims to bring insects to good use for all human beings. Another point of traction of how to achieve the SDGs is educational farming, in order to help farmers to develop practical long-term sustainable tools and best practices.

For a more detailed report of the visit:

https://1e77aae8-7794-4927-85e4-bc314e1d90f5.filesusr.com/ugd/2ea2a4_cf63f003b390487bb0ad825531f59299.pdf



The *icipe* group at the Steinhardt Museum of Natural History, Headed by Prof. Tamar Dayan

VISITING SCHOLARS

Prof. Victor OK Li and Dr. Jacqueline CK Lam of Hong-Kong University, November 19th, 2019

Prof. Li and Dr. Lam lead the HKU-Cambridge lab of “AI to Advance Well-being and Society Research Platform [AI-WiSe]”. These impressive scholars gave a seminar on the topic of “AI to Advance Well-being and Society”. The lab at HKU proposes a Bayesian Deep Learning Model for regulatory intervention analysis with uncertainty estimation. Prof. Li and Dr. Lam presented a case study of an AI tool that was developed to monitor air pollution and inform citizens in Hong-Kong of the local rate of air pollution: <http://hkair.eee.hku.hk/map/index.html>

Prof. Miranda Schreurs, Professor of Environmental and Climate Policy Program, Dean of Studies, School of Governance, Technical University of Munich, Germany; Member of the BMI Academic Board December 22nd–24th, 2019



During her visit to TAU, Prof. Miranda Schreurs from the Technical University of Munich gave a lecture on the prospects of Climate Change Policies worldwide post the 2015 Paris Summit (COP21). The world might be in a more dangerous place than it ever was, but there is still hope for some positive changes, especially if proper policy is applied worldwide. The global annual carbon dioxide emissions are compared to pre-industrial times in the framework of climate change and that is where the world is fully failing in fighting climate change. The industrial revolution is regarded as the start of climate change, increasing significantly after WWII. Negative

emissions have to be implemented in order to meet the United Nations Sustainable Development Goals. If nothing is done – the change in average surface temperature can reach 9-10 Celsius in some areas, which would also increase natural disasters and precipitation.

Policy-wise, the world needs to agree on strengthening their Paris targets, though one of the complicated aspects is that it is not a legal agreement but rather a pledge. The currently applied policies will result in an approximate 3.2 degrees' Celsius change of surface temperature. The top 6 countries that emit the most add up to into 70.1% of all global emissions. In order to meet the SGDs, the world would need to get rid of oil, coal and gas in the next 30 years, keeping temperature increase below 2c and strive for 1.5 and increasing aid towards 100 billion USD to LEDCs. The aim of the Madrid COP25 conference in 2019 was to Finalize the rule book for Fighting Climate Change. As was expected, there are problems deciding on rules for carbon market mechanisms & transparency. It was further stated that the 1.5-degree increase is very likely by 2030-2050. The European Energy Commissions set a target to reduce emissions by 85-90%, improve Energy efficiency in the form of net zero emissions buildings, increase renewables for the more efficient use of electricity and use the circular economy concept. There are quite a few initiatives that have to deal with policy that are posing hope to the question of Climate change. The Green New Deal for Europe as a whole for example agreed on Climate Neutrality by 2050.

This instance will impact court cases and policy implications all over the world in regards to climate change and therefore, there is still hope.

Dr. Segenet Kelemu, Director General and CEO, *icipe*, Kenya; Member of the BMI Academic Board



During her and her team's visit to TAU, Dr. Kelemu gave a remarkable presentation on entomology and its real life applications. Insect science can be crucial for the promotion of sustainable development and environment. The vast majority of insects are a beneficial part of the global ecosystem, affecting other damaging pests and their position in the food chain can never be overlooked.

There are around 5,000 insect species that are deadly, transmitting diseases and devastating crops; however, it is possible to utilize the beneficial attributes of insects to counter-affect the deadly ones. The insects' beneficial effects also have a significant commercial potential. Such effects can be applied and are important to crops such as grasses, maize and more. *icipe* has recently developed a system which is easy and cheap for farmers to utilize and adapt, in order to control socio-parasitic wheat: Push-pull technology – intercrop maize crops with Desmodium (legume). The system has already been adapted in nine African Countries, due to its' significant reduction of labor.

Icipe is also contributing to the elimination of Malaria, which is still a major problem in the world: it is vital to remember that probably way more soldiers had died from Malaria/Yellow fever than from bullets. The world has moved to start combating Malaria, which still exists and is disproportionately common in Africa. A lot of progress has been made in order to control the vector of Malaria, however invasive alien plants are contributing to Malaria now, causing significant reduces in agricultural yield, livestock productivity, bee productivity, and human health. Certain plants contribute to mosquito pools, so eradicating these plants will reduce malaria. Vertically transmitted fungus reduces the transmission of Malaria between mosquitos, as the symbiont has a strong malaria transmission blocking phenotype, which is one of the functional ways of biocontrol.

It is possible to start extracting protein from insects, however the planet is addicted to meat. There is an increase in global meat consumption to a rate of 43kg per capita annually. Furthermore, an enormous amount of freshwater is used to produce livestock. The consumption of insect protein would reduce our carbon footprint drastically. Many insect-based proteins contain a lot of vital micronutrients and many people globally consume insects for protein, some even as delicacies. Insects (such as locusts and grasshoppers) can also produce different oils, which are good for nutrition, as well as skincare. There is a need for new business models – fulfilling the demand without harming the environment. Insect-treated compost performs the same as the commercial fertilizer (by combining the two in equal proportion – getting even higher yield). Think out of the box solutions are needed instead of focusing on materialistic goods. Unfortunately, from a public policy standpoint, the question still remains: how to implement these solutions into mass-production which will promote the sustainability of the planet?

FUTURE ACTIVITIES

- Upscaling BMI to serve as the cornerstone of the new **TAU International Graduate School for Social Sciences**, a home for the faculty's international programs, involving an impressive group of internationally renowned academics as associate professors.
- Next BMI conference – Vienna, November 2021, marking the 160th anniversary of the birth of Theodore Hertzl, the visionary founder of the Zionist movement: **National Revival in the 21st Century.**



Members of BMI's Advisory Board and Academic Committee: Armenia, Bulgaria, Czech Republic, Finland, Germany, Kenya, Luxembourg, Montenegro Russia



BMI Research: California, India, Kenya, OECD, Rwanda, NEPAL



BMI Conferences: Armenia, Finland, Georgia, Italy, Malta, Montenegro



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