مؤتمر عجمان الدولي للبيئة

AJMAN INTERNATIONAL ENVIRONMENT CONFERENCE

CONFERENCE PROCEEDING

قد تتشابه جميع المدن إلى حدٍ ما، ولكن السر يكمن في التفاصيل

CITIES MAY LOOK ALIKE, BUT IT'S ALL ABOUT THE DETAILS

His Highness Sheikh Khalifa Bin Zayed Al Nahyan

President of the United Arab Emirates

His Highness Sheikh Humaid Bin Rashid Al Nuaimi

Member of the Supreme Council

Ruler of Ajman

His Highness Sheikh Ammar Bin Humaid Al Nuaimi

Crown Prince of Ajman,

Chairman of the Executive Council

H.H. Sheikh Rashid Bin Humaid Al Nuaimi

Chairman of the Department of Municipal and Planning
Ajman

Yahya Ibrahim Al-Reyaysa

Director General of the Department of Ajman Municipality
and Planning Department

VIP GUEST

H.E. Dr. Rashid Ahmed Mohammed bin Fahad

Minister of UAE Environment and Water

VIP GUEST

H.E. Dr Abdulaziz Othman Altwaijri

The Director General of the Islamic Educational, Scientific and Cultural Organization (ISESCO)

Organizing Comittee

Organizing Comittee

Chairman of the Organizing Committee

Engineer Khalid Al Housani

Executive Director,
Environment and Public Health Department
Ajman Municipality & Planning Department

Engineer Khalid Al Housani holds a Bachelor of science in plant in arid regions (Emirates) 1998.

He was awarded distinguished service supervisory staff in 2008.

And engineer Al Housani has experiences of many in the field of health and environment and has the fingerprints and achievements in work sites filled the managerial positions in the Ministry of Environment and Water and the Department of Ajman Municipality and Planning. He is a member of several committees of local, regional and international related projects, public health and the environment. .

He established sections and administrative units in the Ajman municipality and Planning Department, section of public health, section of cleaning, environmental Protection section , markets unit, and health education unit.

AL Housani charismatic influence those who around him, and his participation in environmental conferences and regional expertise earned him emanated the formation of teams circuit enhance partnerships and special teams matters of public health and the environment and community service.

Co-Chairman of the Organizing Committee

Eng.Humaid Al Mualla

Director of Public Health & Environment Department,
Ajman Municipality & Planning Department

Eng.Humaid Al Mualla has been involved in the environmental field since 2007. He was the Project Engineer of the first recycling plant for Construction and Demolition Waste in the UAE. Then he was appointed as a Landfill Engineer in charge.

Currently, Humaid is the director of public Health and Environment department at Ajman Municipality and Planning Department. The role of the department is to ensure that all licensed activities within the emirate are in compliance with federal and local regulations as well as to ensure the cleanliness of the emirate.

Humaid holds a Bachelor of Industrial Engineering from Texas A&M University - College Station, Texas

Organizing Comittee

Dr. Eslam Alhogaraty

Head of Strategic Planning, Ottawa Biosphere Eco-city Council, Canada
Associate Faculty, Hamdan Bin Mohamed Smart University, UAE

Dr.rer.nat. Eslam ALHOGARATY holds PhD in Natural Sciences and Geo-ecology from Ernst Moritz Arndt University of Greifswald (Germany) and a Master's degree in Environment Protection from the Arab Academy for Science, Technology and Maritime Transport (Egypt). He is a member of the Water Environment Association of Ontario, IASTED Technical Committee on Environmental Systems in Canada and the Global Environmental Standard in Australia.

ALHOGARATY is also the Associate member of the Institute of Advanced Studies on Sustainability in Germany and one of the ambassadors of the Go Green Program in UAE and actively practicing as the external voice of the Canadian Center for Green Development in Middle East with a 10 years of experience in environmental management focusing in sustainable landuse management and sustainable practices.

His research and consultation interests include global and regional sustainability, Environmental Resources Management, Environmental Impact Assessment Studies and Numerical Modeling, Geographical Information System and Remote Sensing with its application on Environment, Coastal Zone, and Coastal Water Resources. He also has teaching and training experience at National Institute of Oceanography (Alexandria), Ajman University of Science and Technology (Ajman), the American University in the Emirates (Dubai) and Murdoch University (Dubai).

Certified as Project Management Professional (PMP), he has participated in projects planning, coordination, budgeting and implementing which led him to work in projects with many international organizations like USAID, DANIDA, FINNIDA, CH2MHILL and European Bank.

His remarkable achievements: The UNITWIN Agreement between Garching bei München in Germany and Ajman Emirate in UAE; The establishment of the Center for Sustainability Research at Ajman Municipality and the design of the Ajman Eco-Vision 2030 in UAE; The design of the professional e-diploma in sustainability for the CCGD in Canada; The leader of the uOttawa-OBEC Sustainability Plan and Editor in Chief of international peer-reviewed journal in environment and sustainability in Canada.

Eng. Yaser Omar Kayed

Head of Studies& Planning Unit – Environmental Protection Section - Ajman Municipality & Planning Department

Eng Yaser Kayed Is A Head of Studies and Planning Unit _ Environment Protction section – Ajman municipality And Planning Department –UAE

During His Career He Served As

- Environmental protection section in charge from 2008 up to 2011-UAE
- Environmental Officer 2003-2008-UAE
- Six month Manager in charge of Ajman Food & Environment Lab 2004 (June – December)
- Health and Environment officer 2000-2003 – Palestine
- Environmental Studies Researcher and Planner/ Environmentalist/ waste management/ , Marine Environmentalist/ Water Resources Environmentalist with more than 11 years experience.
- Environmental Monitoring and management ,air modeling .
- Waste ,medical waste ,Waste water Management
- Environmental Permit provider and EIA preparation ,review , approved.
- Local legislation and Standard Draft preparation .
- Active participation of an environmental inspection system and environmental E- services.
- Awareness program preparing and implement >
- HSE specialist
- Part of Ajman master plan 2030 (environmental part)
- Outgoing with strong and effective organizational and communication skills.
- Expert in environmental Operation and services Design and management

Member Of:

- Member of the environmental technical committee of the General Secretariat of Municipalities tell 2010 .
- Member of the crusher committee for licensing and monitoring .
- Ground water licensing committee.
- Member or the committee that improve the remix factories .
- Member of the electronic services for the health and environment Department .
- Help member of the knowledge committee.
- Biodiversity committee _ Ministry of water and environment
- Desertification prevention committee Ministry of water and environment
- Ajman (first, second and third environment conference committee .
- Member of the E-services team
- Institutional performance development team - Ajman municipality
- head of waste management team for the implementation of the Integrated Management System-. Ajman municipality
- Head of the five standard (Processes and services)team - Ajman municipality
- Member of Day without plastic bags team
- Member of Water saving team

Specialist

- Marian water studies and reporting.
- Air Monitoring Reporting .
- Industry Monitoring and corrective actions
- Waste management & Strategy
- Medical Waste Treatment Roles (Incineration's Techniques
- Environmental management Plan
- Policy & Environment regulation .
- Environment Impact Assessment (EIA) Reporting And Review>
- Environmental KPI
- Sustainability Planes.
- Education &Training .
- Preparation of:
- preparing the draft of the ground water ameere degree of Ajman with a team of 3 people 2009.
- preparing the local order NO.3 of the year 2010 regarding the prohibition of the plastic bags made from non-biodegradable material .
- Part of the team preparing the environmental instruction book for the industries.
- One of the team that put the proposal of Ajman environment authority.
- He Attend several conference Such As Waste Management – 2010, Green middle east 2011

He has MSc. Environmental Sciences, An-Najah National University 2000.

Organizing Comittee

Eng. Shikah Al-Shehhi

Head of the Environmental Protection Unit
Public Health & Environment Department, Ajman Municipality

Engineer Shaikha Hassan Al-Shehhi holds a Bachelor of Chemical Engineering from the University of the United Arab Emirates, and a Masters in Engineering and Management of groundwater Ajman University of Science and Technology.

Eng. Shaikha used to work as safety engineer in the International Food stuff company , which includes more than 15 companies

She joined the Municipality and Planning Department in 2005 as an analyst for the chemical laboratories of food and the environment. In 2010 became the unit Head of Environment laboratory.

Eng. Shaikha establish the Environmental Laboratory which analyze water , include the physical, chemical, biological pollutant .Also contribute to establish laboratory analysis of biodegradable plastic bags.

Won first place in the United Arab Emirates University Award for the best project clean up oil spill by using absorbent technology.

Accredited certificate ISO 9001, ISO 14001, OHSAS 18001, ISO 17025 and accredited assessor of Excellence Program.

Now working as head of the Environmental Protection in the Municipality and Planning Department

Scientific Committee

Scientific Committee

Chairman of Scientific Committee

Sheikh/Dr. Abdul Aziz bin Ali Al Nuaimi

Environmental Advisor to Ajman Government

Sheikh Abdul Aziz bin Ali Al Nuaimi is member of the Ajman Royal family and a nephew of the ruler of Ajman, one of the seven emirates that make up the UAE. Globally known as the 'Green Sheikh' as well as „Down-to-Earth Sheikh, he has made it is his mission to break down barriers and reach out to the younger generation to raise awareness of environmental and sustainability issues and encourage a general sense of environmental stewardship. He hopes to use his environmentally conscious lifestyle and message as an example to others, and encourages people to take responsibility for their actions.

The Sheikh received a doctorate from Australia in 2007. He also possesses bachelor degrees in petroleum and chemical engineering, and several diplomas in environmental and related studies. He has put his studies and influence to practical use, joining many environmental groups, speaking at numerous universities and events, and engaging with local regional and international media to promote dozens of environmental causes.

The Sheikhs official role is as Environmental Advisor to the Ajman Government, where he is International Senior Board Advisor at WANA (West Asia North Africa) Forum in Jordan, chaired by H.R.H Princess El Hassan bin Talal. He is also Vic President and CEO of the Ajman-based Al Ihsan Charity Centre. Founded in 1990, the charity is primarily concerned with meeting the daily needs of orphaned children and women struggling to raise families alone as a result of spousal bereavement or divorce. Beneficiaries are given food rations, health care, financial assistance, clothing, home necessities, school supplies and other donated items.

In 2004 he was awarded first place of his research specifically pertaining to sustainable development at the doctoral level at the 97th Annual Conference and Exhibition at Indianapolis, Indiana, USA. In 2007 awarded as the UAE fine volunteering personality in environment and humanitarian via Sharjah Volunteering Awards. Mayor Matti Herrera Bower of City of Miami Beach gave him the key to the city. In 2010 Sheikh Al Nuaimi awarded the Islamic Personality by Fujairah Quranic Award in the UAE. Last year 2011 Awarded on Ajman Science Day for his Community Responsibility and Service.

Now he is an Ambassador of goodwill in various organizations, Conservation and Environmental Grants (Ford Motor Company), Katerva Awards on Sustainability and ECOFFEE sustainable entrepreneurship in recognition of fundamental interests shared – to promote environmental awareness and conservation.

Prof. Ali Sayigh

Chairman of WREC & Director General of WREN
World Renewable Energy Congress, Brighton, UK

Prof. Sayigh is British Citizen, Graduated from London University, & Imperial College, BSC.DIC, PhD, C Eng in 1966. Fellow of the Institute of Energy, and Fellow of the Institution of Electrical & Mech. Engineers, called now Institution of Energy and Technology, Chartered Engineer, Chairman of Iraq Energy Institute.

From 1966- 1985, Prof Sayigh taught at Baghdad University, College of Engineering; King Saud University, College of Engineering, Saudi Arabia; fulltime; and also Kuwait University as part time professor. He was Head of Energy Department at Kuwait Institute for Scientific Research (KISR) and Expert in renewable energy at AOPEC, Kuwait from 1981-1985.

He started working in solar energy in September 1969. In 1972, he established "The Journal of Engineering Sciences" in Riyadh, Saudi Arabia and in 1984 he established with Pergamon Press his first International Journal for Solar and Wind Technology as an Editor-in-Chief. This has changed name in 1990 to Journal of Renewable Energy. He has been Editor-in-Chief of Renewable Energy incorporating Solar & Wind Technology, published by Elsevier Science Ltd, Oxford, UK. He is editor of several international journal published in Morocco, Iran, Bangladesh, Nigeria and India.

He has been a member of ISES since 1973 and founder and Chairman of the ARAB Section of ISES since 1979. He was chairman of UK Solar Energy Society for 3-years and consultants to many national and international organizations, among them, the British Council, ISESCO, UNESCO, UNDP, ESCWA, and UNIDO.

Since 1977, Prof Sayigh founded and directed several Renewable Energy Conferences and Workshops in International Centre for Theoretical Physics, (ICTP) - Trieste, Italy, Canada, Colombia, Algeria, Kuwait, Bahrain, Malaysia, Zambia, Malawi, India, West Indies, Tunisia, Indonesia, Libya, Taiwan, UAE, Oman, Czech Republic, West Indies, Bahrain, Germany, Australia, Poland, Netherlands, Thailand, Oman, Korea, Iran, Syria, Saudi Arabia, Singapore, China, USA and UK.

Scientific Committee

Dr. Mohamed Dawoud

Water Advisor
Environment Agency-Abu Dhabi (EAD), UAE

Mohamed Dawoud is Water advisor with the Environment Agency - ABU DHABI, United Arab Emirates. He has graduated in Civil Engineering with honor degree and got his Master and Ph.D. from Ain Shams University through joint program with Colorado State University, USA. Since 1991.

Dr. Dawoud has maintained an active program of research and consulting activities, with particular emphasis on groundwater, numerical modelling, artificial recharge, strategic water reserve, and water resources management.

He attended many water resources related training course in USA, Netherlands, Sweden, Spain, and France. He has worked also on World Bank and USAID projects in Egypt, and Nigeria. He is professor of National Water Research Center in Egypt (on leave). His current research includes analysis of water supply and demand issues, groundwater management, Aquifer Storage and Recovery, Numerical Simulation in many countries such as Egypt, Nigeria, Kenya, Mali, Saudi Arabia, and United Arab Emirates.

He participated in preparing many training courses in cooperation with IFAD, FAO and UNESCO for joiner engineers in Egypt, Jordan and United Arab Emirates. He is an editor in two journals and reviewer for 5 journals. He has 4 published books and more than 50 published research papers in international journals, regional and international conferences.

Arun Kanchan

Regional Manager, GCC
Organization: Trinity Environmental Consultancy International, SPC (of Qatar And Bahrain)

Mr. Kanchan is a Principal Consultant responsible for expanding Trinity's services internationally, with specific focus on the Oil & Gas, Petrochemical, and Chemicals Manufacturing industries in the Middle-East. He has 24 years of experience in operations, business development, bidding, and contracts management. He is currently based in Doha, Qatar. Previously Mr. Kanchan was Manager of the New Jersey, Dallas, and Long Beach offices for Trinity Consultants in the United States of America.

Mr. Kanchan has primarily responsibility of managing clients in Qatar, Saudi Arabia, Bahrain, Kuwait, U.A.E. and other countries in the Middle-East.

Trinity is a leader in sustainability, greenhouse gas inventorying, developing commercial air dispersion modeling software as well as in providing professional training to individuals in environmental management and compliance topics.

His technical work includes air quality permitting, air quality modeling, agency negotiations, due-diligence audits, compliance auditing, emissions inventories, regulatory compliance analyses, incineration system design, evaluation and specification of air pollution control equipment, climate change, stack testing, continuous emission monitoring systems, and the development of custom application software for environmental compliance tracking.

Scientific Committee

Muna Al-Amoodi

Head of Environment
Dubai Aluminium (DUBAL)

Muna Al-Amoodi is working as a Head of Environment at Dubai Aluminium (DUBAL). Graduated from UAE University in Al Ain as a Biologist, and also graduated from Hamdan Bin Mohammed e-University (HBMeU) spring 2014, Master of Science: Excellence in Environmental Management.

Her expertise lies in managing projects, related to environmental awareness, waste management, energy efficiencies, water conservation and sustainability in the Smelters, Power and Desalination plants.

Ms. Al-Amoodi involved in DUBAL's routine tasks, like: Development of Smelter, Power & Desalination Environmental reports; Monitoring of the operation performance and impact; Involvement in inspection, walkabout and audit; Interaction with local authority; Alignment with the ISO 14001; Interaction with International Aluminum Institute regarding environment and sustainability objectives ; Community Interaction through school & university visits, lectures and exhibitions; Support community projects; and coordinate the activities of waste recycling programme and energy conservation.

Moreover, she is also involved in most of DUBAL's special projects, like: DUBAL Green Belt Project , Environment, Health, Safety & Waste Management Campaign; Pot lining (SPL) recycling project ; Dross project ; DUBAL sustainability Report; Clean Development Mechanism (CDM) projects ; Development of Carbon Management strategy.

Programme

Programme

Day 1: Monday 7th April 2014

Registration		**8:30**	**9:00**
Opening Ceremony			
Opening of Exhibition		**9:00**	**9:25**
National Anthem		**9:25**	**9:30**
Holy Quran		**9:30**	**9:35**
Documentary Film		**9:35**	**9:40**
Speech - HE Dr. Rashid Ahmed Bin Fahad, Minister of Environment and Water		**9:40**	**9:50**
Speech - H.H Sheikh Rashid Bin Humaid Al Nuaimi		**9:50**	**10:00**
Signing of MoU's		**10:00**	**10:05**
Honoring Ceremony		**10:05**	**10:15**
Coffee Break		**10:15**	**10:30**
First Session: Overview		**10:30**	**13:10**
Keynote Speaker	Topic	Time	
Sheikh Dr. Abdul Aziz Al Nuaimi	Environmental challenges in UAE	**10:30**	**10:50**
Prof. Ali Sayigh	Renewable Energy – the Global Scenario with 50% electricity by 2030	**10:50**	**11:10**
Luay Jawad Al Khatteeb	The Oil and Gas and its Future Development in the UK	**11:10**	**11:30**
Prof Philip Jones	Examples in using Green Technology in Buildings	**11:30**	**12:50**
Prof. Elena Noumova	Innovation in observation and monitoring: seasonality and early waterborne outbreak detection	**12:50**	**13:10**
Lunch Break		**13:10**	**14:00**

Second Session: Alternative and Renewable Energy Application		14:00	15:15
Speakers	Topic	Time	
John P. Fillo	Comparison of Renewable and Fossil Energy Generation and Use to Achieve Sustainable Cities	14:00	14:15
Hussein A Kazem	Feasibility of Photovoltaic Systems in Oman	14:15	14:30
Kamaruzzaman Sopian	Numerical analysis and optimization of solar combined single effect absorption-ejector cooling system	14:30	14:45
Ashraf Tubeilieh	Biofuel Research in Canada	14:45	15:00
Questions/open Discussion		15:00	15:15
Coffee Break		15:15	15:30
Third Session: Green Building		15:30	16:45
Speaker	Topic	Time	
Abdul Salam Darwish	Eco-Friendly Buildings: the central factor in transitioning to a Green Economy	15:30	15:45
James Irwin	Sustainability Through Stakeholder Involvement – Ottawa's Biosphere Eco-City Initiative	15:45	16:00
Representative of the ministry og Energy - UAE		16:00	16:15
Emad Saad	Green Application in Bld.	16:15	16:30
Questions and Open Discussion		16:30	16:45
End of Day 1		16:45	

Day 2: Tuesday 8th April 2014

First Session: Monitoring Tools for Sustainability		9:00	10:15
Speaker	**Topic**	**Time**	
Abed AlReda Abo AlHassan	RTA-Green Transportation	9:00	9:15
Magaly Koch	Advanced Remote Sensing Technology for Sustainable Land Development in Arid Lands	9:15	9:30
Ahmed Gaber	Monitoring the Buildings Stability Using Differential SAR Interferometry Technique: Case Study in Port-Said City, Egypt	9:30	9:45
Naser Tibi	Indoor Air Quality In UAE	9:45	10:00
Questions and Open Discussion		10:00	10:15
Coffee Break		10:15	10:30
Second Session : Energy and Water in Eco-cities		10:30	11:45
Speaker	**Topic**	**Time**	
Khaled A. Al-Sallal	Eco-cities and Energy Challenges	10:30	10:45
Elisabeth Lord	Odors from wastewater	10:45	11:00
Hung-ming (Sue) Sung	Evaluation of the Infrastructure for Compressed Natural Gas for Alternative Fueled Vehicles: Barriers and Challenges	11:00	11:15
Mostafa AbuBakr	GROUNDWATER RESOURCES IN NORTHERN SINAI: IMPLICATIONS TO SUSTAINABLE DEVELOPMENT	11:15	11:30
Questions and Open Discussion		11:30	11:45
Coffee Break		11:45	12:00

Third Session: Water Technology		12:00	13:15
Speaker	**Topic**	**Time**	
Christophe Ledur	Turning Wastewater into a Resource	**12:00**	**12:15**
Alaa A. Bukhari	The Electrochemical Process; an Innovative Wastewater Treatment Technology	**12:15**	**12:30**
Ameen Rageh	Impacts Assessment of Treated Wastewater Use in Agriculture Irrigation In Amran area, Republic of Yemen	**12:30**	**12:45**
Z. Rizk	Hydrogelogic Map of Ajman	**12:45**	**13:00**
Questions/open Discussion		**13:00**	**13:15**
Lunch		**13:15**	**14:00**
Fourth Session: Sustainable Approach and Monitoring		**14:00**	**15:15**
Speaker	**Topic**	**Time**	
Mazen Salman	Detoxification of olive mill waste water using the white rot fungus Phanerochaete chrysosporium	**14:00**	**14:15**
Riyaz Syed	Wastewater Re-use Initiatives in Qatar's Natural Gas Processing Plants	**14:15**	**14:30**
Mohamed Dawood	Abu Dhabi Environment Agency-Water Resources	**14:30**	**14:45**
Ahmed Homssi	Chemical Company Towards Preserving the Environment	**14:45**	**15:00**
Questions and Open Discussion		**15:00**	**15:15**

Workshop/Panel discussion (1) Green and Innovative Architecture		9:00	11:00
Panelist	**Topic**	**Time**	
Nazar Sayigh	Low Energy Approaches to Urban Schemes in London - Case Studies	**9:00**	
Questions and Open Discussion			**11:00**
Workshop/Panel discussion (2)		**11:00**	**13:00**
Sean Biengissner	Wastewater Treatment in Canada	**11:00AM**	
Questions and Open Discussion			**13:00**
Workshop/Panel discussion (3)		**9:00**	**11:00**
John Fillo and Dr. Sue Sung	Sustainable Cities: Energy, Infrastructure and Carbon Foot Print	**9:00**	
Questions and Open Discussion			**11:00**
Workshop/Panel discussion (4)		**11:00**	**13:00**
James Irwin	Sustainability Through Stakeholder Involvement – Ottawa's Biosphere Eco-City Initiative	**11:00**	
Questions and Open Discussion			**13:00**

Keynote Speakers

Ali Sayigh

Professor & Chairman of WREC/WREN
World Renewable Energy Congress

Professor Ali Sayigh, British Citizen, Graduated from London University, & Imperial College, B.SC. DIC, Ph.D., AWP, CEng in 1966. Fellow of the Institute of Energy, and Fellow of the Institution of Engineering and Technology (previously called IEE), Chartered Engineer, Chairman of Iraq Energy Institute.

Prof Sayigh taught at Baghdad University, College of Engineering, King Saud University, College of Engineering, Saudi Arabia, full time and also Kuwait University as part time professor. Also Head of Energy Department at Kuwait Institute for Scientific Research (KISR) and Expert in renewable energy at AOPEC.

He started working in solar energy since September 1969. In 1984 he established with Pergamon Press his first International Journal for Solar and Wind Technology as an Editor-in-Chief. In 1990 up to present, Editor-in-Chief of Renewable Energy Journal incorporating Solar & Wind Technology, published by Elsevier Science Ltd, Oxford, UK. He is also the Editor-in-chief of comprehensive renewable energy, 8-volumes with 154 contributors.

He is Founder and Chairman of the ARAB Section of ISES since 1979, was chairman of UK Solar Energy Society for 3-years and consultants to many national and international organizations, among them UNESCO, ISESCO, UNDP, ESCWA, & UNIDO.

Since 1977, Prof Sayigh founded and directed several Renewable Energy Conferences and Workshops in ICTP - Trieste, Italy, Canada, Colombia, Algeria, Kuwait, Bahrain, Malaysia, Zambia, Malawi, India, West Indies, Tunisia, Indonesia, Libya, Taiwan, UAE, Oman, Czech Republic, West Indies, Bahrain, Germany, Australia, Poland, Netherlands, Thailand, Oman, Korea, Iran, Syria, Saudi Arabia, Singapore, USA and UK.

In 1990, he established the World Renewable Energy Congress and in 1992 the Network (WREN) which have their Congresses every two years, attracting more than 100 countries each time. In 2000 he and others in UAE, Sharjah founded Arab Science and Technology Foundation (ASTF). He is Chairman of Iraq Energy Institute.

He edited, contributed, and written more than 33 books and more than 600-papers in various international journals and Conferences Winner of PROSE award in 2012 for the best book entitled Comprehensive Renewable Energy, which involved 154 contributors from 80 countries. My recent book came September 2013, Sustainability, Energy and Architecture published by Elsevier.

Luay J. al Khatteeb

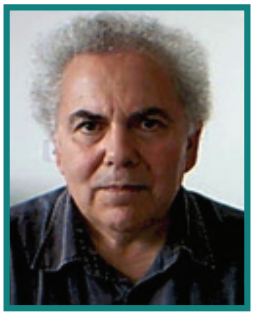
Luay J. al Khatteeb,
Founder & Director, Iraq Energy Institute

Luay al-Khatteeb is Joint Visiting Fellow at the Brookings Doha Center and the Brookings Institution (Foreign Policy Program), focusing on energy security, geopolitics and economy in the Middle East. He is the founder and director of the Iraq Energy Institute (IEI) and serves as senior advisor to the Federal Parliament of Iraq for energy policy and economic reform. His work experiences span over 20 years with various IOCs, investment banks, management consulting firms and multilateral organizations, and he is a frequent commentator on issues related to energy and political economy in the Middle East region.

Luay earned his Honours Degree from Kingston University (UK), studied his PhD on Petroleum Policies at the University of Salford (UK), and completed his professional training in Petroleum Exploration & Production at the Shell Commercial Academy in the Netherlands.

Phillip Jones

Professor
Welsh School of Architecture, Cardiff University



Professor Phil Jones is Professor of Architectural Science at the Welsh School of Architecture, Cardiff University. He chairs the Wales Low Carbon Research Institute (LCRI), a consortium of 6 Welsh universities working with government and industry in Wales to promote the low carbon agenda. He leads a number of low carbon built environment research projects, focusing on a systems approach, and developing simulation tools, at building and urban scale.

He chairs the Building Regulation Advisory Committee for the Welsh Government. He also chairs the EU COST Action on Smart Energy Regions (SmartER), which has 28 member countries, and is addressing energy use in the built environment at a regional scale. He is chairman of the board of directors of Warm Wales, a community interest company carrying out large-scale housing retrofit programmes. He is a senior consultant to the Chongqing Academy of Science and technology and an advisor to the Shenzhen Building Research Institute.

Elena N. Naumova

Associate Dean for Research
Tufts University School of Engineering

For the last 10 years I direct the NIH-sponsored Tufts Initiative for Forecasting and Modeling of Infectious Diseases (InForMID) at Tufts University and as a statistician by training I provide guidance for study design, development and implementation of analytical plans, guide data quality assessment, facilitate data compilation, select proper statistical models and conduct statistical analysis for large-scale epidemiological studies. My primary area of expertise is in modeling of transient processes with application in growth, environmental epidemiology, and infectious diseases.

I have developed innovative analytical and computational tools to monitor and assess spatio-temporal processes of waterborne disease transmission and their intricate relationships with the environment. In 2010, I have joined the Tufts University School of Engineering to spearhead innovative interdisciplinary research projects in bio-medical fields. As the Biostatistical Core leader, I organized and participated in a number of projects, funded by NIAID, NIEHS, CDC and EPA with complex schemes of recruitments and utilizing multi-sourced data repositories such as climate databases, and vital and hospitalization records, including Centers for Medicare and Medicaid Services and U.S. Census.

I have served as a Chair on a number of Data Safety Monitoring Boards, implemented or sponsored by industry. To support InForMID training mission, I have set up workshops and training programs to support field research and analytical assessment of research data and co-directed the Tufts Institute of the Environment, an outstanding supporter for summer research programs for Tufts graduate students. I hold secondary appointments at the School of Medicine, the Friedman School of Nutrition at Tufts University, and the Christian Medical College in Vellore, India, where I oversee statistical analyses for two large birth cohort studies, funded by NIAID and a study funded by an Indo-US consortium. For over a decade I have served on NIH review panels, editorial boards of scientific journals, including the Journal of Public Health Policy (Statistical Editor) and Environmental Health Perspectives. For 5 years I served on the Tufts Medical Center/Tufts University Institutional Review Board, where I help to shape and implement institutional policies on data sharing and management, data quality assurance and information security. In 2013, I was elected to the International Statistical Institute.

Speakers

John P. Fillo

Ph.D., CPEA
Principal Consultant
Trinity Environmental Consultancy International, SPC

Dr. Fillo has over 30 years of experience in environmental, health and safety (EHS) compliance and risk management, and business/financial and strategy consulting. He specializes in the assessment, design and improvement of internal controls and procedures for effective compliance, risk and liability management; performance management and improvement; climate change and sustainable development; and training program development and deployment.

His consulting experience spans the globe, including North America, South America, Europe, Russia, China and the Middle East, and in many industry sectors, with a career emphasis in energy. His experience base with the oil and gas industry is extensive, with core expertise in produced water and associated wastes management, and recent work with a Middle East natural gas company developing their greenhouse gas (GHG) strategy and program, and assessing opportunities for GHG mitigation and energy efficiency improvement.

Dr. Fillo is a Principal Consultant with Trinity Consultants Inc. in their EHS Information Technology Solutions business. He is a Certified Professional Environmental Auditor through the Board of EHS Auditor Certifications and is a Lead Assessor in ANSI's GHG accreditation program. He is extensively published and a frequent invited speaker on topics in EHS and business management, as well as sustainability and climate change. He received his Masters and Ph.D. degrees from Carnegie-Mellon University.

Abstract:

Comparison of Renewable and Fossil Energy Generation and Use to Achieve Sustainable Cities

In today's global economy, countries face important decisions about how to fulfill their growing energy needs, and the future methods of energy supply and use. Fossil energy still comprises over 80 percent of the world's energy consumption. The GCC is central to the production and distribution of fossil energy to the world. Of the fossil fuels, natural gas is portrayed as the transition fuel, but supplies need to be sufficiently close to the market so that its transport is economically and environmentally viable. Use of renewable energy sources is on the rise, with biomass, hydropower and nuclear comprising the majority. With this in mind and the world's increasing consumption of energy, how might renewable energy resources be evaluated specifically as an important component (low-carbon input) of eco-cities?

One mechanism that has been used to evaluate the use of various energy technologies on a level playing field is lifecycle assessment. Lifecycle assessment is a standardized technique that tracks material, energy, and pollutant flows throughout the 'lifecycle' of a system, from raw material extraction, manufacturing, transport, and construction, to operation and end-of-life disposition. Lifecycle assessment is used to determine environmental burdens from "cradle to grave" and facilitate comparisons of products and technologies, and provides a comprehensive framework to compare and contrast renewable energy technologies with fossil-based and nuclear energy technologies.

Fortunately, a wealth of studies contrast and compare fossil and renewable energy technologies. These studies have identified some interesting characteristics between these technologies. For example, with a focus on greenhouse gas (GHG) emissions or on carbon footprint, it has been found that:

- Fuel combustion during operation of a fossil fuel facility emits the vast majority of GHGs.
- Natural gas is the cleanest of the fossil fuels, with combustion/use being the largest GHG contributor. However, transportation of LNG to market can result in a significant carbon footprint.
- For nuclear power generation, fuel processing emissions are most significant, with a distinct proportion of GHG emissions associated with facility construction and decommissioning.
- Emissions from biomass power are largely generated during feedstock production and are substantially affected by agricultural practices.
- For renewable technologies such as solar, wind, hydropower, ocean and geothermal, lifecycle GHG emissions stem predominantly from component manufacturing and, to a lesser extent, facility construction.

Similarly, there are several excellent examples of government and private sector programs that are aime d at improving enterprise sustainability, including energy use and environmental footprint. These include CDP and their World Cities Project, the UK government's Public Procurement initiative and the US Strategic Sustainability Performance initiative, among others. Each of these provides valuable examples and insight that can be leveraged globally, including in the GCC.

The objective of this paper is to discuss a number of the available studies of fossil and/or renewable energy technologies, as well as sustainability programs, so as to draw conclusions regarding best practices, lessons learned and the economic and environmental viability of these technologies.

Hussein A Kazem

Assistant Professor
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Dr Hussein A Kazem: Has received his BSc, MSc degrees in electrical engineering from University of Technology (UOT), Baghdad - Iraq also, PhD from Newcastle University (NCL), UK. In 1996 he was appointed as Assistant Lecturer in UOT, Baghdad and from 1997 to 2002 he was a Lecturer with the Faculty of Engineering, Al Tahady University, Libya. In 2002 he became a Lecturer and then Assistant Professor with the Faculty of Engineering-Sohar University, Sultanate of Oman. Also, he is currently academic visitor at Newcastle University-UK and visiting scientist in University Kebangsaan Malaysia -Malaysia.

Hussein is involved in academics and research, since the last 17 years and is associated with professional organization and engineering societies such as IEEE, IEE, Elsevier, IAENG and WSEAS. He organized and participates in many conferences, symposiums and workshops. He is a referee in IEEE, WSEAS, AMSE, Elsevier and IJCSER journals. Also, he is a referee and organizer for many international conferences and editor of Bonfring International Journals. He has authored several publications on electrical engineering, including more than 110 papers published in scientific journals and conferences, some 35 invited talks, and four books in Power Electronics, Electrical Machines, Photovoltaic and Renewable Energy. Hussein had supervised and graduated more than 30 BSc, 7 MSc and 2 PhD students under his supervision in Al Tahady University, Sohar University, Newcastle University, University Kebangsaan Malaysia and University of Malaysia Perlis.

His current researches interests are in the area of Photovoltaic's, Renewable Energy, Power Electronics, Power Quality, Harmonics, and Electrical Power System.

Hussein is chairman of the Renewable Energy & Sustainable Technology Research Group in Oman, which work on three funded project (500,000 US$) by the Research Council of Oman.

Abstract:

Feasibility of Photovoltaic Systems in Oman

Peak electricity demand in Oman increased from 2,773 MW in 2007 to approximately 5,691 MW in 2014. The annual growth rate, at approximately 9%, is very high, and peak demand is envisaged to continue increasing due to the accelerated industrial and population growth in Oman. The forecast for electricity generation in 2014 is 24.0 TWh, and electricity shortages are expected to occur in the near future if current trends continue. The Omani government accounts for 19% of total gas production, while the remainder is used in oil production and for export, and up to 92% of the natural gas is domestically used for producing electricity. If we continue to build power stations which utilize gas for electricity production Oman will have to import, rather than export gas. All power generation facilities at present are dependent on nonrenewable fossil fuels; thus it is strongly advisable to seek alternative sources of energy. The three most important factors in selecting new energy sources are that they must be: locally available, renewable, and environmentally friendly.

Solar energy fulfills all of these requirements. It is free to collect, renewable for as long the sun is shining, and it does not hurt the environment. This study aims to investigate the feasibility of using solar energy via photovoltaic technology to generate electricity in Oman. The main interconnected grid electricity system exhibits a distinct seasonal shape – demand in summer months is very much higher than in winter, perhaps as much as 6-fold. Air conditioning loads in summer rise in response to higher temperatures resulting in the strong positive correlation of monthly peak demand and maximum monthly ambient temperature. The potential for producing electricity using Photovoltaic (PV) systems is highest during the summer which coincides with the period of peak electricity demand in Oman. Using solar energy to produce electricity also emits zero Greenhouse Gases (GHG) such as CO2. The reduction in GHG emissions (carbon) would be approximately 175 kg/MWh where renewable energy replaces natural gas. Replacing at least part of Oman's conventional fossil fuel plants with PV technologies could significantly reduce GHG emissions in the country, along with reducing the country's dependence on non- renewable energy sources. The important issue is finding an appropriate starting point and development scenario for the use of renewable energy in Oman that may lead to the zero carbon scenario described above.

Solar power can be collected to produce electricity by a variety of methods. Among these methods, PV systems have shown great success due to many reasons. To name some, it is the oldest and most thoroughly researched, and has been tested and implemented for a long time across the globe. Implementations of PV systems have shown that their reliability and efficiency depend on many factors, the dominant being location (latitude, longitude, and solar intensity), environmental (temperature, wind, humidity, pollution, dust, rain, etc.) and the type of PV used. Thus before committing to a large PV project, a thorough investigation of the above factors is essential.

In this research 24 PV panels installed in the Faculty of Engineering, Sohar University. Each panel has a

power output of 140W (total of 3.36 kW). Different PV systems configurations have been designed installed and evaluated. A key aspect of the planned work involves measuring the environmental parameters mentioned above, and their effects on system performance.

Connection of the PV modules will be made both off-grid and with the grid; this is expected to allow further research on maximizing the power delivery to the grid from PV. The performance of the PV system has been optimized for the Omani environment, especially in the heavily populated North Al-Batinah region centered on Sohar. Investigation of PV performance parameters also carried out using a solar monitoring station located at different places in Oman. Thus, the outcomes from this project are available as the pillar point for the government and any company planning to use PV in future power generation in Oman.

Kamaruzzaman Bin Sopian

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Professor Dr Kamaruzzaman Bin Sopian obtained his BS in Mechanical Engineering from the University of Wisconsin-Madison, MSc in Energy Resources from the University of Pittsburgh and PhD in Mechanical Engineering from the University of Miami-Coral Gables. He has been involved in the field of renewable energy for more than 25-years. His main contributions are in solar radiation modeling and resource assessment, advanced solar photovoltaic systems (grid-connected photovoltaic, solar powered regenerative fuel cell, solar hydrogen production, thin film silicon solar cell) and advanced solar thermal systems (solar cooling, solar heat pump, solar assisted drying, combined photovoltaic thermal or hybrid collector).

Promoting renewable energy technology to the communities has always been his passion. He has undertaken assignments in about 10 countries for international agencies and programs such as UNDP-GEF, UNIDO, ASEAN EU-Energy Facility, ASEAN-Australia Economic Co-operation Program, ASEAN-CIDA (Canada International Development Agency), JSPS-VCC, British Council CHICHE, ISESCO and UNESCO related to renewable energy technology. He has been appointed as the Honorary Professor of Renewable Energy, at the Faculty of Built Environment, University of Nottingham, United Kingdom (2009 -2013). In addition, he has been appointed as the associate editors of the Journal of Sustainable Cities and Society published by Elsevier Ltd, and Journal of Energy, Hindawi.

He won several international awards for his academic contribution in renewable energy including the IDB (Islamic Development Bank) S&T Prize 2013, World Renewable Energy Network Pioneer Award 2012, ASEAN Energy Awards (2005, 2007 and 2013). He has 2 patents, 20 patents pending, 6 copyrights, and 1 trademark for his innovation in renewable energy technology. The innovation and invention in renewable energy technology have won several medals in national and international innovation and invention competitions including special innovation awards such as Prix de L ‹Environnement by the Swiss Society for Environmental Protection, 2001, Geneva, Special Prize, Korea Invention Promotion Association at the INPEX Pittsburgh 2008 and Energy and Environmental Award, at INNOVA 2013 in Brussels.

Abstract:

Numerical analysis and optimization of solar combined single effect absorption-ejector cooling system

Solar assisted desiccant cooling system is an attractive and cost effective application for air conditioning system especially in hot and humid conditions. Four configurations have been investigated namely, one-stage ventilation, one-stage recirculation, two-stage ventilation, and two-stage recirculation as shown in Figure 1. These models were simulated for 8,760 hr of operation under hot and humid weather in Malaysia. Several parameters (i.e., coefficient of performance or COP, room temperature and humidity ratio, and the solar fraction of each system) were evaluated by detecting the temperature and humidity ratio of the different points of each configuration by TRNSYS simulation. The simulation models have been validated by means of by data measurement of an experimental one-stage solar desiccant cooling system.

The latent and sensible loads of the test room were 0.87 kW and 2.62 kW, respectively. The capacity of cooling load and also the sensible heat ratio of the zone were 1ton, and 0.25. Results of four systems are shown in Table 1. It was achieved that the two-stage ventilation mode with 1.06 of COP, and 69% of SF was as best model among of the other configurations. The two-stage ventilation produced supply air at 17.6 °C and 0.0096 kg/kg to remove the sensible load of the room, whereas the supply air temperatures of the other configurations were higher. Our results indicated that the two-stage solar desiccant cooling system under the ventilation mode was the best configurations.

Ashraf Tubeileh

College Professor
University of Guelph

Dr. Tubeileh has a PhD and M.Sc. In - Agronomy (with Honours) from ENSAIA - INPL and a B. Sc. in Plant Production and Protection from An-Najah National University.

He is a college Professor at University of Guelph, Kemptville Campus and he was a postdoctoral fellow in water and nutrient flows at Natural Resource Management Program, ICARDA, he used to as Agronomist and Deputy Director, Department of Soils and Irrigation, at the Ministry of Agriculture, Ramallah, Palestine.

His research interests are agronomic management for perennial biomass grasses, soil fertility and sustainable fertilizer practices for corn and spring wheat, control of leaf fungal diseases in cereals, enhancing nutritional value of Ontario soybeans and new crops.

Dr. Tubeileh has an experience with sustainable crop and fruit-tree production systems, soil and water management and plant water relations and crop ecophysiology.

He is a member of Canadian Society of Agronomy, American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Canadian Weed Science Society and World Association of Soil and Water Conservation.

Dr. Tubeileh has a more than 30 publications in international peer-reviewed journals and he has published four books in the fields related soil System Management under Arid and Semi-Arid Conditions and Growing olives and other tree species in marginal dry environments.

Abstract:

Biofuel Research in Canada

Ashraf Tubeileh and Tim Rennie
University of Guelph

Depleting unrenewable fuel resources and environmental concerns have renewed interest in sustainable environment-friendly biofuel resources. While one of the oldest sources of energy, crops occupy a large piece in the puzzle for future energy supplies. Several bioenergy projects have been launched at Kemptville since 2008 to study production potential and challenges with respect to varietal effects, nutrient requirements, mineral concentration in tissues, weed management and final product quality. The crops studied could be categorized into 3 different groups:

- Biomass crops: These are generally used for combustion and for biomaterial extraction. Examples include perennial biomass grasses (e.g., Miscanthus (Miscanthus spp.), switchgrass (Panicum virgatum L.), big bluestem (Andropogon gerardii Vi!.) indiangrass (Sorghastrum nutans Nash.) and annual grasses such as maize (Zea mays L.), forage millet (Pennisetum glaucum) and sorghum (Sorghum bico/or (L.) Moench). Our research is also currently investigating woody species such as poplar (Populus spp.).

- Biodiesel crops: We mainly studied Came/ina sativa, which is valued for its high quality oil that can be used for jet fuel, in addition to many other high-end industrial uses.

- Ethanol crops: These are grown to produce starch or sugar that will be fermented to produce ethanol. Our research involved maize and sweet sorghum.

Our results on perennial grasses indicate that it is possible to produce up to 10 tonnes dry biomass per hectare with minimal nitrogen input. At these levels, a sustainable and efficient production can be achieved.

Our research help producers make informed decisions with regard to species selection, seeding rates,

fertilizer rates, expected yields and energy values of little-known bioenergy crops.

Among those species, some grasses might represent a suitable option for dry environment such as those in the Arabian Gulf. Tolerance to drought and salinity should be tested for those, and other grasses, to establish their potential under southeast Arabia conditions. In addition, other promising biofuel species like Jatropha curcas should be evaluated.

Abdul Salam Darwish

Director
Phoenix Renewable Energy Centre

Prof Darwish is Director of Phoenix Renewable Energy Centre and Head of Engineering Department at Manchester Trinity College (UK). He holds an MSc Membership in Aeronautical Engineering CIT (UK) and a PhD in Wind Turbines Aerodynamics from the University of Reading (UK).

He is also a visiting professor and lecturer at Loughborough University, Warrington Collegiate, and other UK academic institutions. He is international program consultant at University of Glyndwr and Wolverhampton University and had supervised and graduated more than 11 PhD students and 33 MSc students under his supervision at Universities in UK and Middle East. His main Interest is the design, operation and management of Renewable Energy technologies and is leading research to locate wind and solar technologies for sustainable buildings for developing countries. He had published many articles related to his specialist.

Abstract:

Eco-Friendly Buildings: the central factor in transitioning to a Green Economy

The building sector is the largest contributor to global greenhouse gas emissions. More than 33% of global energy use is consumed in offices, homes, and other buildings. This figure is expected to double to more than 60% by 2030. It is a vital requirement, therefore, that new construction projects and renovations to existing construction, are focused on eco-friendly building designs. Such consideration is a low-cost means to battling climate change, reducing energy bills, and diminishing our reliance on fossil fuels. However, a failure to act immediately will compound and multiply the costs associated with climate change. This paper will present building designs and techniques, the goal of which will be to achieve energy neutrality.

That is to say that the building's energy demand will be offset by power generated from renewable energy sources. For instance, in a country such as the UAE, there are high numbers of sunshine hours and a considerable amount of wind potential.

It would therefore be best to incorporate solar panels into new building designs. Micro wind turbines, distributed in an aesthetically pleasing way, could supplement the solar panels. Many factors need to be considered when creating an energy efficient building in such a sunny climate. These include: making the best technical use of local resources to avoid the costly (financially and ecologically) long-distance transportation of construction materials; determining the most optimum balance between harnessing the natural sunlight and insulating the inside of the structure from its accompanying heat; and creating natural ventilation and air filtering through design rather than focusing on energy draining air conditioning systems. Of these three, the last may be the most important, as the highest percentage of household energy consumption is associated with cooling/heating living spaces and with heating water. These are two aspects that greatly affect quality of life and that people will not forsake. Their ecological adaptation is therefore necessary in order for populations to adopt more sustainable lifestyles. The focus of this paper will then be about balance: balancing the planet's and our communities' future needs with sustainment of home comforts and quality of life. Balance of future urban development with the ecological integrity of our land and water. Balance of ecological building design with natural resource capitalisation. A balance between people and nature. This paper will explore how these goals can be realised through concepts such as incorporation of renewable energies into design; green rooftops; holistic and life cycle approaches to consumption, waste, and recycling; reduced traffic through intelligent pedestrian community design; means of renewable energy transportation; and the reduction of urban heat island effect.

James Irwin Birtch

Director (and Founder)
Ottawa Biosphere Eco-City Council

A graduate of Geography and Computer Science programs, Jim began a social work career in the 1970s, working with Ottawa›s homeless people. Later he developed projects with community groups to meet the needs of the disadvantaged. Jim also co-created TV Language Training that produced three video series to help new Canadians learn English.

Jim›s second career was in program review and development. He coordinated the first planning and review supplement to the Air Administration›s (12,500 employees) annual request to Parliament. This process then became the standard for all federal departments (Part III of the Estimates). He later created a Parks Canada results framework that formed the structure of the agency›s annual business plan.

In his environmental carreer, Jim used his community and program planning experience. For a decade he coordinated regional integration policy on Canada›s national parks. Then in 1997, Jim wrote Parks Canada›s first sustainable development strategy. He also coordinated Canada›s biosphere reserves for over 20 years, and was a member of UNESCO›s biosphere reserves working group. In 2002, Jim proposed the Biosphere Eco-City (BEC) model to UNESCO (as MAB Urban Demonstration Areas). In 2009 he began an Ottawa BEC pilot and he continues as a director of the Ottawa BEC Council.

Jim received the Queen›s Golden Jubilee Medal in 2002 for his work on biosphere reserves. In 2010 the Mayor of Ottawa presented him with the Eco-Stewardship Award for the Biosphere Eco-City pilot.

Abstract:

Sustainability Through Stakeholder Involvement – Ottawa's Biosphere Eco-City Initiative

The Ajman conference has multiple goals for the environment and human benefit. It addresses them by sharing information among international stakeholders along clear Themes of Sustainability. Imagine the effect of ongoing stakeholder interaction on sustainability in our cities? We achieve sustainability together.

The Biosphere Eco-City (BEC) is a model for ongoing cooperation among citizens and organizations to make an urban-centred region sustainable. It includes a city's surrounding rural area where urban-rural interaction is strong. BEC shares the conference goals and supports conservation of the Biosphere.

The world's best-known examples of eco-cities were achieved through an expert-directed approach, but most of the 3200 cities around the Biosphere cannot become sustainable in this way. They lack time, money and expertise for planning. Instead, they could progress towards sustainability through stakeholder involvement and action; a complement to planning. This cooperative approach would permit them to make use of the only relatively untapped resource for sustainability – human capital: the energy and ideas of people.

The author was a community developer in the 1980s, working with disadvantaged immigrant and refugee groups. By focusing on needs, sharing ideas and working together, these communities were able to achieve dramatic improvements. Through cooperation and a small amount of support, ordinary people can often address their own needs. This universal ability should be applied to sustainability.

BEC has four objectives and all engage human capital for sustainability: Understanding, Involvement, Initiative and Sharing.

BEC's simple tools for stakeholders address these objectives. Themes of Sustainability (Transportation, Energy, Design, Habitat, Food, Natural Capital, Waste, Health, Recreation and Sense of Place) focus discussion and action. A Database of Sustainability Projects shares information and permits viewers to connect. Sustainability Plans allow members of an organization to collectively develop an agenda for action. A Council of Stakeholders shares ideas, creates partnerships and promotes sustainability. Demonstration Projects show new approaches, to citizens and organizations. Processes for Sustainability (Science, Education, Communication, Culture) are harnessed to improve project performance for any Theme.

In 2009, the City of Ottawa used discussion papers on BEC Themes to orient the public to sustainability planning. It also partnered with the Ottawa BEC Council for public discussion on sustainability goals and outcomes. In September 2013, the Mayor launched the self-guided Ottawa Sustainability Tour developed by over 60 volunteers. The tour guides people by car, bus or bicycle to ten excellent sites illustrating BEC's 10 Themes of Sustainability.

Forming stakeholder groups around the Themes could improve implementation of sustainability practices. For example, Transportation plans could benefit from inputs by Design or Health stakeholders. Urban gardens include Natural Capital elements of water and soil, but inputs from stakeholder groups on Themes of Food, Design, Habitat and Recreation could be useful. Energy stakeholders can help address Waste.

Conference participants are encouraged to apply BEC techniques in their own cities to achieve sustainability together.

Emad Saad

Environmental Adviser
Environment Friends Society

Dr. Imad Mohammad Saad has more than 15 years of Experience in the field of environmental consulting and training at UAE. He has presented and conducted hundreds of lectures and training courses and specialized workshops in the field of Environmental Protection and Sustainable Development, Social Responsibility, and Quality Management to the various sectors of society and social classes. He represented UAE in many international conferences and events.

The most important, Earth Summit Conference on Environment, held in Johannesburg, South Africa 2002. He also presented dozens of scientific papers at conferences and environmental courses at the local and international level, (United Arab Emirates, Qatar, Syria, Lebanon, Egypt, Algeria, South Africa, Germany...). He has got more than 1000 Certificate of Appreciation from government agencies, private sectors and civil society from both inside and outside the country. He won numerous international awards for his efforts in the transfer and resettlement of knowledge and building a sustainable society.

Abstract:

Green Application in Bld.

لـو نظرنـا الـى مـا يجـري حولنـا مـن تغيـرات مناخيـة حـول العالـم ومـا خلفتـه مـن كـوارث انسـانية وبيئيـة وصحيـة وغذائيـة بـل وأمنيـة لوجدنـا ان اللاعـب الأساسـي فـي هـذا الأثـر السـلبي هـو الانسـان ومـا أدراك مـا الانسـان ومـا يمكـن أن يفعـل فـي نفسـه وغيـره مـن أثـر سـلبي مسـتدام سـواء بعـدم إدراكـه ووعيـه وأحيانـاً عـن سـبق الاصـرار والترصـد.

لما كل هـذا وهـل وصلنـا فـي الكـرة الارضيـة الـى الحـد الـذي يجـب ان نرفـع فيـه صوتنـا عاليـاً لنصـرخ كفـى اوقفـوا هـذا التدميـر الممنهـج لبيئتنـا ولأمنـا الأرض تحـت عناويـن براقـة (حقنـا فـي التنميـة . وحقنـا ان نصـل الـى مـا وصلـت اليـه دول العالـم الأول...) لكـن علـى حسـاب مـن لا يهـم وكأن الأثـر المتبقـي لسـلوك الانسـان علـى بيئـة لـه حـدود او يسـتطيع التحكـم بنتائجـه.

طبعاً لا فالكرة الأرضية أضحت بيتاً صغيراً ونحن وصلنا الى الحد الخطر الذي لا رجعة منه ابداً...

بالتالـي علينـا ان نتكيـف مـع هـذا التحـدي بأفضـل السـبل عبـر مجموعـة مـن التطبيقـات الخضـراء علـى مسـتوى الافـراد والمؤسسـات وشـركات القطـاع الخـاص والقطـاع الحكومـي أيضـا لـكل دوره مهمـا صغـر لكـن أثـره كبيـر.

ومـن بـين المبـادرات الايجابيـة هـي اعتمـاد كـود متخصـص بالمبانـي الخضـراء أي التـي تتبـع فـي عمليـة بنائهـا بعـض الاجـراءات والتطبيقـات التـي مـن شـأنها أن تخفـف مـن بصمتهـا الكربونيـة والبيئيـة, وهـذه الاجـراءات تنسـحب علـى الافـراد القاطنيـن فـي تلـك المبانـي أو فـي غيرهـا علـى مسـتوى رقعـة الوطـن والعالـم ككل. خصوصـاً إذا عرفنـا ان حصـة قطـاع السـكن مـن البصمـة البيئيـة لدولـة الامـارات علـى سـبيل المثـال هـي ٥٧ ٪ . وعليـه نـرى أن سـلوك افـراد المجتمـع ككل لـه قـدرة علـى خفـض البصمـة الكربونيـة والبيئيـة ككل عبـر مجموعـة مـن الاجـراءات والسـلوكيات البسـيطة التـي تسـاعد افـراد المجتمـع علـى تطبيـق افضـل الممارسـات بمـا يضمـن افضـل النتائـج للإنسـان ومحيطـه الحيـوي مـن حولـه.

فالعيـش بمسـاحة صغيـرة مثـل شـقة سـكنية ضمـن بـرج او فـي مسـاحة اوسـع مثـل الفيـلا اصبـح لـه اليـوم نظـام دقيـق مضبـوط وفـق قواعـد البصمـة الكربونيـة يسـتطيع كل منـا ان يقيـس بصمتـه الكربونيـة لأي سـلوك او تصـرف قـام بـه داخـل او خـارج بيتـه.

فـي ورقـة العمـل تلـك سـوف نسـتعرض بطريقـة فنيـة جذابـة مـا هـي سـبل وآليـات أن يكـون للإنسـان تطبيقـات خضـراء تجعـل مـن سـلوكه أخضـر أي سـلوك مسـؤول يـؤدي الـى نجـاح مسـتدام لنـا وللأجيـال التـي لـو تولـد بعـد

كمـا سـوف اقـوم بربـط هـذه السـلوكيات والتطبيقـات الخضـراء بمـا تمثلـه مـن بعـد وطنـي خصوصـا اذا عرفنـا اننـا لا ندفـع القيمـة الحقيقـة لمـا نسـتهلكه مـن ميـاه وكهربـاء لأنهمـا سـلعتان مدعومتـان مـن الحكومـة مـا يعنـي ان ترشـيد اسـتهلاك الطاقـة والميـاه او غيرهمـا مـن قواعـد السـلوك الاخضـر هـو سـلوك حضـاري وواجـب وطنـي.

كمـا تعـرض الورقـة مجموعـة القواعـد والتطبيقـات الخضـراء التـي يمكـن للفـرد ان يقـوم بهـا داخـل المنـزل او المكتـب او العمـل او المدرسـة والشـارع وفقـاً لأفضـل الممارسـات العالميـة والمقارنـات المعياريـة التـي منشـأنها رفـع كفـاءة الاسـتخدام وبأقـل بصمـة علـى البيئـة. وربطهـا أيضـا بمعاييـر التميـز المؤسسـي باعتبـاره العمـود الفقـري الـذي تقـوم عليـه كافـة الهيـاكل التنظيميـة للمؤسسـات الاتحاديـة والمحليـة علـى مسـتوى دولـة الامـارات.

Magaly Koch

Research Associate Professor

Dr. Magaly Koch is a geologist specialized in the application of Remote Sensing and Geographic Information Systems in the study of groundwater resources and environmental change of arid and tropical regions. She has conducted research on the: (i) estimation of the ground water potential in Sudan (Darfur and Red Sea Hills), Egypt, Oman and United Arab Emirates, (ii) evaluation of the geomorphic effects of the Gulf War in Kuwait using pre- and post-war satellite images, (iii) characterization of wetland degradation processes in Spain, (v) assessment of flash flood potential of ephemeral rivers (wadis) in Egypt, Oman, and United Arab Emirates, (vi) discovery of hidden Maya ruins in the thick rainforest of Guatemala, and (vii) relationship between landscape evolution and cultural development of the Axumite kingdom in N Ethiopia, and the possible causes for past and present-day land degradation problems in this region.

Her teaching experience has been gained at Boston University where she has taught Remote Sensing in Archaeology (undergraduate/graduate level) from 1999 until 2007. More recent teaching assignments include an introductory course in GIS at BU's Earth & Environment Department (spring semester 2011), and the Intro to Remote Sensing course in the Department of Civil & Environmental Engineering at Tufts University (from 2011 until present). She has also taught full semester & short courses in RS and GIS as applied to environmental sciences and geology in several other countries, including Japan, Spain, Egypt, UAE and Kuwait. She is co-author of the textbook "Processing of Remotely-Sensed Images: An Introduction", Fourth Edition with Paul M. Mather.

Dr. Koch graduated from the University of Cologne, Germany, in 1986 with a M.Sc. in Geology. Her PhD research, on the use of remote sensing in ground water studies, was undertaken at Boston University, USA, and completed in 1993. Subsequently she was awarded a Marie Curie Fellowship by the European Union to undertake post-doctoral research at the Earth Science Institute, CSIC, Barcelona, Spain. Her current post is that of Research Associate Professor at the Remote Sensing Center of Boston University, Boston (MA), USA.

Abstract:

Advanced Remote Sensing Technology for Sustainable Land Development in Arid Lands

Although drylands make up around 40% of the Earth's land surface area, our knowledge of their ecological and hydrological response to rapid land use changes is still limited. As human populations increase, requirements for new land and water resources have focused on arid regions.

Recent advances in the study of arid and semi arid ecosystems and their response to human activities have been made as a result of the adoption of innovative methodologies. The use of remote sensing technology is the most time and cost efficient way to monitor and assess the effect of land use changes on land degradation processes, such as soil erosion, crusting, salinization, and loss of near-surface water due to evapotranspiration. Such degradation processes are often triggered by none sustainable land use practices (e.g. expansion of irrigated agricultural, increased water demands by industry) and exacerbated by natural processes (e.g. extreme weather events, long-term climate change).

Researchers have recognized the potential use of multi-sensor remote sensing as one of the main data sources for monitoring and assessing the impact of rapid land use changes especially in fragile ecosystems such as drylands. Most mapping methods were developed for multispectral images (e.g., Landsat TM and ETM+) since this type of imagery provides currently the longest Earth Observing (EO) records that can be used to construct time series for monitoring the status of arid and semi-arid ecosystems. The spatial resolution of older generation EO sensors imposes, however, a problem in relation to the spatial variability of ecosystem components and status. Several techniques have been developed to improve the detection and mapping of surface features that occur at sub-pixel resolution so that their spectral information can be used for feature identification and extrapolated in space and time. One important aspect is to extrapolate findings of in-situ studies (field spectroscopy, geophysical surveys) to larger areas. Field measurements are needed to characterize and verify the land surface components making up a pixel as well as to relate their spectral response to their actual physical stage (e.g., vegetation health, soil salinity and moisture content etc.).

This paper discusses current techniques in multisensor data fusion by illustrating their applications in urban and agricultural settings. Typically land surface characterization is done using spectral information from a single sensor. Two factors underlie why multisensor fusion of data is becoming increasingly important in land surface characterization. First, there are substantial improvements in land cover/use characterization using more information from multisensor data sets obtained at various spatial resolutions (from local to regional) as well as at various spectral and angular resolutions. Second, there will be an exponential growth in the availability of data. A range of advanced EO sensors are expected to be launched in the next few years, including optical, hyperspectral and microwave sensors. Examples of their potential use will be given.

Ahmed Gaber

Visiting Researcher, PhD
Center for Remote Sensing, Boston University, Boston, MA 02215-1401, USA

Dr. Ahmed Gaber is a geologist specialized in the applications of Synthetic Aperture Radar (SAR) and Ground Penetrating Radar (GPR) for land subsidence detection, groundwater discovery in arid lands, archaeological investigations and tree roots and utility detection. He has conducted research on the: (i) estimation of the ground water potentiality in the Western Desert of Egypt, (ii) archeological exploration in Japan and Egypt, (iii) estimating the underground biomass by detecting the tree roots, (iv) evaluating the land subsidence rate using the differential radar interferometry technique, (v) soil mapping using the polarization signature of full

polarimeteric SAR data and (vi) calculating the soil moisture and surface roughness.

Abstract:

Monitoring the Buildings Stability Using Differential SAR Interferometry Technique: Case Study in Port-Said City, Egypt

Monitoring the buildings and ground deformations caused by natural or different anthropogenic activities is a key requirement in order to prevent damages to structures and utilities at the ground surface. In recent years the differential interferometric Synthetic Aperture Radar (DInSAR) techniques have demonstrated their potential as land and buildings deformation measurement tools. Their capability has been considerably improved by using large stacks of SAR images acquired over the same area and along different time series. With these advances the DInSAR techniques are becoming more and more quantitative geodetic tools for deformation monitoring, rather than simple qualitative tools. In this work, 8-ALOS/PALSAR (L-band 23 cm) radar scenes cover the period from 2007 to 2010 were used to monitor the building stability in Port-Said City, Egypt.

The 8-PALSAR scenes were co-registered using well distributed 35 ground control points (GCPs) with RMS error mean (0.029). The co-registered 8-SAR data were used to generate 4-interfergames pairs and estimate the coherence of each pair. Since our area of interest is an urban area, thus the coherence was high enough (~ 0.6 to 1) to use all selected SAR data. The estimated interferograms were filtered and used together with the coherences data to calculate the phase unwrapping. Finally both the 3-passes and persistent scatterers DInSAR methods were performed to map the land and buildings deformations in Port-Said City, Egypt during the investigated period. Of course such information will help the decision-makers in Port- Said Governorate for initiating sustainable development and land-use planning programs.

Naser Tibi

Regional Director
Norwegian Institute for Air Research (NILU)

In 1995, I was granted the Ph.D. in Industrial and Systems Engineering from the University of Florida-U.S.A.

I worked as the Technical Advisor, Administration department in Nablus Municipality in1995-1996.

From 1995 to 1998 I was the Technical Director at the Palestinian Energy & Environment Research Centre (PEC)-Palestine.

I was Director of Public Relations Department and Assistant Professor at the Industrial Engineering Department at Al-Najah National University – Palestine from 1998 to 2003.

I worked as the Executive Director of the Center for Externally Funded Research Activities and Consultations (eFORS) at the UAE University from 2003 to 2006.

In 2006, I was employed to establish a branch office for the Norwegian Institute for Air Research (NILU) in the UAE and build up the professional capacity of the office to handle investigations of air pollution problems. Currently, NILU undertakes and offers consulting ser¬vices for public authorities, industries, international organizations and others and has highly qualified staffs of 19 persons based in Abu Dhabi consisting of engineers and technicians specialized for work related to air pollution. In 2008, NILU conducted long-term projects with governmental organizations such as Environment Agency-Abu Dhabi (EAD) and started a strategic partnership, Municipality of Abu Dhabi City, Abu Dhabi Ports Company, and other governmental and private bodies.

We are conducting environmental studies with emphasis on indoor air quality, sources of airborne pollution, atmospheric transport, transformation and deposition and are also involved in the assessment of the effects of pollution on ecosystems, human health and materials.

We have established a Standardization Unit in the UAE to maintain the standard operation procedures for calibrating and certifying air quality monitoring equipment. The Standardization Unit is also responsible for giving guidance on the development of the Quality Manual.

Abstract:

Indoor Air Quality In UAE

The Norwegian Institute for Air Research (NILU) performed indoor air quality investigation for several buildings in Abu Dhabi (Embassies, Schools, Mosque, villas, commercial building and Residential building).

The main goal of the study is to define the main pollutants that could be found in the buildings and to define the status of existing buildings with respect to indoor air quality.

The results of measurements that were conducted at different locations have shown that there was a wide mold growth in the duct of ventilation system due to poor maintenance in most studied buildings; also that carbon dioxide (CO2) and voltaic organic compound (VOC) are considered the main pollutants that could be found and affect the indoor air quality in these buildings.

In my presentation, I will discuss our findings regarding the following parameters and their concentrations:

- Carbon monoxide “CO”
- Radon “Rn”
- Ammonia”NH3”
- Hydrogen sulfide “H2S”
- Nitrogen dioxide “NO2”
- Oxygen “O2”
- Ozone “O3”
- Sulfur dioxide “SO2”
- CO2 concentration
- VOC concentration
- PM2.5 parameters

Khaled A. Al-Sallal

Professor
UAE University

Dr. Khaled A. Al-Sallal is currently a professor of architectural engineering and the director of daylighting laboratory at UAE University and his area of expertise is sustainable design with emphasis on building energy. He has a Ph.D. from Texas A&M University and a Master's degree from Arizona State University. He has been involved in many research projects and consulting services that introduced new building sustainable technologies to the UAE and the Middle East. His teaching and research has focused on building performance and simulation, carbon-neutral design, daylighting, and vernacular and climatic responsive architecture.

He produced numerous publications in international refereed journals (17) and scientific conferences proceedings (44), and wrote chapters in 3 edited books published by reputable scientific publishers (Elsevier, Francis & Taylor, Hogrefe & Huber). He is currently editing a book on low carbon low energy architecture. He gave numerous lectures and presentations in various conferences, meetings, and scientific forums. He is the UAE Representative of the Council of Tall Buildings and Urban Habitat (CTBUH) based in Chicago, USA. He is also a member of BOD of the International Building Performance Simulation Association (IBPSA) and the founder and current president of the UAE Affiliate (IBPSA-UAE). He received several awards including: the best research project award of Engineering for 2007 and the Award of Excellence in Teaching 2000, UAE University.

Abstract:

Eco-cities and Energy Challenges

The built environment has been reported at attributing 48% of all energy consumption and greenhouse gas emissions in the U.S. and 30–40% of the total carbon emissions in the UK. Construction sector in India emits about 22% of the total annual emission of CO2 resulting from the Indian economy. Buildings also contribute indirectly to greenhouse gas emissions. Production of construction materials is primarily dependent on conventional energy sources in many parts of the world. Out of the emissions from the construction sector, around 80% are resulting mainly from the products/industrial processes of energy intensive building materials (i.e. cement, lime, steel, bricks and aluminum.)

Over the next three decades, the building stock is projected to grow extensively, which creates an extraordinary opportunity to achieve significant emissions reductions in the building sector. Pressure to slash CO2 emissions continues to mount with growing levels of legislation and incentives to preserve our environment. To meet these targets, considerable research into energy efficiency is underway. The review in this study identifies the role of city planning and buildings in global carbon emission and solutions to reduce it with appropriate technologies and materials. This review helps in developing an insight for buildings' role in carbon emission and possibilities of developing eco-cities.

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Elisabeth Lord

Senior Engineer, Odour Expert and President
Air & Odour

Ms. Elisabeth Lord, P.Eng. M.Sc. a senior environmental engineer, has a degree in chemical engineering, a Master's in air pollution management and almost 20 years of experience in odor and air quality management.

Ms. Lord provides environmental services throughout the world, including the Middle East countries, in analysis of best available odor and air pollution control technologies, environmental impact assessments, emission inventories, odor and air quality dispersion modeling and impact analyses, and greenhouse gas assessment and management. Her strengths include studies of wastewater treatment plants (municipal and industrial), industrial sites encompassing petroleum refineries, upstream oil & gas industries, asphalt plants, hazardous waste management, etc.

Ms. Lord has successfully completed numerous projects involving stakeholder groups, consultation with regulatory agencies, and liaison with industry and non-governmental environmental organizations in federal and provincial processes.

Abstract:

Odors from wastewater

This presentation aims at being an introduction to olfactometric science. It is a good base for initiating regulatory requirements and innovative solutions for eco-cities. While some of the critical components of sustainable eco-cities such as reduced air pollution, low carbon footprints, use of natural and nature- friendly building materials, and energy-efficient transportation systems have been well studied, other issues such as odors remain misunderstood and prone to qualitative assessments rather than having measurable and quantitative definitions.

In the GCC, one of the predominant downsides of wastewater treatment processes are odor nuisances. Based on the diversity of waste products in the region, their transport, and their ultimate treatment, odor issues are a reality that need to be addressed. Whether wastewater is from industrial or municipal sewage, and whether odors come from the pretreatment, primary or sludge treatment stages, they must be considered as a concept clearly distinct and separate from other types of pollution. Odors must also be examined in their entirety rather than as individual odorous constituents.

The particularity of odors are based on the fact that they are nuisances that trigger human perception and thereby affect considerations of healthful living in any community – ecologically balanced or otherwise. A human subject has 1 gene to hear, 3 to see, 12 to taste, and 1000 to smell. The complexity of olfactometry science renders its study, understanding, measurement, regulation and ultimately its mitigation as unique and distinct.

One of the first steps in odor management is to conduct an odor survey and odor diagnostics in view of prioritizing the sources. Sampling and odor measurements are intended to determine odor concentrations (ou/m3) and emission rates (ou/s) of pollution sources. Once all identified sources have been sampled

and odors measured, odor nuisances can be studied and diagnosed using dispersion modeling. Odors must be studied on the shortest period of time possible because human subjects detect odor fluctuations predominantly to constant odors. Changes are influenced by crucial dispersion parameters such as sources characteristics, topography, vegetation, meteorology and coastal effects, etc. which are taken into account through dispersion modeling.

The result assessment lead to the determination of odour nuisances and to regulatory requirements. International regulations show diversities although there is a leading edge for regulating odor concentrations converging to the perception thresholds and taking into account the frequency of occurrences using percentile results.

Odors are such that nuisances are determined by the frequency and hostility of the odors, which often may be more important than the magnitude of their concentrations. These are distinct and non-quantified parameters that may play a determining role in the development of an odor mitigation plan and source prioritization. Mitigation must also target the mixture of gaseous components rather than looking into treating one sole gaseous component. If such is done, odor problems often remain misunderstood and unsolved.

Hung-ming (Sue) Sung

Director – EHS Technology
Trinity Environmental Consultancy International, SPC

Dr. Sung joined Trinity Consultants in 1989 and has since been providing technical support to clients in air quality compliance, accidental release analysis, air quality research, pollution control technology, and noise impact issues. She is Director of Trinity's EHS Information Solutions business and is also the Director for Trinity›s international operations in China and the Middle East.

Dr. Sung has extensive regulatory and technical knowledge related to industrial processes. She is a frequent author and speaker on air quality technical and compliance issues. She teaches professional development courses in areas such as:

- Emergency Response and Dispersion Modeling for Chemical Accidental Releases
- Emissions Impact Assessment for Process Industries
- Corporate Environmental Management Strategies
- Pollution Control Technology
- Clean Air Act Workshop for Oil Refineries
- GHG Emissions Accounting & Reporting

Dr. Sung received a B.S. in Environmental Engineering from National Chung-Hsing University, an M.S. in Environmental Engineering from Marquette University, and a Ph.D. in Environmental Engineering from Vanderbilt University.

Abstract:

Evaluation of the Infrastructure for Compressed Natural Gas for Alternative Fueled Vehicles: Barriers and Challenges

Hung-ming (Sue) Sung
Director – EHS Technology, Trinity Environmental Consultancy International, SPC

Naomi Lee
Senior Consultant, Trinity Environmental Consultancy International, SPC

Alternative fueled vehicles – those powered by such fuels as compressed natural gas (CNG), liquefied natural gas (LNG), ethanol, and biodiesel -- represent a complex and growing sector in the global transportation industry. The development of alternative fueled vehicles is attributable to many factors. Government policies or incentives, tougher regulations and restrictions, or public concern related to better air quality standards are some of the many reasons that lead to the development and formulation of the industry. Most importantly, however, the adoption and management of alternative fueled vehicles rely heavily on the available infrastructure (i.e., accessibility to the alternative fuel as well as access and costs of the motor vehicle technology).

Natural gas fueled vehicles (CNG/LNG) are a mature and proven technology that may be more economically attractive than advanced gasoline or diesel technologies. Based on a study comparing costs of alternative fueled vehicles, natural gas vehicles fared favorably. Initial costs are higher, but over time the use of the natural gas fuel is economically and better. Transit buses and vans have the strongest market drivers for adopting natural gas because of their market enabling features of short range and return- to-base duty cycles. Furthermore, the abundance of natural gas in the region make it an attractive transportation fuel option.

Depending on the fuel storage capacity, CNG and LNG vehicles provide comparable performance levels to existing diesel-powered vehicles with the added benefit of low particulate emissions. Some aftermarket vehicles may also be converted to run natural gas using an aftermarket conversion kit, complete with fuel tank, fuel lines, a pressure regulator, and a mixer or carburetor. Vehicles that have been converted can sometimes run on either an alternative fuel or a conventional fuel.

The potential equipment cost to replace any existing fleet is estimated at 33% higher than current MSRP per vehicle. For the infrastructure, it is estimated to cost $675,000-$1,000,000 to build the CNG infrastructure (cost per fueling station). The most prominent technical problems associated with LNG and CNG are a reduction in power as well as the undeveloped refueling infrastructure. CNG vehicles have a range 70% to 80% less than that of a gasoline vehicle significantly limiting the travel ability of these alternative fuel technologies.

Successful implementation of alternative fueled vehicles often includes government involvement, increased education and awareness; and financial and technical support. This paper examines the implementation of CNG and LNG alternative fueled vehicles in various communities and organizations to better understand barriers and challenges associated with compressed natural gas, compresses natural gas vehicles, and the necessary infrastructure required to make the technology switch.

Mostafa AbuBakr

Research Scientist
Center for Remote Sensing, Boston University

Dr. Mostafa AbuBakr is a geologist with primarily interest in the application of Remote Sensing and Geographical Information Systems (GIS) in the study of the renewable groundwater resources and natural hazard in arid environments. He has conducted research on:

(i) constructing hydrological modeling for ephemeral rivers in the North Eastern Sahara,

(ii) assessing the renewable water recourse in the Egyptian Sinai Peninsula.

(iii) proposing a strategy for using seasonal rainfall and renewable groundwater resources to establish sustainable agriculture development in North Sinai,

(iv) detecting the locations of Paleoriver courses and paleolakes in North Sinai using space-borne radar images.

(v) estimating and mitigating the flash flood hazard in Wadi El-Arish, Egypt.

(vi) identifying thermal anomalies in arid lands and their implications on groundwater accumulation.

Recently, he has joined/submitted several research projects that targeted sustainable development in Middle East countries and Africa. For instance, a project with the Egyptian government for identifying the renewable water resources and harvest of rainwater for sustainable development in North Sinai. In addition, projects on utilizing space image data for groundwater exploration in Djibouti and Chad. He also worked with Dr. Farouk El-Baz on modifying and remodeling the proposed development corridor of Egypt. Furthermore, Dr. AbuBakr has joined an NSF project aims to assessing natural resources potential for land use planning and development in west Aswan, Egypt.

Abstract:

Groundwater Resources in Northern Sinai: Implications to Sustainable Development

Mostafa Abubakr
Farouk El-Baz
Center for Remote Sensing, Boston University

Scarcity of freshwater supplies is a problem that impedes sustainable development in Middle Eastern countries. Therefore, reliance on renewable groundwater represents a key to assuring sustainable development in such arid environments. However, efforts to understand and locate renewable groundwater in these dry lands are often hampered by scarcity of flow data and lack of appropriate runoff monitoring systems. Radar and thermal remote sensing data along with field investigations could be used to monitor indirect indications of groundwater accumulation in bare sandy soils. Egypt's Sinai Peninsula is one of such region that can be developed by defining the most appropriate sites for renewable groundwater. It receives the highest amount of rainfall in Egypt and is relatively close to crowded cities; thus, it represents an ideal region for sustainable agricultural development based on renewable water resources. The main objective of this research is to identify potential sites of renewable groundwater using integration of multi-sensors remote sensing data in a geographic information system (GIS). It also aims at detecting and monitoring thermal anomalies in bare sandy surfaces following a rainfall event to understand the recurrence of this phenomenon in only specific locations. This reveals possible connections between the anomalies and local environmental factors, such as basin hydrologic behavior, structure, topography, paleoriver courses and the groundwater quality.

SRTM data were used to extract the watershed of Wadi El-Arish, the largest ephemeral river in the study area. Radarsat-1 (C-band, 12.5 m) and ALOS/PALSAR (L-band, 6.25 m) sensors were utilized to detect and map the buried rivers beneath the sand. A Systematic analysis of thermal inferred (TIR) data of daily MODIS LST, ASTER and ETM+ satellite images were correlated with major rainfall events from TRMM data to reveal cool patches (dark) within the watershed. These dark patches indicate cooler surfaces of approximately 10 °C lower than the surroundings with a lifespan of more than a week. The most frequent anomaly is located in El-Sirr depression. Radar data show that this location contains an ancestral paleoriver course of Wadi El-Arish, which is filled by paleofluvial deposits, and may serve as an unconfined aquifer controlled by high-density fractures. These fractures may have channeled the runoff to accumulate water beneath the paleo-channel courses. In addition, the hydrologic behavior analysis indicates that thermal anomalies appear in a sub-basin of high groundwater potential with a wide flat pick flow hydrograph. Furthermore, field investigations of water wells prove that salinity values decrease toward the thermal anomaly west of Gebel Halal and increase in an easterly direction. From these findings it is concluded that structure, topography and paleodriange are key elements that control the appearance of thermal anomalies and could contribute to renewable groundwater exploration, and consequently to sustainable development in arid environments.

Christophe Ledur

Deputy General Manager
ASPCL (Ajman Sewerage)

Christophe works as Deputy General Manager at Ajman Sewerage Company (ASPCL). He holds a Master's Degree in Civil Engineering from the Belgian University of Louvain, and a MBA from the Vlerick Business School.

Prior to Ajman Sewerage Company, Christophe successively worked in the Finance and Civil Engineering sectors, and also launched and sold his company specialized in international auctions and brokerage of used industrial machinery and professional equipment.

Abstract:

Turning Wastewater into a Resource

For a long time, the treatment of wastewater has been considered as a necessity, rather than an opportunity that creates value in itself. At present, this perception is changing and wastewater starts being considered as a resource:

- Treated wastewater becomes an increasingly valuable commodity that is not only to be reused for agriculture but also for industrial and even domestic purposes;
- Biogas, a byproduct from the treatment process, has shown to be very useful in the field of CNG, bioplastics and other energy-substitution projects with a large set of practical applications from cogeneration of electricity and heating, vehicular transportation, etc.
- Sludge, another byproduct, can be and is being reused as a resource for soil conditioning, biofuels, waste-to-energy, etc.

The presentation looks at how the UAE is already considering wastewater as a resource and which are the opportunities in the next few years with a dedicated focus on the Emirate of Ajman. The objective is also to enhance public awareness and knowledge about the benefits of these resources.

Alaa A. Bukhari

Director, Center for Environment & Water
King Fahd University of Petroleum & Minerals

Dr. Alaa Bukhari is the Director of the Center for Environment and Water at the research institute and an Associate Professor of Environmental Engineering at the Civil Engineering Department of King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia. He received his Ph.D. in Environmental Engineering University of Colorado at Boulder, August 1996. His research work emphasis on water/wastewater treatment processes.

He participated in dozens of contract research projects (funded by the private sector companies) and a number of scientific research studies sponsored by King Abdul-Aziz City for Science and Technology (KACST), and KFUPM. He chaired several sessions in a number of conferences/symposia. He participated in a large number of committees as a chair/member within the University and nationally. He is also actively involved in coordinating graduate students in the environmental engineering graduate program at KFUPM.

Abstract:

The Electrochemical Process; an Innovative Wastewater Treatment Technology

Alaa A. Bukhari
Center for Environment & Water, the Research Institute,
King Fahd University for Petroleum & Minerals

Ahmed Sawalha
Environmental Consulting Bureau (ECB), Dammam- KSA

Wastewater is looked at as a potential water source in many countries, particularly, those located in arid regions. Therefore, treatment of wastewater, whether municipal or industrial, for reuse purposes has become an area of much interest to researchers in many countries. Although, Biological treatment processes are the most common methods used for the treatment of municipal and industrial wastewaters, however, a number of drawbacks remains of concern. Research, in the past two decades, has shown that electrochemical (EC) processes can be developed as a potential technology for the treatment of municipal and industrial wastewater.

The main objective of this presentation is to introduce such a technology and its potential to be used for the treatment of municipal and industrial wastewater. Two types of wastewater were investigated; municipal and paint industrial wastewater. The investigations were mainly directed towards assessing the efficiency of the EC process in the removal of BOD from municipal wastewater and COD from paint industrial wastewater. The results showed that about 85% BOD removal was possible in about 20-30 minutes of treatment duration for the municipal wastewater. Similar results were obtained for paint industrial wastewater, close to 80% COD removal in about 30 minutes of treatment duration.

Ameen Yahya Rageh

Senior Researcher in Environment and Water Resources
Agricultural Research and Extension Authority, AREA -Yemen

Research Assistant, the department of Water at Agriculture and Irrigation office, Dhamar Governorate, 1998.

Works at the laboratory to analyze soil and water samples from the research and agricultural extension authority 1999.

2000 – 2003 work as UNDP-peer expert in the field of irrigation, funded by the International Program .

Deputy Director of the Center for Renewable Natural Resources Research - General Authority for Agricultural Research and Extension - Dhamar – 2010-2013.

Director of the national agricultural training center, in Agricultural Research and Extension Authority - Dhamar – 2013 till present.

Researches & Studies:

- Study of surface irrigation management areas north part of the Republic of Yemen, 2001.

- Conduct laboratory analysis of soil and water for several agricultural areas of Yemen Republic, 2002.

- Conduct research & studies for water management in several valleys of southern Yemen, 2003.

- Introducing drip irrigation system on the agricultural terraces in the province of Rayma, funded by the IFAD,2003.

- Study natural resources and waterfalls of the valley (Wadi Bana), 2004.

- Study the effect of using the treated waste water on the soils and plants in many areas (Sanaa – Hajjah and Dhamar).2005.

- Assess the competencies of a number of the installed modern irrigation systems (drip) on mango farms in Tahmah Hodeidah, 2006.

- Implementation of a study on indigenous knowledge and traditions of the farmers on the use of natural resources (Mahweet Governorate), 2007.

Abstract:

Impacts Assessment of Treated Wastewater Use in Agriculture Irrigation In Amran area, Republic of Yemen

Water availability is the principal factor which is, and will increasingly, constrain development in Yemen. It is well recognised that this is a resource that is being exploited at a much faster rate than natural replenishment, but actions to achieve control of the situation are slow to be implemented. The use of novel sources of water, such as treated effluent, is one of number of necessary immediate actions to provide short-term mitigation of the increasingly critical. Water shortage situation, and effluent reuse will be a small but essential component of the long-term solutions to sustainable water resources.

Sanitation and health have rightly been identified as crucial issues and, as a result water supply, sewerage systems and wastewater treatment facilities have been, or are now being, installed in many towns and cities in Yemen. This will control, or at least reduce, surface and groundwater contamination of water supplies for towns and downstream users of water.

Wastewater is a major vector in the transmission of disease and pollution, and the treatment and safe disposal (preferably by reuse) of the products of treatment are crucial for the protection of public health and the environment.

This study deal with assess the impact of treated wastewater use in agriculture irrigation in Amran area, Yemen. The overall objective of this study is to assess the impact of wastewater use on the soils and water resources. In addition, to analyze and evaluate the chemical and biological wastewater and soil samples in accordance with the local and international standards. Analysis of the effluent in the facultative pond shows that the faecal coliforms were present at >2,400 MPN/100 ml. Nematode ova were absent but pathogenic protozoa (Entamoeba and Giardia) were found in significant numbers. This study revealed that treated wastewater in the study area contains moderately saline (2.4 dS/m), high sodium bicarbonate, and have high contents of nitrogen and phosphate. The soils analytical data indicate the soils are highly saline (SAR>15). This may refer to the over quantity of wastewater use for irrigation, which exceed of the irrigation requirements between 40-100% and the wastewater treatment plant is only primary treatment. The quality of the effluent is important, not only for compliance with the regulations to protect farmers irrigating with effluent and consumers of the crops, but also to protect local inhabitants and other users of the wadi from incidental contact.

Zeinelabidin E. Rizk

Dean, Institute of Environment, Water and Energy
Ajman University of Science and Technology

Prof. Zeinelabidin E. Rizk, Dean of the Institute of Environment, Water and Energy (IEWE) at Ajman University of Science and Technology (AUST) in the United Arab Emirates (UAE), obtained his B. Sc. and M. Sc. in Geology and Hydrogeology from Egypt. He obtained a second M. Sc. in Geology and Geophysics from the University of Minnesota in the United States (USA) and his Ph. D. in hydrogeology from South Dakota School of Mines and Technology in the USA. Prof. Rizk in working for the Menoufiya University in Egypt since 1977 till now, and worked for the UAE University in Al Ain during the period 1993-1999.

Prof. Rizk thought undergraduate and graduate courses in hydrogeology, hydrogeochemistry, water resources and environmental sciences, and maintained active research and consulting activities, with particular emphasis on desert hydrogeology, numerical modeling, water quality and contaminant transport, isotope hydrology and water resources evaluation and management.

He attended training workshops, short courses and seminars on water-related topics in the Switzerland, Ireland, Jordan, Oman, Syria, US, France, Germany and USA, and conducted joint research projects with the International Atomic Energy Agency (IAEA) in Switzerland, Technical University of Berlin in Germany and Chiba University in Japan. Prof Rizk supervised many Master and Ph. D. theses on water and environment issues in Egypt and UAE. He co-authored 2 books and published over 50 scientific papers in local, regional and international Journals. Prof. Rizk initiated the M. Sc. Program in Water Resources offered by the UAE University, and founded the M. Sc. in Groundwater Engineering and Management currently offered by the IEWE at AUST. The IEWE at AUST also hosts the UNESCO Chair on Water Resources Management in the Arabian Gulf Region.

Abstract:

Hydrogelogic Map of Ajman

Zeinelabidin E. Rizk
Dean, Institute of Environment, Water and Energy, Ajman University of Science and Technology, Ajman, United Arab Emirates

Khalid Alhosani
Executive director, Public Health and Environment Sector, Ajman Municipality and Planning Department, Ajman, United Arab Emirates

Ajman is the smallest of the United Arab Emirates with a total land area of 259 km^2 and 372,923 inhabitants in 2013. The Emirate is composed of three distinct land areas: Ajman metropolitan city overlooking the Arabian Gulf coast, Manama agricultural area is located approximately 60 km to the east and Masfut agricultural area lying in the Northern Oman Mountains 110 km to the southeast of Ajman city. The Emirate of Ajman, particularly Ajman city, witnessed remarkable development during the last decade, imposing tremendous stress on water resources.

The hydrogeological map of Ajman is intended to provide valuable information on water resources for planning and management as well as for education and public information. The map illustrates areal distribution of aquifers, hydraulic heads, groundwater recharge and discharge and groundwater flow directions. Hydrogeologic map also reveals the variation in groundwater chemistry, quality and exploitation rates. Additionally, hydrogeological maps includes data on topography, geology and prevailing climatic conditions.

Geomorphology of the Ajman Emirates is mountainous in Masfut, plain in Manama and coastal in Ajman. Rock lithology varies from Permian to Upper Cretaceous fractured Hawasina Complex and Semail Ophiolites in Masfut, Quaternary eolian sand in Manama and Quaternary sand dunes in Ajman city. These rocks and sediments form unconfined aquifers, varying in nature, water chemistry and water quality. The groundwater is fresh in Masfut (TDS <1,000 mg/L), fresh to brackish in Manama (TDS 1,000 mg/L to 10,000 mg/L) and brackish to saline in Ajman (TDS 10,000 mg/L to 35,000 mg/L).

The mean annual rainfall varies from 100 mm in Ajman, to 120 mm in Manama to 160 mm in Masfut, while the mean annual potential evapotranspiration changes from 2,390 mm in Ajman, to 2,442 in Manama to 2,441 in Masfut.

The potentiometric surface maps of the aquifers within the study area indicate groundwater flow from the Northern Oman Mountains in the east towards the Arabian Gulf in the west. Local variations in the flow regime are related to lithological changes or water utilization patterns. The Quaternary sand dunes aquifer within Ajman city is receiving 12,542 m3 of recharge water from the east per day.

The agricultural sector in Manama and Masfut is the main consumer of groundwater. Ajman has 691 farms covering 2,104 hectare (21.04 km^2) and receiving irrigation water from well tapping the Ophiolite and eolian sand aquifer.

Despite the time limitation on the validity of hydrogeological maps, their continuous update can provide important water resources planning and management tool. \

Mazen Salman

Assistant Prof.Phytopathology, Director, Technical and Applied Research Center
Palestine Technical University-Kadoorie

Dr. Mazen Salman is a research scientist in the field of Phytopathology. Currently employed as an Assistant Professor/Phytopathology at Palestine Technical University-Kadoorie. In 2012 hired as the director of Technical and Applied Research Center (TARC). Worked on biological control of plant pathogens since 1997. The main research interests include but not limited to plant biotechnology, pathology, molecular plant microbe interaction integrated pest management (IPM) and bioremediation. using fungi as bioremediation agents to remove chemical pesticides from polluted soil and water.

After receiving the PhD from Hohenheim University, Stuttgart (DAAD scholarship holder 2003-2007), I worked at the Department of Biotechnology and Biological Control, Institute for Phytopathology, Christian Albrecht University of Kiel, Germany. The main field of work was the use of biocontrol agents to control plant disease.

In 2012, I was nominated by the university as a member of the Higher Council for Innovation and Excellence which was issued by President Mahmoud Abbas. Other administrative duties include membership of Scientific Deans council at Palestinian universities, Secretary of Scientific council at

Palestine Technical University and Editorial board of Palestine Technical University Research Journal.

Abstract:

Detoxification of olive mill waste water using the white rot fungus Phanerochaete chrysosporium

The manufacturing process of olive oil yields a black liquid waste called 'olive mill wastewater' (OMWW) creating a major environmental problem in many olive producing countries including Palestine. OMWW is toxic to plants and soil micro flora and can affect the soil quality. Current processes such as evaporation ponds or lagoons have not been efficient in decreasing the high toxicity of OMWW due to economic and technical reasons. Biological remediation might be a promising alternative to these processes. Effective bioremediation resulting in significant reduction of phenolic compounds, allows safe and economical disposal of OMWW onto land or into surface waters. As another benefit, bioremediation may produce valuable products including an excellent fertilizer.

In Palestine, Olive production is considered the backbone of Palestinian agriculture. In 2011, about 93,565.7 tons of olive were pressed in 300 olive presses with an extraction rate of 22.2% producing about

200 thousand cubic meter OMWW (Zibar). The majority of Zibar (44.5%) is disposed in Tight Cesspit. In addition to that, OMWW is discharged into surface waters and spread to land which affects soil's physical and chemical properties. Considering water scarcity in Palestine, treatment of OMWW will make extra water source that might be used in agricultural practices (i.e. irrigation and fertilization). The aim of this work is to investigate the ability of the white rot fungus Phanerochaete chrysosporium in reducing phenolic compounds in OMWW.

Fresh OMWW was collected directly from Presses and stored at the laboratory in dark bottles until use. Ph. chrysosporium was isolated from heavily polluted soil in Palestine. Fungal isolates were maintained on potato dextrose agar (PDA) at 4°C. To study the effect of the fungus on phenol removal, 125 ml Erlenmeyer flasks containing 25 ml of OMWW were inoculated with 7 mm diameter PDA disks grown with

7 days old Ph. chrysosporium. The flasks were placed on a rotary shaker at 150 rpm for two weeks at

room temperature. The effect of OMWW on fungal growth was measured by filtering the media on pre-weight Whattman #1 filter paper. Mycelial dry weight was then recorded after drying the filter papers at

65°C for 24 h. After that total phenols concentration was determined spectrophotometricaly using UV VIS spectrophotometer at 460 nm wave length.

Results of this work showed that OMWW did not affect the growth of the fungus... According to the results of this work, Ph. chrysosporium was able to grow in OMWW and reduced phenolic contents of OMWW under in vitro conditions without the addition of nutrients. Interestingly, germination of barley seeds in treated OMWW was similar to that in seeds germinated in control (fresh water). Further experiments must be conducted to scale up a reactor system for mas removal of phenolic compounds from OMWW. Additional research should also be done in order to transfer this technology in industrial conditions.

Riyaz A. Syed

Environmental Engineering Specialist (Reg Compliance & Permits)
RasGas Company Limited, Doha, Qatar

Mr. Syed has twenty (20) years of a broad set of Environmental, Health and Safety (EHS) experience in United States and Middle-east. His work primarily includes EHS regulatory compliance audits, Environmental Impact Assessment (EIA), EHS management systems, waste and wastewater management, soil and groundwater investigation, spill prevention control and countermeasures plan, and indoor air quality assessment.

Currently, Mr. Syed works for RasGas in Environmental Affairs Department, where he is mainly involved with regulatory compliance and environmental permitting for operations and expansion/ new projects. He is also involved with maintaining environmental management system, strategy development and advocacy programs. Mr. Syed also provides technical support to operations and projects in the areas of waste & wastewater issues. Mr. Syed began his career in Metropolitan Water Reclamation District of Greater Chicago as an analyst in R&D Department and worked for almost 5 years. He then moved his career into consulting and worked as project manager for 12 years at two consulting firms including URS Corporation.

Mr. Syed holds a Master's degree in Environmental Engineering from Illinois Institute of Technology, Chicago, and is a Certified Industrial Hygienist (CIH) with American Board of Industrial Hygiene, and Certified Safety Professional (CSP) with Board of Certified Safety Professionals, and he is also a Certified Hazardous Materials Manager (CHMM).

Abstract:

Wastewater Re-use Initiatives in Qatar's Natural Gas Processing Plants

Emerging water regulations and fresh water scarcity are driving the natural gas processing industries in Qatar towards reuse of wastewater and implementing Zero Liquid Discharge (ZLD) systems. ZLD implies that all wastewater produced in the plant is contained within the plant fence and treated industrial and process water (TIPW) is not discharged into the environment.

This paper presents an evaluation of technologies, their potential effectiveness and challenges in achieving ZLD. Pre-treatment facilities for TIPW re-use generally consist of neutralisation and filtration packages, Hydrogen Sulfide stripping towers, Dissolved Air Floatation (DAF) and Membrane Bioreactor (MBR) units. A combination of technologies such as Brine Concentrators, Ultrafiltration (UF), Reverse Osmosis (RO), evaporation-crystallization unit, and other emerging technologies, are considered as viable solutions for ZLD.

The RO reject brine will be sent to evaporation-crystallization unit to recover remaining water and precipitate the dissolved solids as salts. The mixed salts from the crystallizer-centrifuge will have 85-90% solids composed mainly of sodium salt. Deep well injections, evaporation ponds (and landfill disposal options) and discharge to the marine environment (with proper mixing) are the only feasible options for disposal of concentrated salts. A combination of re-concentration techniques and a comprehensive utilisation of concentrated salts would be one of the most effective ways to fulfill ZLD.

Mohamed A. Dawoud

Advisor, Water Resources
Environment Agency – Abu Dhabi

Dr. Dawoud is water resources advisor with the Environment Agency - ABU DHABI, UAE. He has graduated in civil engineering with honor degree and got his Master and Ph.D. from Ain Shams University through joint program with Colorado State University, USA.

Since 1991, he has maintained an active program of research and consulting activities, with particular emphasis on groundwater, artificial recharge, Reuse of TSE, desalination, and water resources management. He attended many training course in USA, Netherlands, Sweden, Spain, and France. He worked as a consultant for World Bank, UNESCO, ESCWA and USAID. His current research includes water supply and demand, solar desalination, groundwater management, aquifer storage and recovery, and Reuse of TSE in many countries such as Egypt, Nigeria, Kenya, Mali, Oman, KSA, and UAE.

He is an editor in three international journals and reviewer for other 7. He has 5 published books and more than 75 published research papers in international peer-reviewed journals, and international conferences. He got the 2009 Abu Dhabi Excellence Award and 2011 HH Sheikh Sultan bin Zayed Al Nahyan Award. In 2011 he was awarded by the National Academies-USA as one of best four young Arab water scientists.

Abstract:

Abu Dhabi Environment Agency-Water Resources

Fresh water supply in arid regions becomes an increasingly important issue. Desalination of brackish and saline groundwater could play an important role in water supply for areas that are remote from both seawater and freshwater resources. The main challenge is saving the required power to operate the desalination plants in areas where there is no power grid. Using sustainable and renewable energy source such as solar for operating a groundwater desalination system include a high recovery ratio, and high water output per unit of energy and land could be a solution. A pilot solar powered reverse osmosis (RO) has been designed, constructed and operated in Abu Dhabi in 2010 to assess the feasibility of using solar energy o desalinate the brackish and saline groundwater in remote areas. Using solar power can help to overcome a series of desalination related problems, the most significant of which are those related to energy consumption and environmental pollution caused by the use of fossil fuels.

The aim of this study is to demonstrate the feasibility of using of photovoltaic solar energy for powering RO system for the desalination of brackish and saline groundwater abstracted from the shallow aquifer system located in the western region of Abu Dhabi Emirate, with salinity ranges between 5,000 to 20,000 ppm. The design capacity of the system is 5 m3/hr with photovoltaic solar system of 45 kW hours. To minimize the cost, the system was operated during day time only to avoid using batteries for electricity storage.

The produced fresh water stored in ground elevated tank to be used for 24 hrs. Also, a mathematical model was developed to calculate the required brackish groundwater and design of an RO system powered by photovoltaic energy (RO size and the number and configuration of the solar cells panels). The model was used as a tool for the design, optimization and costs.

Ahmad Homssi

Environmental Manager
Qatar Chemical Company Ltd. (Q-Chem), Qatar

Homssi has bachelor degree of Environmental Engineering from the Middle East Technical University, with over 12-years working experience with Q-Chem and over 20 years of total experience in the gas and petrochemical industry.

Mr. Homssi is certified on:

- ISO 9001 & 14001 Lead Auditor,
- Responsible Care® Auditor,
- Air emissions dispersion modular,
- HAZMAT advanced technician,
- Marine Spill Responder,
- Administrator for API ambient air monitoring stations,
- Root Cause Analysis® Incidents Investigator, and
- Radiation Supervisor, and
- Search and Rescue Scuba Diving.

Mr. Homssi is a member of:

- Number of local and regional environmental organizations,
- Number of engineering chambers,
- Gulf Petrochemical and Chemical Association(GPCA) Responsible Care Steering Committee
- Qatar Environmental Technical Committee, and
- Ras Laffan Industrial City and Mesaieed Industrial City Environmental Committees.

Ahmad is responsible for planning, directing and managing all environmental aspects of Q-Chem, Q-Chem II and RLOC facilities in Qatar.

Abstract:

Chemical Company Towards Preserving the Environment

Qatar Chemical Company Limited (Q-Chem) is a joint venture petrochemical company between Qatar Petroleum 51% and Chevron Philips Chemicals 49% in Mesaieed Industrial City in Qatar. Started production in early 2002 with Ethylene cracking, Polyethylene and Hexene production, gas sweetening facilities, and associated utilities. In its journey since 202, Q-Chem had expanded from 1 to 5 companies with world largest Ethylene cracker, larger spectrum of products, operating from 2 industrial cities in Qatar and marketing field covering the 5 continents. In this journey, company's manpower increased by 3 folds with over 30 different nationalities, with increase in many challenges, like, but not limited to, product stewardship, environmental, process safety, personnel safety, quality assurance and control, and operational excellence management systems.

In this paper, Q-Chem share their experience with their environmental challenges and best practices adopted to overcome these challenges to ensure sustainable development in a responsible manner while resources are conserved and pollution continues to be prevented.

The programs, plans, procedures, corrective and preventive actions implemented by the company were rewarded every year in the past 7 years; including the GCC Environmental Award for "Best Establishment Meeting Regulatory Requirements". The company became ISO-9001, ISO-14001, RC-14001, ISO-17025 and is receiving many other awards in Safety, Qatarization, Training & Development and often used by local regulators as a role model.

Most importantly, these best practices adopted by company had led to major reductions in flaring, air emissions, water discharges, wastes generated and disposed, energy consumed per unit of product, and major increase in conservation of resources and awareness of manpower and community.

Company's individual process and non-process groups were successful in reducing wastes and demonstrating economic benefits while enhancing their efficiencies. Among many improvements, above are some examples of achievements that helped company reduce flaring, emissions, wastes and energy consumption, while increasing recycling reuse of resources; hence, increasing economic benefit and reliability.

Nazar Sayigh

BA(Hons) DipArch(UCL) RIBA

Nazar is a fully qualified architect and chartered member of the RIBA with over 18 years of professional experience. Prior to setting up Glas, he worked for a number of award-winning design firms including Circus, Buschow Henley Architects [now Henley Halebrown Rorrison], and Mary Thum Associates. More recently his firm has been responsible for some of South London's most distinctive and successful mixed-use housing developments, including 1 Druid Street and 134-144 Southwark Bridge Road. The practice undertake a wide range of design led projects from small commercial fit out schemes through to large scale master planning exercises; and have developed expertise across the range of RIBA work stages from inception through to delivery.

Nazar is a recent member of Southwark Council's highly acclaimed Design Review Panel, a steering committee member of The World Renewable Energy Congress, an RIBA competition assessor and has been an invited guest critic at the Bartlett School of Architecture,

East London University School of Architecture, London Met School of

Architecture and Southampton University.

Nazar has also given seminars for WREC, and presented papers at several WREC related conferences as well as lectures at Reading University. His firm has been featured in numerous periodicals and articles, and was included in the Architecture Foundations publication New Architects 2

Abstract:

Low Energy Approaches to Urban Schemes in London - Case Studies

A number of London [UK] projects undertaken by Glas Architects, set out as individual case studies each focusing on a single key feature to illustrate the flexible approach to sustainable building design undertaken by the practice.

A selection of scheme type and size chosen to highlight that sustainability can be a key consideration on a diverse range of building typologies; from large mixed use developments down to small scale one off residential dwellings.

Case studies 1 & 2 concern two large scale mixed use developments – 133- 134 Webber Street, Southwark & Stead Street Early Housing at Elephant and Castle, Southwark; focusing on site analysis, space planning and orientation.

Case study 3 concerns a medium scale educational project – a multi-purpose hall at Tower House School, Richmond; focusing on renewable / sustainable / recyclable materials and passive ventilation.

Case studies 4 & 5 concern two small scale residential dwellings – Black Diamond House, New Islington, Manchester and The Light Works, Brixton; focusing on low cost / low tech eco materials, use of structurally insulated plywood panels and re-use of existing redundant buildings and brown field sites.

Naomi Lee

Senior Consultant
Trinity Environmental Consultancy International, SPC

Ms. Lee is a Senior Consultant for Trinity Consultants Strategic Environmental Management business line focused on providing climate change strategy, greenhouse gas emissions inventory support, environmental management, sustainability, life cycle analysis and regulatory compliance assistance to clients. Ms. Lee provides greenhouse gas support to clients from multiple sectors including the oil and

gas industry. She has worked on projects developing emissions database systems and greenhouse gas (GHG) emission inventories. Her most recent projects include developing a GHG reporting manual for a renewable energy company, contributing to the development of a GHG Management Strategy for a large international oil and gas company, and conducting an audit of GHG emissions inventory for a distribution company.

Ms. Lee also provides EH&S management system (EH&SMS) support to clients from multiple sectors including construction products, cement industries and electric utility industries and is experienced with the ISO 14001, ISO 9001 and OSHAS 18001 standards.

For her master's thesis, Ms. Lee evaluated the use of alternative fueled vehicles in large organizations. Specifically, Ms. Lee examined the factors that impacted the organization's decision to implement a particular technology (i.e., compressed natural gas, biofuel or liquefied natural gas). Ms. Lee examined three large organizations (i.e., an airport, school district and university) and analyzed technical, educational, and political barriers that impacted the implementation of alternative fuels. Ms. Lee earned her B.S. degree in Environmental Economics and Policy from the University of California, Berkeley and an M.E.M. degree in Environmental Economics and Policy with a focus in Business and the Environment

with a certificate in Energy from Duke University.

Abstract:

Evaluation of the Infrastructure for Compressed Natural Gas for Alternative Fueled Vehicles: Barriers and Challenges

Hung-ming (Sue) Sung
Director – EHS Technology, Trinity Environmental Consultancy International, SPC

Naomi Lee
Senior Consultant, Trinity Environmental Consultancy International, SPC

Alternative fueled vehicles – those powered by such fuels as compressed natural gas (CNG), liquefied natural gas (LNG), ethanol, and biodiesel -- represent a complex and growing sector in the global transportation industry. The development of alternative fueled vehicles is attributable to many factors. Government policies or incentives, tougher regulations and restrictions, or public concern related to better air quality standards are some of the many reasons that lead to the development and formulation of the industry. Most importantly, however, the adoption and management of alternative fueled vehicles rely heavily on the available infrastructure (i.e., accessibility to the alternative fuel as well as access and costs of the motor vehicle technology).

Natural gas fueled vehicles (CNG/LNG) are a mature and proven technology that may be more economically attractive than advanced gasoline or diesel technologies. Based on a study comparing costs of alternative fueled vehicles, natural gas vehicles fared favorably. Initial costs are higher, but over time the use of the natural gas fuel is economically and better. Transit buses and vans have the strongest market drivers for adopting natural gas because of their market enabling features of short range and return- to-base duty cycles. Furthermore, the abundance of natural gas in the region make it an attractive transportation fuel option.

Depending on the fuel storage capacity, CNG and LNG vehicles provide comparable performance levels to existing diesel-powered vehicles with the added benefit of low particulate emissions. Some aftermarket vehicles may also be converted to run natural gas using an aftermarket conversion kit, complete with fuel tank, fuel lines, a pressure regulator, and a mixer or carburetor. Vehicles that have been converted can sometimes run on either an alternative fuel or a conventional fuel.

The potential equipment cost to replace any existing fleet is estimated at 33% higher than current MSRP per vehicle. For the infrastructure, it is estimated to cost $675,000-$1,000,000 to build the CNG infrastructure (cost per fueling station). The most prominent technical problems associated with LNG and CNG are a reduction in power as well as the undeveloped refueling infrastructure. CNG vehicles have a range 70% to 80% less than that of a gasoline vehicle significantly limiting the travel ability of these alternative fuel technologies.

Successful implementation of alternative fueled vehicles often includes government involvement, increased education and awareness; and financial and technical support. This paper examines the implementation of CNG and LNG alternative fueled vehicles in various communities and organizations to better understand barriers and challenges associated with compressed natural gas, compresses natural gas vehicles, and the necessary infrastructure required to make the technology switch.

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