

2ND INTERNATIONAL CONFERENCE ON

GLOBAL WARMING : SUSTAINABLE CITIES

MAY 5 - 7, 2013



CONFERENCE TOPICS :

POLICIES AND ACTION PLAN

NATURAL RESOURCES & WATER

SUSTAINABILITY AND ENERGY

CLIMATE CHANGE AND OCEANS

SUSTAINABLE CITIES AND ENVIRONMENTAL MANAGEMENT PLAN





CONFERENCE PROCEEDINGS

2ND INTERNATIONAL CONFERENCE

GLOBAL WARMING SUSTAINABLE CITIES

MAY 5-7, 2013

Environment Protection & Development Authority (EPDA)
Government of Ras Al Khaimah
United Arab Emirates



Scientific Committee

Dr. Saif Mohammad Al Ghais

UAE University - EPDA, UAE

Dr. Bradley Smith

University of Maryland, USA

Dr. Meyya Meyyappan

NASA, USA

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EPDA, UAE

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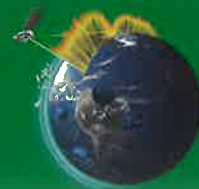
Mr. Abdullah Mohammad Al Shehhi

Mrs. Salma Al Keebali

Mr. Haitham Ahmed Al Shehhi

Ms. Taghreed Al Tenaiji

Mr. Raed Mesmar Al shehhi



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MESSAGE

It is a matter of immense pleasure that the Environment Protection and Development Authority, Ras Al Khaimah is organizing the 2nd International Conference on “Global Warming: Sustainable Cities” during May 5 - 7, 2013 at Ras Al Khaimah.

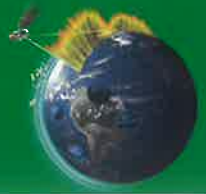


Global warming threatens the basic elements of life for people around the world, access to water, food production, health, and use of land and the environment. Environmentally sustainable economic development rewards beneficial and sustainable socio-economic activities and achievements. To approach this goal in Ras Al Khaimah and the United Arab Emirates we encourage and support the use of technological, educational, social and policy options for keeping the momentum of economic development without compromising with impacts on environment and security.

I hope this conference will provide a forum for regional and overseas scholars and experts to discuss and share their knowledge on the environmental and socio-economic issues of Global warming on sustainable cities and the latest advancements towards finding their solutions needed for the continued existence of our present as well as future generations.

I welcome all the delegates and other participants to this conference and extend my greetings and good wishes for the success of the conference.

H. H Sheikh Saud Bin Saqr Al Qasimi
Member of Supreme Council of UAE, Ruler of Ras Al Khaimah



CHAIRMAN'S MESSAGE

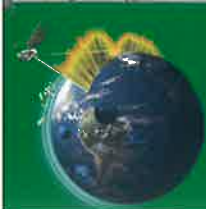
It is an enormous pleasure for us to organize the 2nd International Conference on "Global Warming: Sustainable Cities" under the patronage of His Highness Sheikh Saud Bin Saqr Al Qasimi, Supreme Council Member and Ruler of Ras Al Khaimah, in Ras Al Khaimah, United Arab Emirates, during May 5-7, 2013.



The effects of global warming is an increase in global temperature and includes a rise in sea levels and a change in the amount and pattern of precipitation, as well as a probable expansion of deserts. Warming of the climate system is unequivocal, and scientists are certain that it is primarily caused by increasing concentrations of greenhouse gases produced by human activities such as the burning of fossil fuels and deforestation. These effects significant to humans include the threat to food security from decreasing crop yields and the loss of habitat from inundation. So I look forward to this conference which will present an opportunity to discuss and contribute to their information on the issues of Global warming on sustainable cities.

I am greeting all the delegates and other participants of this conference and express my good wishes for the success of the conference.

H. H Sheikh Mohammed Bin Saud Bin Saqr Al Qasimi
Crown Prince of Ras Al Khaimah and Chairman of EPDA



WELCOME MESSAGE

It is a great pleasure and privilege for us to host the 2nd International Conference on "Global Warming: Sustainable Cities" under the patronage of His Highness Sheikh Saud Bin Saqr Al Qasimi, Supreme Council Member of UAE and Ruler of Ras Al Khaimah, in Ras Al Khaimah, United Arab Emirates, during May 5-7, 2013.



Global warming has been largely considered to be a "Creeping" problem. Global warming is the increase in the average temperature of the Earth's near-surface air and oceans and its projected continuation. The accumulation of greenhouse gases (especially carbon dioxide) in the atmosphere is the primary cause of global warming. Atmospheric carbon dioxide has increased by about 35% since the beginning of the industrial age. Sustainability is a way to make our cities and communities more livable by balancing economic, social and environmental needs. At the core of sustainability, is science and technology. Science & technology are the catalyst for change in the growth of cities and urban areas around the world and influences construction, transportation, health and living spaces. Advances in social sciences are having an impact on social development, city management, planning, and economic development.

The scientific program of the conference has been planned with an endeavor to bring together regional and international experts and scholars to address the forefront environmental and socio-economic issues associated with the global warming and their solutions.

I take this opportunity to express my gratitude to His Highness for His Patronage and support.

I, on behalf of the EPDA-RAK, welcome the distinguished guests and esteemed delegates wish to extend gratefulness to them for making this conference successful and enriched by their thought of deliberations.

In the last but not the least I must thankfully acknowledge the persistent effort, assistance and support of my office staff and colleagues in organizing this conference.

Dr. Saif M. Al Ghais
Executive Director
EPDA-RAK



MESSAGE

Some 200 kilometres from Ra's Al Khaimah, in the United Arab Emirates, an ambitious project is taking shape: a future zero-carbon, green city is being built in the middle of the desert. Masdar City aims to showcase clean energy, resource efficiency and clever urban design - in other words, what it takes to be a sustainable city of the future.



Certainly, it will take many more Masdars to move us towards a greener, cleaner and, inevitably, more urbanized future, here in the Gulf Region and around the world.

As we all know, we now live on an urban planet – more than half of us are city dwellers. This proportion will keep increasing and is expected to reach 70% by 2050. While they cover just 2% of the Earth's land surface, cities already consume over three quarters of the world's resources, many of which become more and more scarce.

In short, cities can no longer grow the way they used to, and must now adapt to new pressures, which will intensify with climate change. Furthermore, as hubs of innovation, economic activity and social melting pots, cities can lead the way in testing new approaches to make our increasingly urban planet more resilient.

This is why the 2nd International Conference on "Global Warming: Sustainable Cities" is extremely timely, and I would like to congratulate the Environment Protection and Development Authority of Ra's Al Khaimah and in particular His Highness, Sheikh Saud Bin Saqr Al Qasimi, Supreme Council Member and Ruler of Ra's Al Khaimah on this important initiative not only for the region but for other parts of the world.

West Asia can lead the way in finding solutions for future sustainable cities - not least because it is already on the frontline of major environmental challenges such as climate change, water scarcity, desertification, air and water pollution, loss of biodiversity, and the list goes on. What is more, West Asia is expected to get even hotter and drier in the future. Scientists say that by mid-century, the region's temperature will increase between 2 and 3.7 degrees Celsius, bringing with it more droughts and floods, sand and dust storms, and rising sea levels.

According to the Arab Forum for Environment and Development and Boston University Centre for Remote Sensing, one meter sea level rise will impact 41,500 sq km of the coast in the Arab region. Among the most affected are several Gulf States including the UAE. It has also been estimated that around 75% of buildings and infrastructure in the Arab region are at direct risk of climate change.

Climate change will negatively impact the region's tourism industry, increase food prices, limit fish catches and more generally impede economic growth and human development in the region. Clearly, cities need to start preparing today to climate-proof themselves for tomorrow. With 84% of its population being urban, the UAE clearly understands the climate challenge for cities and has started to address it. In addition to its pioneering work on renewable energy, it is working on energy efficiency, smart transport solutions and green building design.

Ra's Al-Khaimah's collaboration with the Centre Suisse d'Electronique et Microtechnique (CSEM), a private research facility, to test new technologies such as solar-powered desalination, is another great example of innovation for sustainability.

At the same time, as we continue to explore new technologies to bring about sustainability, we should not overlook other options that are available to us and which have been doing the job - often for free - for millennia.

I am talking about nature, or what we at IUCN call 'nature-based solutions'. Natural infrastructure — ecosystems such as forests, wetlands and coral reefs that provide a steady flow of benefits such as clean air and water, flood and drought protection, and climate regulation — has a key role to play in addressing the three major challenges for urban resilience: water, energy and food security.

Investing in nature can help cities to enhance quality of life, save money, strengthen local economy and reduce the impacts of climate change. For example, one in three of the world's largest cities draws a significant proportion of its drinking water from forest protected areas. Green rooftops can help mitigate the urban heat island effect and reduce the need for air conditioning, while saving energy and money.

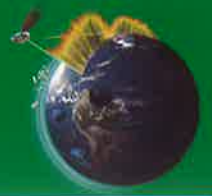
Already, more than 20 cities, including Nagoya, Curitiba, Cape Town and Bonn, are leading the effort to develop urban biodiversity management programmes, recognizing nature's importance for the wellbeing of their citizens.

I hope that this Conference will recognise that healthy nature can be a major asset for urban development, and that it can make an important contribution towards achieving a truly sustainable future for our cities and for the billions of people who call them home.

I also hope that our gracious host, the emirate of Ra's Al-Khaimah will also consider taking the nature-based solutions approach on board, something that IUCN will be delighted to assist with.

Once again, allow me to express IUCN's appreciation for His Highness's and Ra's Al Khaimah's leadership in organising this Conference and I look forward to fruitful discussions.

Ms. Julia Marton-Lefèvre
IUCN Director-General



ENVIRONMENT PROTECTION AND DEVELOPMENT AUTHORITY (EPDA)

Ras Al Khaimah's Environment Protection and Development Authority (EPDA) was formerly known as the Environment Protection and Industrial Development Commission (EPIDC), originally established in 1999. In March 2007, EPIDC was restructured and renamed through Local Emiri Law No (2) of 2007.

EPDA is Ras Al Khaimah's nominated body (Competent Authority) responsible for implementing Federal Law No. 24 of 1999 for the Protection and Development of the Environment in collaboration with the UAE's Federal Environment Agency, Ministry of Environment and Water and other concerned parties and stakeholders at international, federal and local level.

EPDA main objectives are:

1. Protect and develop the environment of Ras Al Khaimah, from the negative impacts of activities that may cause damages to human health, agricultural crops, wildlife, marine life, other natural resources and climate by implementing necessary policies, plans and actions.
2. Promote the sustainable development of the Emirate and propose the necessary regulations to link environmental concerns to the planning and development policy of the entire Emirate, by coordinating between the Authority and different private and governmental organizations.

Important responsibilities of EPDA are:

1. Conduct scientific studies and researches related to natural resources, pollution, human settlement, industrial and economic development.
2. Suggest and offer projects, technical solutions, recommendations and contingency plans to issues related to environment for all the sectors of the Emirate.
3. Prepare laws, rules, regulations, systems and procedures. As well as in force and execute federal and local environment rules.
4. Inspect and evaluate industrial, agriculture, economic developmental projects that have direct and indirect effect on the environment.
5. Establish a benchmark laboratory in the emirate for the purpose of scientific research & technologies.
6. Work in cooperation and coordination with official and non official organizations and institutions inside and outside the country.



Global Warming : Sustainable Cities

2nd International Conference, Ras Al Khaimah, United Arab Emirates, May 5-7, 2013

2nd International Conference Global Warming : Sustainable Cities May 5-7, 2013

Organized by: **Environment Protection & Development Authority, Ras Al Khaimah**

Venue : **Al Hamra Fort Hotel & Beach Resort, Ras Al Khaimah, U.A.E.**

Saturday 4th May , 2013

19:00 Welcome Reception and Get-together

Day 1, Sunday 5th May, 2013

8:00 – 10:45

Inaugural Session

08:00 - 09:30

Registration

09:30 - 09:35

Recitation from the Holy Quran

09:35 - 09:45

Local Cultural Performance

09:45 - 09:55

Welcome Speech

Dr. Saif M. Al Ghais Executive Director, EPDA

09:55 -10:15

Minister Speech

Dr. Rashid Ahmed Bin Fahad

Minister of Environment and Water, UAE

10:15 -10:30

Inaugural Address

Ms. Julia Marton Lefevre , Director General of IUCN

10:30 -10:45

Exhibition Opening

COFFEE BREAK

10:45- 11:00

Session I

11:00 -13:00

Policies and Action Plans

Chairman

Dr. Vigliotti Franco

EPFL Presidency & Dean of EPLF Middle East,
RAK-UAE

11:00 -11:30

Keynote Speaker: "Sustainability is Political Responsibility"

Prof. Faisal Al Mubarak, Al Faisal University (KSA)

11:30 -11:50

"Sustainability of Groundwater Resources in the UAE Through Governance"

Dr. Ahmed A. Murad, UAE University

11:50 -12:10

"Long-term Estimates of Temperature and Precipitation for Sustainable Planning in UAE"

Mr. Abubaker Elhakeem and Dr. Walid Elshorbagy

UAE University

12:10 -12:30

"Decentralized Gray water Harvesting and Reuse an Alternative Urban Water Resource for Mains Water Demand Management in Al Ain"

Dr. Rezaul Kabir Chowdhury, UAE University

12:30 -12:50

"Building Bridges with Businesses/Private Sector in Support to Sustainable Cities"

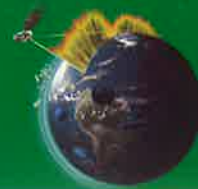
Mr. Saeed Shami, IUCN, West Asia

12:50 -13:00

Discussion

PRAYER & LUNCH BREAK

13:00 – 14:00



Session II
14:00 – 16:00

Natural Resources & Water

Chairman	Mr. Saeed Shami IUCN, West Asia
14:00 -14:20	" Global Climate Change Impacting Natural Water and Infectious, Diseases: Cholera a case study" Dr. Anwar Huq , University of Maryland, USA
14:20 -14:40	"Cities in the Arab World and the challenges of urbanization : an opportunity for innovation and sustainability" Dr. Vigliotti Franco , EPFL, RAK
14:40 -15:00	" Assessment of Water Resources Sustainability in Al Ain City" Dr. Mohamed Mustafa Mohamed , UAE University
15:00 -15:20	"Future of desalination industry in the Arabian Gulf given the long term environmental and ongoing anthropogenic impacts" Mr. Abubaker Elhakeem and Dr. Walid Elshorbagy , UAE University
15:20 -15:40	" Climate Variation over a Middle Eastern Basin in Response to Atmospheric Circulation Patterns" Dr. Ramadan H.H. , Water Eng & Mgt, San Diego
15:40 -16:00	Discussion

PRAYER & COFFEE BREAK

16:00 – 16:30

End of 1st Day Program

Day 2, Monday 6th May, 2013

08:00 - 09:00 Registration

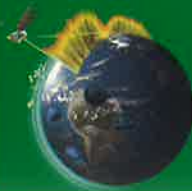
Session I
9:00 – 11:00

Sustainability and Energy

Chairman	Dr. Basheer Ali , Lucknow, India
09:00 - 09:30	Keynote Speaker: "Nanotechnology in Environmental Management" Prof. Meyya Meyyapan National Aeronautics and Space Administration NASA(USA)
09:30 -09:50	" An innovative Approach to knowledge – Managing Energy for Sustainable Cities" Dr. Anthony Ayoola , American University of RAK
09:50 -10:10	"Manufacturing "CLEAN" Energy (Lead Acid Accumulators)" Dr. James Mark Stevenson CEO Eternity Technologies, Al Jazira Al Hamra, UAE
10:10 -10:30	"Mangroves restoration-measure for global warming" Prof. K. Kathiresan Marine Sciences, Annamalai University, India
10:30 -10:50	"Using waste heat to generate power at Union Cement Company" Mr. Nasser Saffarini , UCC, RAK
10:50 -11:00	Discussion

COFFEE BREAK

11:00 – 11:30



Global Warming : Sustainable Cities

2nd International Conference, Ras Al Khaimah, United Arab Emirates, May 5-7, 2013

Session II 11:30 – 12:40

Climate Change and Oceans

Chairman	Dr. Walid Elshorbagy , Associate Professor, Civil and Environmental Engineering Department, Director of the Graduate Program of Water Resources, United Arab Emirates University
11:30 -11:50	Keynote Speaker: "The Development of Sustainability Action Plan for the state of Washington" Prof. Bradly F. Smith , Western Washington University (USA)
11:50 -12:10	" Understanding the Possible Impacts of CO2 Emission on Global Warming in the Gulf Cooperation Council (GCC) countries" Prof. Hasan Arman , UAE University
12:10 -12:30	"The Effects of Climate Change in the Frequency Phenomenon Fog in Southern Iraq for The Period 1941-2003 " Prof. Dr. Ali A. Alwaily , University of Baghdad, IRAQ
12:30 -12:40	Discussion

PRAYER & LUNCH BREAK 12:40 – 13:30

Session III 13:30 – 15:00

Poster Session

13:30 -15:00	Posters from UAE University
15:00	Sightseeing- Dubai

End of 2nd Day Program

Day 3, Tuesday 7th May, 2013

08:00 - 08:30	Registration
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Session I 8:30 – 11:30

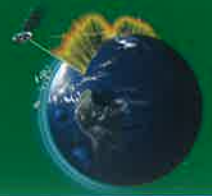
Sustainable Cities and Environmental Management Plan

Chairman	Prof. K. Kathiresan , Director Centre of Advanced Study in Marine Biology, Annamalai University, India
08:30 - 09:00	"Potential Native Plants for Urban Landscape in Gulf Counties" Dr. Ali El- Keblawy , University of Sharjah
09:00 - 09:20	"Sustainable Cities: More Mangroves" Dr. Larry D. Griffin , University of RAK
09:20 - 09:40	"Geospatial Technology Role for Sustainable Cities" Dr. Hussein Harahsheh , Global Scan Technologies, Dubai, UAE
09:40 -10:00	" Intelligent Infrastructure for Smart Cities" Mr. Hanno Hidmann , EBTIC, Khalifa University, UAE
10:00 -10:20	"Identification Project for Soil Types Which Causes Dust storms in Iraq by Using Remote Sensing & GIS Techniques" Eng. Oday B. Abdul Hameed , Ministry of Environment, Baghdad, Iraq
10:20 -10:30	Discussion

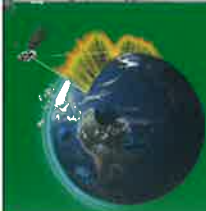
CLOSING SESSION 10:30 – 11:30

COFFEE BREAK 11: 30

End of 3rd Day Program



KEYNOTE SPEAKERS



KEYNOTE SPEAKER

Dr. Faisal Al Mubarak

King Faisal University Saudi Arabia - Al Faisal



Dr. Faisal Al Mubarak, provost of academic affairs and chief academic advisor, has a rich background in higher education, public policy, urban planning and architecture, as well as tourism, and has served on many national committees and as an advisor to national and international agencies in areas of his expertise.

He completed his Ph.D. in Urban Design and Planning at the University of Washington, Seattle (1992), his Masters degree in Urban and Regional Planning from the University of Southern California, Los Angeles (1986), and his Bachelor degree of Architecture from the College of Engineering, King Saud University (1981).

He has served on the faculty of King Saud University, (18 years), teaching urban design, urban policy and theory as well as urban history and became a full professor in 2005. As the president's advisor to Prince Sultan bin Salman al Saud at the Saudi Commission for Tourism and Antiquities, Dr. Faisal Al Mubarak headed the department for strategic planning and monitoring and was the executive director of the First International Conference on Urban Heritage in Islamic Countries, UHIC, (May 2010), one of the largest, most well attended international conferences hosted in the Kingdom to date.

Professor Al Mubarak has been an advisor to several national committees and ministries including the Ministry of Higher Education, the High Commission for the Development of Arriyadh (HCDA), and the National Environment Council. He has also served as a committee member on the board of the World Tourism Organization (representing the Middle East Region). His planning expertise was well utilized as the Deputy Mayor of Riyadh for Projects and Development, and as a Member of the HCDA Council, Chaired by HRH Prince Salman bin Abdul Aziz al Saud, Governor of the Riyadh Region.



He has published and authored numerous articles and reports, in academia as well as media, and has authored a book on policy and urban strategic planning and infrastructural development in the Kingdom of Saudi Arabia, and he has also translated into Arabic a text book on urban theory. Dr. Al Mubarak has authored and participated in the preparation of executive advisory reports to Provincial Governors, Ministers and other leading officials in government agencies including, the Shura Council, municipal administrations and served on high level national and international task forces of strategic and technical importance. Professor Al Mubarak has given speeches and lectures in many public and private symposia and conferences on issues of urban development, higher education, and socio-cultural development issues in the Kingdom of Saudi Arabia and abroad.

KEYNOTE SPEAKER

Dr. Bradley F. Smith

Western Washington University, USA

Dr. Bradley F. Smith was named Dean of Huxley College of the Environment at Western Washington University in September of 1994. Prior to his appointment, Dr. Smith had served as the first Director of the Office of Environmental Education for the U.S. Environmental Protection Agency. He also served as a Special Assistant to the administrator of the EPA and as Acting Associate Administrator for the EPA. Dr. Smith was appointed to the U.S. Senior Executive Service in 1992. He received his Ph.D. from the University of Michigan School of Natural Resources and the Environment. His BA and MA are in economics and political science.



From 1975 to 1990, Dr. Smith was a professor of political science and biology, and concurrently was executive director of Michigan's Tobico Marsh National Refuge from 1982 to 1990. During this time, he also served as adjunct faculty at the Air Force Institute of Technology and the University of Michigan's School of Natural Resources and Environment. Dr. Smith has been a Fulbright Scholar to England a NATO Fellow and is a Fellow of the Royal Institute of Environmental Science in the UK. He holds adjunct faculty positions in Russia, China, Holland, England and Japan.

In 2007 he was appointed by the EPA Administrator to the National Advisory Council for Environmental Policy and Technology (NACEPT) which advises the USEPA on domestic and international environmental policy issues. In 2009 he was appointed by the Governor to the Washington State Fish and Wildlife Commission.

Currently he serves on the steering committee of the Commission on Education and Communication for the IUCN and as a Trustee of the National Environmental Education and Training Foundation. He is the past President of the U.S. Council of Environmental Deans and Directors and the past chair of the Washington State Sustainability Commission. He has served as an environmental advisor to many corporations and as an external evaluator for the U.S. Department of Energy.

Formerly Dr. Smith served as an appointed member of President Clinton's Council for Sustainable Development (Education Task Force). His most recent publications include co-author of Environmental Science: A Study of Interrelationships, 12th edition 2009, and Environmental Science Field Guide and Laboratory Manual, 12th edition 2009. McGraw-Hill.



KEYNOTE SPEAKER

Dr. Meyya Meyyappan

Chief Scientist, NASA Ames Research Center, Moffett Field, California, USA

Email: m.meyyapaan@nasa.gov

Meyya Meyyappan is Chief Scientist for Exploration Technology at NASA Ames Research Center in Moffett Field, CA. Until June 2006, he served as the Director of the Center for Nanotechnology at NASA Ames. He is a founding member of the Interagency Working Group on Nanotechnology (IWGN) established by the Office of Science and Technology Policy (OSTP). The IWGN is responsible for putting together the National Nanotechnology Initiative.



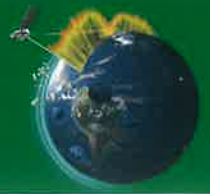
Dr. Meyyappan has authored or co-authored over 200 articles in peer-reviewed journals and made over 200 Invited/Keynote/Plenary Talks in nanotechnology subjects across the world. His research interests include carbon nanotubes and various inorganic nanowires, their growth and characterization, and application development in chemical and biosensors, instrumentation, electronics and optoelectronics.

Dr. Meyyappan is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), the Electrochemical Society (ECS), AVS, the Materials Research Society (MRS), the Institute of Physics, American Institute of Chemical Engineers (AIChE), and the California Council of Science and Technology. In addition, he is a member of the American Society of Mechanical Engineers (ASME). He is currently the IEEE Nanotechnology Council (NTC) Distinguished Lecturer on Nanotechnology, IEEE Electron Devices Society (EDS) Distinguished Lecturer, and was ASME's Distinguished Lecturer on Nanotechnology (2004-2006). He served as the President of the IEEE's Nanotechnology Council in 2006-2007. He currently serves as the VP for Education of the IEEE EDS.

For his contributions and leadership in nanotechnology, he has received numerous awards including: a Presidential Meritorious Award; NASA's Outstanding Leadership Medal; Arthur Flemming Award given by the Arthur Flemming Foundation and the George Washington University; IEEE Judith Resnick Award; IEEE-USA Harry Diamond Award; AIChE Nanoscale Science and Engineering Forum Award. For his sustained contributions to nanotechnology, he was inducted into the Silicon Valley Engineering Council Hall of Fame in February 2009. For his educational contributions, he has received: Outstanding Recognition Award from the NASA Office of Education; the Engineer of the Year Award (2004) by the San Francisco Section of the American Institute of Aeronautics and Astronautics (AIAA); IEEE-EDS Education Award; IEEE-EAB (Educational Activities Board) Meritorious Achievement Award in Continuing Education.



ABSTRACTS

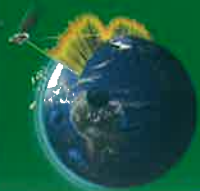


Dr. Bradley smith

Professor,
Western Washington University, USA

ABSTRACT

The former Governor of the State of Washington (who is now the U.S. Ambassador to China) established the Governor's Sustainable Washington Advisory Panel. I co-chaired that panel of twenty members. Members included notable Washington companies such as Boeing, Microsoft and Starbucks. Over a two year period the panel came up with eight essential strategic sustainability outcomes for the year 2030. The panel also set forth eleven priority action recommendations for immediate implementation. I will discuss both the strategic outcomes, goals and priority action recommendations for a sustainable Washington during my presentation.



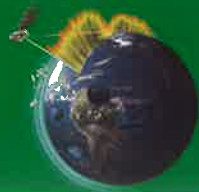
Sustainability is a Political Responsibility

Faisal al Mubarak

Professor of Urban & Strategic Planning
Provost, Al Faisal University

ABSTRACT

Sustainability presupposes large scale social responsibility, political commitment and sound, purposeful planning. Alas, in Saudi Arabia, in particular and in most GCC countries, urban planning has lost its direction, mainly due to rapid urbanization, shortsighted national economic development and private sector greed. Centralized national urban planning and development has eclipsed popular decision making at both the local and regional level, thereby depriving city residents from any meaningful contribution to the development of their own built environments. Nationals, especially in the GCC countries, have understandably grown accustomed to expect more from their respective “rentier” states, including subsidized utilities and food stuff, free, as well as larger parcels of land, while ignoring the concomitant environmental as well as unsustainable consequences of this artificial economy. In my talk, I would like to review the historical developments that have resulted in the contemporary unsustainable built forms in the Kingdom of Saudi Arabia, while highlighting salient attributes of national urban development and recommend a way forward.



Nanotechnology in Environmental Management

M. Meyyappan

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ABSTRACT

Nanotechnology deals with creation of materials, devices and systems by manipulating matter at the nanoscale and exploiting novel properties arising from nanoscale. Nanotechnology is considered to be the technology of the 21st Century. Advances in this field are expected to have an impact on environmental management, clean and renewable energy sources, transportation and other areas critical to sustainable living. This talk will provide an overview of these developments in the context of this conference theme.



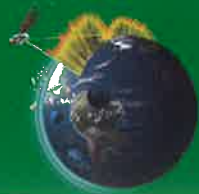
**Cities in the arab world and the challenges of urbanization :
an opportunity for innovation and sustainability**

Vigliotti Franco

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ABSTRACT

With deserts covering 90% of its territories and with nearly 40 million inhabitants, the GCC is one of the most urbanized regions in the world. Today, nearly 75% of the GCC population is living in cities. Demographic projections indicate that by 2050, the population will nearly double, while simultaneously becoming more than 80% urban. The corresponding pressure on our already strained environment will accelerate, in terms of the needed water, energy, other natural resources and land use. This transition will take place in phase with the expected enhancement of climate change, making fossil fuels an increasingly less obvious or affordable choice, when factoring in their real associated global costs. This will be particularly true in countries that have very high energy intensities, such as all GCC countries. Energy management and energy efficiency are slowly emerging as essential components of sustainability strategies of Governments, the same for water use. There is therefore a real need to invest today in scientific research, and a real space for innovative solutions that will help reduce our resource footprint, while contributing to the creation of economic value. Such innovations are coming out of the universities and research institutions today, and a selection of recent leading examples presented last November will be briefly highlighted, made in the UAE and in Switzerland.



Long-term Estimates of Temperature and Precipitation for Sustainable Planning in UAE

Mr. Abubaker Elhakeem and Dr. Walid Elshorbagy

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United Arab Emirates University

ABSTRACT

Increased temperature as well as reduced and more erratic precipitation duration and intensity are projected by the global circulation models (GCM) due to global warming across the Middle East. GCMs data are in the order of hundreds of kilometers and usually miss the influence of the land topography which limits its use for specific local planning. Driven by the vision of the government, considerable resources are being dedicated for the laying and maintenance of infrastructure across the UAE and especially in the coastal metropolitan cities. The evaluation of the extent and rate of the anticipated changes is essential for better resource management, adaptation planning and sustainable development. This study provides an evaluation of temperature and precipitation in the UAE for the 21st century using the statistical downscaling model (SDSM). Large-scale atmospheric data encompassing daily NCEP/NCAR reanalysis data and the daily mean climate model results for scenarios A2 and B2 of the UK Met Office GCM (HadCM3) are downscaled using historical records from Abu Dhabi and Sharjah.

According to the SDSM results of the addressed scenarios, the UAE is expected to witness an increase in the annual mean temperatures by 2.78 °C to 3.56°C in Abu Dhabi and of 2.85 °C to 3.8°C in Sharjah by the end of the century with reference to the average of 1961-2001. The general trend of the projected maximum temperature suggests that the summer season peak temperature has a tendency to occur earlier with a range of one to three months shift during the 2050's and 2080's respectively. The analysis also indicates the propagation of summer conditions both into spring and autumn producing a longer summer season.

2080's projection for Abu Dhabi showed a reduction in annual precipitation by 28.8 to 37.1% to the mean annual rates of 80 mm/year at the reference period. Sharjah is also projected to witness 16.4 to 23.0 % reductions in 2080s to reference mean annual rates of around 121.65 mm/year.



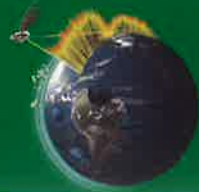
**Decentralized greywater harvesting and reuse-
an alternative urban water resource for mains water demand management in
Al Ain**

Rezaul K. Chowdhury et. al

UAE University

ABSTRACT

UAE is one of the most water scarce countries but their water consumption rate is significantly high. In the Emirate of Abu Dhabi (EAD), water consumption in flats ranges between 170 and 200 Lpcd and between 270 and 1,760 Lpcd in villas. The rapid population growth and the anticipated climate change impact will worsen this water stresses across the country. Security of EAD's urban water resources requires (a) augmentation of water supply sources and (b) water demand reduction. Greywater reuse is therefore becoming a popular alternative urban water resource. About 98% of wastewater generated from households in EAD is centrally collected through an efficient sewerage networks and treated for reuse in the roadside vegetation. Treated wastewater is not used for domestic purposes because of the high expenses of dual reticulation system. In this study, attempt was made to investigate potential of greywater reuse in Al Ain for non-potable consumption purposes (toilet flush and gardening). Greywater generation was estimated and a water balance modeling was conducted to estimate potable water savings from reuse of greywater. A questionnaire survey was conducted among 50 residential houses to investigate the nature of water consumptions and their willingness for reuse of greywater. More than 70% respondents showed their willingness for greywater reuse in gardening, and about 10% respondent were willing for the toilet flushing and gardening, and only 15% respondents considered this as harmful. The water balance modeling showed that greywater reuse can save significant quantity of mains water in Al Ain. The estimated greywater characteristics and their on-site treatments were also delineated.



**Building Bridges With Businesses/private Sector In Support
To Sustainable Cities**

Saeed Shami
IUCN, West Asia

ABSTRACT

The total land area and coastal line length of West Asia region (GCC; United Arab Emirates, Saudi Arabia, Kuwait, Oman, Bahrain and Qatar plus Yemen, Syria, Lebanon, Jordan, Iraq and Iran) were estimated to be around 5,477,401 km² and 14,083 km respectively.

The region therefore constitutes the convergence between Arabian Peninsula, Asia, Africa and Mediterranean regions. The region is as well the meeting point for varying climatic conditions including; Mediterranean, Arid to Semi-arid and therefore for ranging types of natural resources coverage and vegetation.

The West Asia region is characterized by varying climatic conditions and a number of rivers, seas and gulfs and wetlands that enables the ecosystem to provide services such as water resources development, soil and natural heritage protection. The ecosystem as such constitutes the backbone for economic growth, and food security for the region's population. These resources offer precious opportunities for sustained economic development and livelihoods. The vegetation cover provides for the protection of the watersheds and therefore the water resources and soils.

Because of the region's diverse topography (ranging from the snow-capped mountains of Lebanon to the world's lowest point on the shores of the Dead Sea), the climate is not uniform: differing vegetative cover and extremes in altitude create a number of distinct microclimates in this relatively small area .

Scientists agreed that while the ecosystem is very fragile, the marine and terrestrial natural resources of the West Asia region are the richest treasures reserves and natural heritage and that they constitute an important biodiversity resource. The fauna and flora of this region is seen to possess most of the scarce and endangered species.

Following the globalization trend that is taking place and altering population growth, economic development and the consumption pattern and behaviour, environmental stresses and challenges are in continuous rapid increase. With the expansion of urban development, and the tremendous growth in the industrial sector, the environment resource base in the region especially within the GCC is under facing serious pressure. Linked to that is ever increasing use of resources especially with respect to energy and water consumption which are growing very fast. This was further aggravated by the current global climatic changes and their negative impact on natural resources and consumption of such resources. Altogether these are negatively affecting ecosystems integrity and quality.



In the GCC sub-region of West Asia, the snatched growth in different economic sectors including industrial (mining and oil field development, manufacturing, conversion, etc.) development, urbanization and infrastructure network, tourism and many others is ongoing with minimal streaming of environmentally sound performance. This accelerates, among other factors, the deterioration of water, marine and terrestrial ecosystem, habitat and led to sizeable decline in biodiversity. Accordingly, engaging with businesses in the region is therefore top priority and needs urgent intervention.

Regional seas (Red Sea, Arabian/Persian Gulf and Mediterranean), faces today a variety of natural and human-induced challenges that threaten the region's unique and highly diverse coastal and marine environment. Population and economic growth have contributed to increasing pressure from activities such as dredging and filling operations, disposal of domestic and industrial waste, and disproportionate use of limited freshwater resources. Recreational and tourism industries are experiencing rapid expansion, contributing to the over-exploitation of living marine resources. In addition, with the region's global importance for petroleum production and export and the resulting maritime traffic pose a serious threat to the fragile coastal and marine environment. These are further aggravated by climate change.

Since businesses and investment activities within the region are growing vigorously, there is a great need for ensuring that such growth is taking place while considering environmental balance and sustainability concerns.

Thus, engaging with businesses is no longer an option due to the magnitude of the negative impact on the environment and social equity, and the necessity to help them manage their ecological footprint, mitigate environmental impacts and approach positive impact. Business (private, quasi-governmental or others) are to be supported to assess the situation and workout their environmental and sustainability strategies and plans. This includes efforts to encourage improvements in corporate environmental performance, as well as increased private investment in environmental management and ecosystem and resources conservation.

Within this framework IUCN's Private Sector Engagement Strategy endorsed by its Council calls for the following:

1. An accountable and efficient private sector which contributes to sustainable development
2. A conservation community which recognizes the value of and uses market mechanisms
3. Effective dialogue and collaboration between IUCN and the private sector

IUCN aims to "encourage transformational and demonstrable change at business/company and sectoral level in how nature is valued and managed by businesses". To achieve this goal, IUCN is working to ensure that:

1. The business sector recognises the importance of its role in addressing today's conservation challenges.
2. Business is provided with the knowledge and tools it needs to help address today's conservation challenges.
3. Use the convening power of IUCN to foster a continuous and constructive dialogue between business and other sectors of society.



**Global Climate Change Impacting Natural water and Infectious Diseases:
Cholera a case study**

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ABSTRACT

We depend on water for everything from drinking, bathing, growing crops, supporting livestock and aquaculture, shipping goods, generating electricity, and even for recreation. Climate change is not new but the recognition is, because of its profound impact on this precious commodity, threatening its availability, thus, its quality and quantity is a major concern we have today. Because of rise in global temperature, rapid melting of polar ice triggering sea-level rise causing saltwater intrusion into groundwater drinking supplies, especially coastal areas around the world. With population growth, we are expanding our community, therefore, in need of more drinking water and at the same time we are polluting its source because of inadequate wastewater management. As a result, access to this precious commodity in our daily life is shrinking and also affecting diseases causing agents to flourish impacting human health.

Because of rising temperature and its effect in rainfall patterns, climate change is expected to have a widespread consequence on the burden of infectious diseases that are transmitted by insect vectors and or through contaminated water. Several bacterial and viral diseases have been identified over the past two decades having direct or indirect effect from global climate change e.g., malaria, hanta virus and cholera. Malaria epidemics tend to occur during rainy seasons in the tropical areas, whereas, epidemics of the mosquito-borne West Nile virus infection may occur during a period of drought. The reason is, mosquitoes and birds are the primary hosts of the virus that are brought close to humans because of water sharing with limited water sources, enhancing the transmission of the virus. During drought, natural predators of mosquitoes are greatly abridged causing escalation of mosquito population that increases chance of transmission of the disease. Cholera has been directly associated with temperature, although other indirect effects are also under study. Long sunny days provide phytoplankton to flourish supporting more zooplankton to grow. Larger population of chitin containing zooplankton provide larger surface area for cholera bacteria to attach and multiply, making an infectious dose readily available to human. Natural water for recreation or source of potable water treated inadequately can be a source of cholera and other enteric diseases. Providing safe drinking and recreational water is a necessity for sustainable cities, which is potentially becoming more challenging due to climate change issues as well as urbanization due to population growth calls for additional attention.

Sustainability of groundwater resources in the United Arab Emirates (UAE) through governance

Ahmed A. Murad

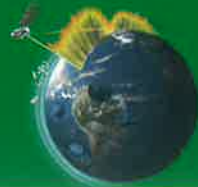
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ABSTRACT

Groundwater resources in the United Arab Emirates (UAE) have been used significantly to meet the high demand of water resulted from human activities and population growth. This increased the stress on groundwater resources in the country. Groundwater governance can play a vital role in improving the statues of groundwater resources through responsibility, participation, information availability, transparency, custom and rule of law.

There are different institutions and governmental organizations involved in groundwater governance in the UAE at local and federal levels. The cooperation between those institutions is strong and also those institutions are supporting each other in different tasks. The participation concept exists between the government, stakeholders and community through the active participation in the awareness campaigns and series of collaboration meetings to discuss water-related issues. Such meetings are essential to keep the level of transparency between the government and the community at high. Also, water related data are available at local and federal levels as electronic information in the website or reports and documents. However, that information is scattered, not well-organized, some of the data are partially analyzed and not sufficient. Accessibility to the data is sometimes difficult.

The government of UAE believes that the policies and regulations will strengthen the groundwater governance. Different laws and policies were regulated to protect groundwater resources from deterioration and to control the drilling of groundwater wells. But, those laws require effective implementation. The falaj system in UAE is considered a model that represents all components of groundwater governance.



Assessment of Water Resources Sustainability in Al-Ain City

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ABSTRACT

Accurate estimation of the water inflows and outflows is essential for efficient and sustainable water resources management of any city especially in arid and semi-arid regions. This is because water resources are critical to economic development in most countries located in these areas. Al-Ain city is located in Abu Dhabi Emirate. This Emirate is one of the seven Emirates which comprise the United Arab Emirates (UAE) and occupies an area of 67,340 km² or about 80% of the total area of the UAE. Al-Ain city has an arid climate with less than 100 mm/yr average rainfall, a very high evaporation rate (2-3m/yr), and no reliable surface water resources. Groundwater is the only conventional source of water in the Emirate of Abu Dhabi. Its share of the total fresh water supply in the Emirate is about 80%. Other unconventional sources of fresh water in the Emirate are desalination plants (17%) and wastewater reuse (3%). The current share of groundwater is estimated based on the estimated water demand in the Emirate and available production of the desalination plants. The sustainable yield of a groundwater aquifer, however, depends mainly on how fast this aquifer is replenished. Yet, the continuously increasing demand puts more pressure on this already scarce source and threatens its quality. In order to attain security in the vital groundwater source, it is essential to accurately estimate replenishment rates of groundwater. In this paper, a simple hydrological budget model will be developed to assess water resources and use in Al-Ain City. A detailed conceptual model representing all potential inflows such as precipitation, irrigation returns, and subsurface inflow; and outflows such as evapotranspiration and subsurface outflow will be developed. This model will use input parameters that are readily available or obtainable and accurately measured. This study will be of great importance to water resources managers in Al-Ain City. It will help to accurately estimate sustainable extraction rates and assess future water resources availability under different management alternatives.

Keywords: Water Budget, Water Resources Sustainability, Al-Ain City.



Future of desalination industry in the Arabian Gulf given the long term environmental and ongoing anthropogenic impacts

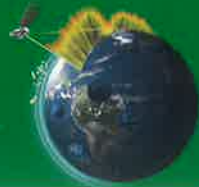
Mr. Abubaker Elhakeem and Dr. Walid Elshorbagy

Civil and Environmental Engineering Department

United Arab Emirates University

ABSTRACT

In the Arabian Gulf region the technological advancements in the desalination industry have proven that producing fresh water by desalination is a viable and economically attractive option. Practice has shown that it is the most realistic alternative to meet future water supply requirements. This paper discusses the potential of the long term environmental changes and human activities on the desalination intake water quality. Climate change and coastal effluents from industrial facilities under sustained conditions are anticipated to alter the ambient conditions of the seawater. A new approach is proposed where a direct relation between the effects of net fresh-water losses related to the environmental and anthropogenic stressors and the mean system salinity and temperature is developed to evaluate the long term gross effect on the desalination intake water.



Climate Variations over a Middle Eastern Basin in Response to Atmospheric Circulation Patterns

Ramadan H.H. et. al

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ABSTRACT

This study examines the sensitivity of a mid-size basin's temperature and precipitation response to different global and regional climate circulation patterns. The implication of the North Atlantic Oscillation (NAO), El Niño Southern Oscillation (ENSO), Indian Monsoon and 10 other teleconnection patterns of the Northern Hemisphere are investigated. A methodology to generate a basin-scale, long-term monthly surface temperature and precipitation time series has been established using different statistical tests. The Litani River Basin is located in Lebanon, east of the Mediterranean Basin, which is known to have diverse geophysical and environmental characteristics. It was selected to explore the influence of the diverse physical and topographical features on its hydro-climatological response to global and regional climate patterns. We also examine the opportunity of conducting related studies in areas with limited long-term measured climate and/or hydrological data. Litani's monthly precipitation and temperature data have been collected and statistically extrapolated using remotely sensed data products from satellites and as well as in-situ gauges. Correlations between 13 different teleconnection indices and the basin's precipitation and temperature series are investigated. The study shows that some of the annual and seasonal temperature and precipitation variance can be partially associated with many atmospheric circulation patterns. This would give the opportunity to relate the natural climate variability with the watershed's hydro-climatology performance and thus differentiate it from other anthropogenic induced climate change outcomes.



An innovative Approach to Knowledge-Managing Energy for Sustainable Cities

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American University of RAK

ABSTRACT

Sustainable energy management systems, usable for modern cities, continue to evolve, adding layers of complexity and functionality. The paper deals with the application of complex systems formalism and contemporary knowledge management techniques for the purposes of assuring more effective delivery of sustainable energy schemes for city dwellings.

Knowledge-Managed Sustainable Energy (KMSE) systems leverage energy knowledge assets optimally, and with greater flexibility, to enhance energy management performance. The KMSE scheme developed adopts a multi-factorial approach for sustainable energy-related knowledge acquisition, aggregation and diffusion, within managed city environments.

The paper presents a structured framework for developing effective KMSE systems for large urban cities, and discusses their applicability to a range of city-oriented renewable energy management projects, with the ultimate aim of fostering continuous energy management performance improvement and sustainability.



Manufacturing “CLEAN” Energy (Lead Acid Accumulators)

James Mark Stevenson, et al

Eternity Technologies, Al Jazira Al Hamra, UAE

ABSTRACT

Eternity Technologies is based in Ras Al Khaimah and was established in April 2011. It is the largest manufacturer of Industrial batteries in the UAE. The factory is equipped with brand new, state of the art battery manufacturing equipment, with many of the production lines being fully automated.

The technology employed is lead acid using tubular designed positive plates and flat type negative plates. The products manufactured are used mainly in the mechanical handling sector providing energy to power electric vehicles such as fork lift trucks. However the design is also employed in other applications as back up to renewable energy systems such as network power, solar power, UPS and telecommunications.

The materials used to manufacture our products are mainly sourced locally and are 100% recyclable the main components used are lead Pb, lead alloy PbSb, polypropylene and sulfuric acid.

We have a management team in place which has over 100 years experience within the battery industry. State of the art laboratories are in place to test incoming materials and recycled materials used within the process. An experienced Technical and Quality Organization supports the Manufacturing process.

All of the manufacturing processes were implemented with an awareness of protection to the environment. We are very conscientious on waste so we have in place a fully controlled waste management system.

Our internal environment statement is reuse, reduce and recycle. To meet these demands many initiatives have already been implemented and further ones will be added as part of our continual improvement strategy.



Mangrove restoration: a counter-measure for global warming

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Marine sciences, Annamalai University, India

ABSTRACT

The process of removing carbon from the atmosphere and storing it in a reservoir is known as carbon sequestration and this process is remarkable in the ocean. However, this is 180 times lower than the rate of carbon burial by coastal vegetated habitats such as mangroves, salt marshes and seagrasses. Therefore, coastal vegetated habitats in particular mangroves are a large carbon sink and they are considered as 'blue carbon sink'. There are knowledge gaps in mangrove sequestration potential in planted mangroves in relation to growth attributes, age of plantation and seasonal changes and sediment characterizations. In this regard, only dearth of published data is available. Therefore, the present work analysed the carbon sequestration potential in two species of mangroves (*Rhizophora mucronata* and *Avicennia marina*) along with their growth, biomass and sediment characteristics for four seasons of the year 2009–2010, in planted stands of different age (1–17.5 years) in the Vellar-Coleroon estuarine complex, India. The mangroves were recorded to store significant amount of biomass. *Avicennia marina* performed better to display 75 % higher rate of carbon sequestration than that in *Rhizophora mucronata*. This could be attributed to growth efficiency and high biomass production. For instance, *Avicennia marina* exhibited 2.7 fold higher girth, 24 % higher net canopy photosynthesis, 2 fold aboveground biomass (AGB), 40 % more belowground biomass (BGB) and 77.3 % higher total biomass, than *R. mucronata* did. Seasonally the rate of carbon sequestration was 7.3 fold higher in post-monsoon, 3.4 fold in monsoon, 73 % more in summer than that in premonsoon. The rate of carbon sequestration was positively correlated with age of planted site, tree height, tree diameter, net canopy photosynthesis, AGB, BGB, total biomass, carbon stock, growth efficiency, AGB/tree height tree girth, leaf area index, silt content ($p < 0.01$). The carbon sequestration was negatively corrected with soil temperature. Mangroves were found to be a productive system and important sink of carbon in the tropical coastal zone, but increasing soil temperature due to global warming would have a negative impact on carbon sequestration potential of the mangroves. With 2118 km² of total mangrove forest cover, the Indian Sundarbans absorb 41.5 million tonnes of carbon dioxide daily from the atmosphere, valued at around USD 79 billion in the international market. This will ultimately result in reducing the rise of atmospheric temperature and the subsequent global warming. Mangrove deforestation in the world generates as much as around 10% of emissions from global deforestation of all forests. Thus failing to preserve mangrove forests can cause considerable carbon emissions and thus global warming. Therefore, mangrove restoration can be a novel counter-measure for global warming issue.



Using wasted heat to generate power at Union Cement Company

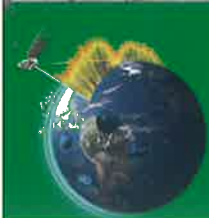
Nasser Saffarini

UCC, RAK

ABSTRACT

In the cement plants, out of total heat consumed in the burning process, around 55% of the heat is utilized for clinker burning and rest 45% is discharged as sensible heat through the exit gases from the pre-heater, cooler as radiation losses and sensible heat carried out by the clinker. Out of above 45% - 22 to 24 % is recoverable and can be utilized for Power Generation. Required steam is generated by boilers connected to the Grate cooler and Pre-heater. For generation of power steam driven turbine +Generator are installed.

PH boiler is installed for recovery heat from the Pre heater outlet. AQC boiler is installed for recovery of the heat from the grate cooler by tapping waste gases at null point (after the secondary air tapping).



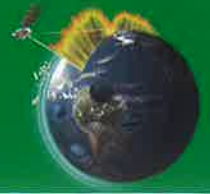
Understanding the Possible Impact of CO₂ Emissions on Global Warming in the Gulf Cooperation Council (GCC) Countries

Hasan Arman, et al

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ABSTRACT

A wide range of direct and indirect measurements of CO₂ concentration verify that the atmospheric CO₂ has been continually increasing globally. As a consequence, this causes global warming elsewhere such as in the region of the Gulf Cooperation Council (GCC) countries. The GCC founded in 1981 is a political and economical union of Arab countries namely Saudi Arabia, United Arab Emirates, Oman, Kuwait, Qatar and Bahrain. There is an increasing public concern in the GCC countries with the possible impacts of CO₂ emissions on global warming. As clearly stated in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report in 2007, human activities such as CO₂ emissions from fossil combustion are one of the main contributors to global warming. However, taking any initiatives is not easy and simple, even environmental stresses already present in the region. Adaptation and mitigation measurements are urgently needs to respond to the inevitable future warming induced by past CO₂ emissions and by reducing their emissions through the appropriate carbon management strategy. Optimum use of renewable energy technologies will certainly reduce environmental impacts, provide a great opportunity to mitigate CO₂ emissions and reduce global warming through substituting ordinary energy sources. The aim of this study is to provide a clear understanding for the possible impacts of CO₂ emissions on global warming in the GCC countries, what the potential challenges are faced by the society and what the expected solutions to overcome such difficulties are.



**Identification Project for Soil Types Which Cause Dust Storms in Iraq
By Using Remote Sensing & GIS Techniques**

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ABSTRACT

After series of Wars against Iraq started 1980, 1991, 2003 furthermore The Economic Sage, All these factors have bad effects on the life aspects on it. Specifically Irrigation and Agriculture regimes. So, using such technologies (GIS, RS) represent ideal solutions to solve many problems like Desertification , leak of water resources from riparian states (Turkey, Syria) and Dust storms which consider as global environmental issues.

The Dust Storms consider as weathering phenomenon are knowing in dry and semi dry areas of the World, Iraq as part of these areas have widely effect by those Storms.

Dust storm define as transformation of dust by winds between two different Areas, however, the first Area called (Dust source region) while, the second called region of dust receiving.

Dust storms is a winds carried with million tones of dust particles of surface crust of the earth and transfer to another regions of surface earth.

Depending on the Remote Sensing and GIS techniques however, several thematic maps have been created which including main classes of the study areas through 2009-2010,in same time produce thematic maps for sand dunes identification , general directions , and their speed motion by topographical variegations' areas.

In this study we use especial Programs like ERDAS IMAGINE 9.1 and Arc GIS to identify the suspicious soils which cause the dust storms inside Iraq

This plan including study area selection (section 24 according to the MODIS satellite survey) which cover regional area include middle-west of Iraq, east of Syria and Jordon in addition to, north parts of Saudi Arabia.

Any way these areas have suspicious soil types which cause the dust storms inside Iraqi lands.



The effect of climate change in the frequency phenomenon fog in southern Iraq for the period 1941 – 2003

Ali A. Alwaily

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ABSTRACT

The climate is the most important resources of the natural environment, but that this natural resource has undergone during the last decades of the twentieth century to a number of changes which intrigued scientists for studies and research in order to reach their causes n phenomenon of global warming and changes expected as a result it is one of the more problems era importance because of their changes in the environment.

We have varied causes of climate change, some of which are due to changes in solar activity (sunspots) and other defined as a result of variations that occur in the Earth's orbit around the sun and the tendency of the Earth's axis and change content atmospheric gases such as volcanic ash and other, and a third see that happen as a result of shifting continents which leads to changing climatic regions sites, while focused views during the first decade of the third millennium to the erosion of the ozone layer as well as the greenhouse effect (warming).

Climate change on the planet included climate change in positions earth different, including southern Iraq, so will see the changes in the climate elements in climatic stations elected in the study area and nearby, as will be through it to determine the effects of these changes on repeat phenomenon Fog for the period 1941 - 2003.

The research changes in the climate in southern Iraq to the specific climatic cycles, in addition to knowledge of the impact of climate controls moving in the recurrence of the phenomenon of fog in the study area.



Potential Native Plants for Urban Landscape in Gulf Countries

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University of Sharjah

ABSTRACT

Gulf Countries have an arid/hyper arid climate with little precipitation, a low ground-water recharge rate and no reliable, perennial surface water resources. The total consumption of ground water resources in these countries exceeds with times its natural recharge capacity. However, urbanization expansion and the need for green landscapes in most of the Gulf cities increase the demand on the irrigation water. This puts great stress on the limited water resources in the Gulf Countries. One way for the sustainable use of the limited water resources is through the use of native desert plants in landscaping the cities.

Native plants are those that have evolved naturally under the harsh environmental conditions of the GCC countries. They can tolerate very high temperatures that could reach up to 50 °C during summer, drought (water deficit) and high salinity. Native plants provide a beautiful, hardy, drought resistant, low maintenance landscape while benefiting the environment. Natural landscaping, which is the use of native plants in landscaping, is adapted to the climate, geography and hydrology and should require no pesticides, fertilizers and watering to maintain, given that native plants have adapted and evolved to local conditions over thousands of years. Once established, native plants do not need pesticides, fertilizers, or watering. In addition, the beauty of native wildflowers and grasses creates a sense of place. The native plants increase our connection to nature and provide a beautiful place to relax. Native plants are also resistant to most kinds of local insects and resistant to most pathogens. Consequently, using native plants would reduce the use of the hazardous chemicals and hence save the environment in a sustainable way.

In the present study, I screened more than 100 plants native to the GCC region to select the most potential in landscaping. Plants are selected based on their appearance, tolerance to drought, salinity, texture to fit as ornamental plants. Priority are given for species that have wide ecological amplitudes. These species can tolerate wide range of environmental (especially soil factors) and hence would be more successful under new conditions in of the urban environment. The main challenge facing the use of native plants in landscaping is the great dormancy in their seeds, which results in very low germination rate. In addition, there is there is a lack of propagation information for most of the native desert plants used in restoration and rehabilitation of degraded habitats or in the urban landscaping. This problem is compounded by the scarcity of propagules (seeds or vegetative materials) of many species



Sustainable Cities: More Mangroves

Larry D. Griffin

University of RAK

ABSTRACT

The beloved Emirate of Ras Al Khaimah, and RAK City particularly, enters world markets in the 21st Century by becoming different. This writer requests that it become more like it was. This undisputed fact: If RAK positions itself to be a world player, RAK will develop, a certainty. This writer denies this not, but offers suggestions about how RAK, particularly RAK City, will be more influential as it becomes something that it has never been before; additionally, this writer provides suggestions that honor and respect RAK's biological heritage of humans interacting within nature that Allah provides in ways that make for a better world.

Scientists provide detailed data about blue carbon holdings and animal habitat. Mangroves remain more important than the world's rainforests to save humans from eminent danger in affecting the climate—what makes the world, warmer and colder, places where that never happened without human intervention. Earth provides only a part of this; inaccurate human intervention adds to challenges.

Arabian Peninsula mangroves remain as endangered ecosystems. Two hundred thousand years ago, the entire peninsula enjoyed complete surrounding by mangroves; one hundred thousand years ago, half were gone—all this, the result of human impact. Today, few remain. This writer praises the Emirate of Ras Al Khaimah for protecting the residuals of this heritage, but calls for more cultivation, especially in coastal areas where any new development occurs.



Geospatial technology role for sustainable cities

Hussein Harahsheh

Global Scan Technologies, Dubai, UAE

ABSTRACT

Geospatial Information on land resources, land use and land cover and the pattern of their changes is a prerequisite for land-resources management, urban and land use planning. The sustainability of cities required planning that takes in consideration the impact of its future shape on the actual and natural world, which should keep the balance between the past and the future state. Using the geospatial technology, we have the ability to analyze and design in real time or near real time the effects of our planning on the performance of the newly built urban areas and its infrastructure.

In this paper we will demonstrate the capabilities of remote sensing and Geographic Information System (GIS) to make the most significant contribution for land-use mapping and land-suitability analysis. The study area covers Irbid city in north of Jordan, an important urban area developing and expanding very fast. The target of the study is to help the decision maker on their agriculture and land use planning. SPOT imagery and aerial photographs were used to analyze the utilization of land through a tree structural classification, which consists of subdividing the classification into levels of analysis, proceeding from the lower level to the next higher one. Then climatic, topographic, soil, and land-use data were georeferenced to the same coordinate system and combined together to create land-suitability maps.



Intelligent Infrastructure for Smart Cities

Hanno Hidmann, et al

British Telecom Innovation Centre (EBTIC), Khalifa University, Abu Dhabi, UAE

ABSTRACT

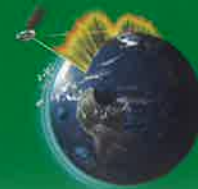
The Computational Sustainability and Green ICT research group at EBTIC has used nature inspired optimization and distributed artificial intelligence techniques (some developed and patented by the EBTIC) to address issues of sustainability and demand-response. I will present an overview over two approaches (both of which have been tested theoretically as well as through implementation in existing hardware in the UAE):

- A patented and award winning approach to allocate mobile clients to wireless access networks. The system aims to maximize the usage of individual cells and facilitates the temporary shutdown of unused hardware. Energy savings in implemented test cases are around 20% (of the wireless access points) in times of low demand. This is scalable and a software / firmware only solution (it can be rolled out without changes being made to the hardware).
- A smart building solution that uses existing infrastructure to enable the buildings A/C units to be used in demand response scenarios as well as to manage the load which is created by the building from the demand-side. This is of relevance in the UAE and other countries, where the A/C infrastructure accounts for up to 80% of the residential power consumption.

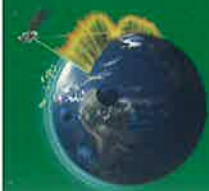
I will

- speak about the EBTIC centre in general,
- discuss the general approach taken by the Computational Sustainability and Green ICT research group
- outline the two approaches mentioned above (approach, software demo, results)
- provide an outlook over what I can be done in the UAE and the middle east
- close with a call to the participants to engage in communication and collaboration to work towards a more sustainable approach for the next generation cities.

Keywords: Smart cities, critical infrastructure, distributed artificial intelligence, nature-inspired optimization, wireless access networks, demand side management for A/C infrastructure



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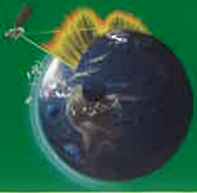
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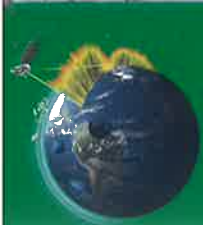


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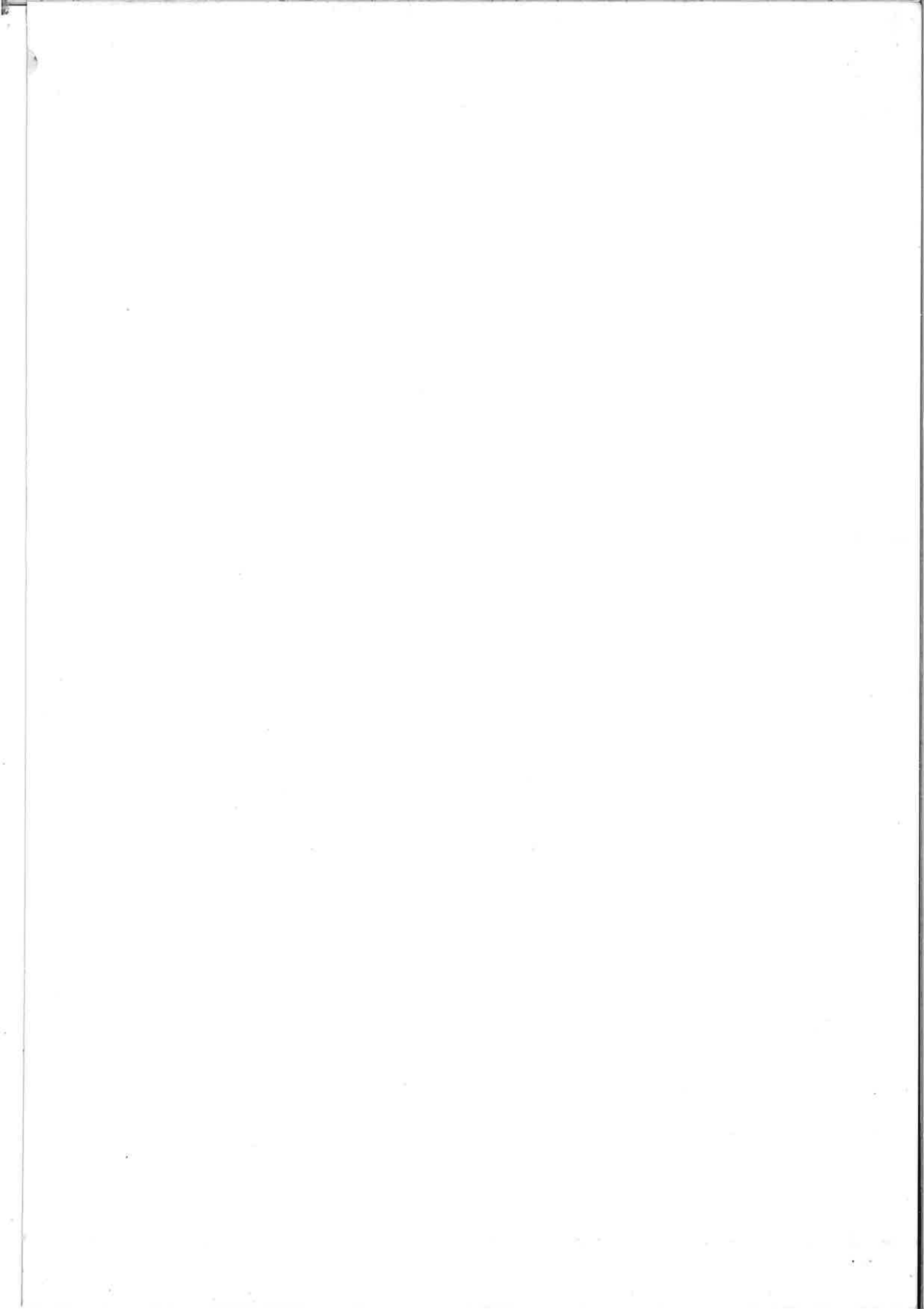


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