

# AUA Deep Dive Program

Jan 2020

2020.01.20 Opening

Dr. Naeema Aldarmaki      Dean of Students

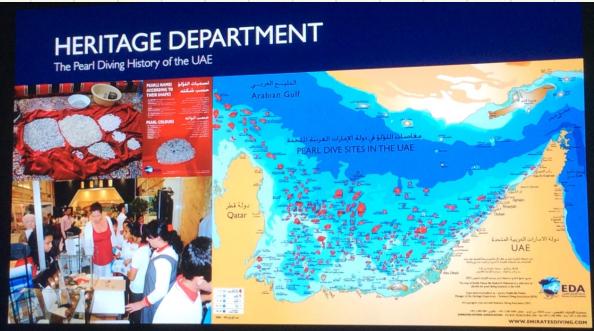
mix people from all 7 emirates ⇔ bounded, diverse

- ① security and sustainability
- ② health
- ③ education
- ④ infrastructure, technology, economics
- ⑤ diversity

10,000,000 population

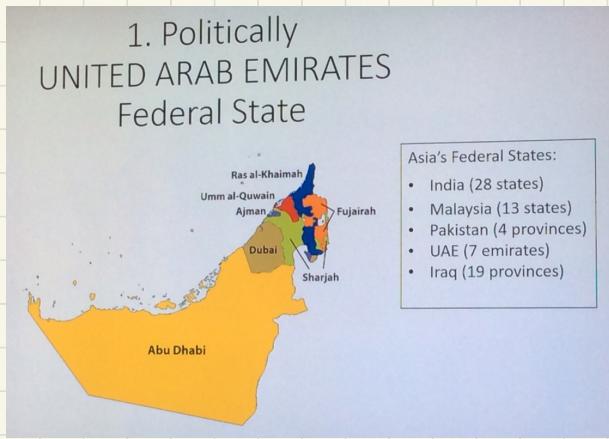
## Emirates Diving Association

EDA is the umbrella for dive centers



# What is the UAE?

Dr. Mohamed Bin Huwaidin  
Dept. Government & Society



"Federal State"  
not very popular in Asia  
good example/model for  
diverse cultures

10,000,000 total population  
1,000,000 legal citizens

★ security, well-being  
human integrity



Political System  
Presidential System



- Executive Power
  - President
  - Vice President/ Prime Minister
  - Cabinet (ministers)
- Legislative Power
  - Federal Supreme Council (rulers of the seven emirates)
  - Federal National Council (40 seats: 20 elected and 20 appointed)
- Judicial Power
  - Supreme court

## 2. Economically

- 3<sup>rd</sup> largest in the Middle East (US\$ 406 billion in 2019-IMF)
- Diversified Economy (oil only 30% of the total GDP)
- One of the most open economy worldwide



passport 1st powerful 179/193

What makes UAE a Model Nation?

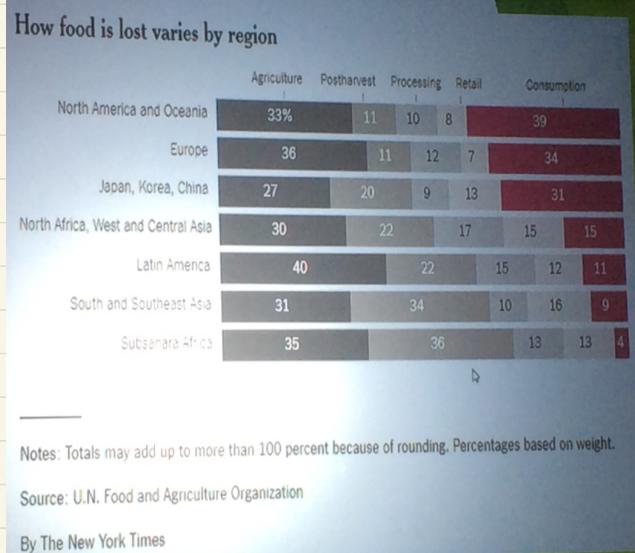
- Social Cohesion (nation-state) regard as one entity
- Tolerance (no extremism) modest islam religion
- Good Governance (accountability – trust in government)
- Development
- Security (21 in the World according to World Safest Countries 2019-Sources: World Economic Forum, The Global Institute For Peace)

social cohesion 国家认同胜过宗教/家族认同 e.g. Singapore  
Every year UAE has a theme. 2019- tolerance 2020- next 50 years  
Q & A: 60% 中国-中东商品在 UAE 中转

# Food Waste Utilisation

## Costa Stathopoulos

waste : not make to the fresh or processed market  
 Loss: at the consumers' end



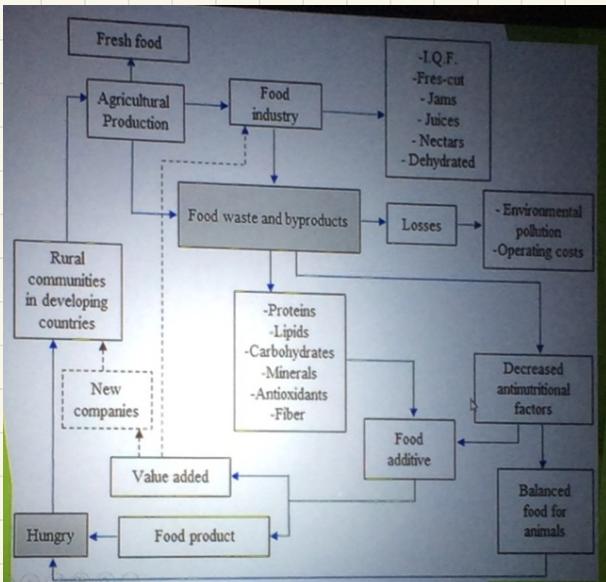
1/3 food wasted



market "seconds"  
 因为不好看而扔掉

bioactive ⇌ reuse  
 (food, feed, pharmaceutical)

e.g. Dates seeds  
 5th largest producer



- ▶ Very broad range of potential bioactives to be recovered
- ▶ Extreme variety of potential sources of bioactives
- ▶ Wealth of extraction methods
- ▶ Ever expanding areas of application

# Food Security in Arid Lands

## Afaf Kamal-Eldin

### Possibilities for New Food Products UAEU

- Aridland climate
- Distinct regions of the world
- Multinational culture
- Different tastes
- Need for healthy diet and lifestyle
- Special food raw materials
- Need for development new foods and dietary recommendations
- Tourism

### Why high prevalence of type 2 diabetes in UAE?

UAEU

- Change in lifestyle
- New Dietary habits
- Lack of physical activity
- High rates of obesity and overweight
- Stress of urbanization & work
- Insulin resistance, a factor in diagnosing prediabetes "peninsular Arabs and South Asians share a tendency to insulin resistance, differing from other ethnic groups living in the UAE."
- Need for epidemiological and genetic studies

### Distinct Food Raw Materials

UAEU

- Camel and goat meat and milk are traditional foods
- Date varieties, classifications and ripening stages
- Possibilities of creation new products
- Need for the development of functional food products

UAE:

- ① growing population
- ② males >> females

high-calorie diet  
→ highest type 2 diabetes

e.g. Sweden  
children only eat sugar  
on the Saturdays

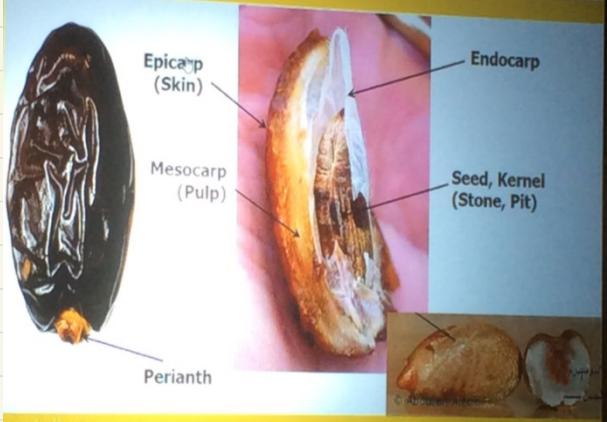
100+ varieties

## Determinants of Dates Fruit Quality

- 1- Moisture Water
- 2- Sugars
- 3- Taste
- 4- Flavor

### The Date Fruit

UAEU

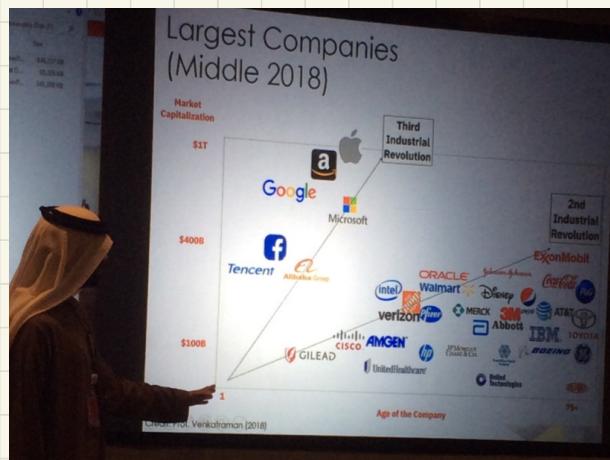


camel milk:  
a special ingredient

# 4th Industrial Revolution

Lecture: Prof. Hamad Al Jassmi

Infrastructure, Technology and Economy



Application of AI

aging infrastructure  
e.g. ML for road cracks

(IT industry)

No domestic companies for international competition  
⇒ incubators startups

2020.1.21

UAE Government

Prof. Sumaia Alkhoolani

Pearl collection  $\Rightarrow$  British planes stopped here for rest  
 $\Rightarrow$  1960s export oil

1960s Dubai transportation port for regional trade

Government

before 1960 tribal system  
tribal leader - tribal faces Council or Diwan - tribal Judiciary  
after 1960  
tribal system  
Prince's Court (as cabinet)  
A role for religious scholars, intellectuals, and merchants  
Bilateral, Hexagonal, Seven, and Nine Federative Councils

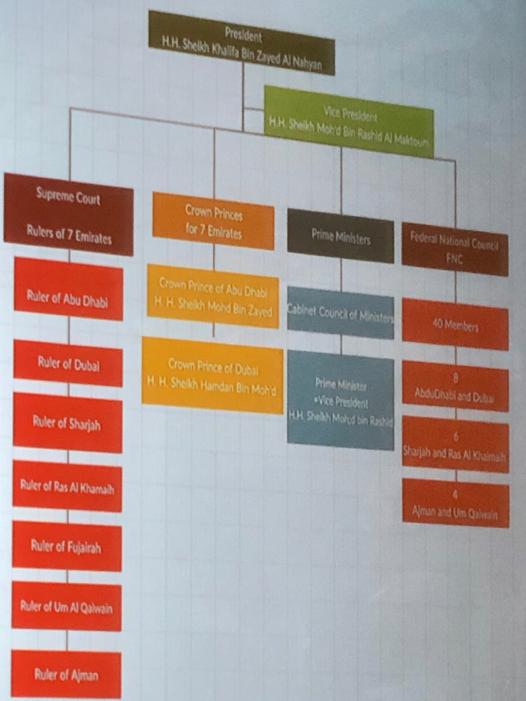
at first wanted 9 emirate  
the first joined is Abu Dhabi and Dubai

Tribes

all tribes go back to Qahtan and Adnan  
the name of the tribe is based on the name of ancestors or area

Agreement with British Government

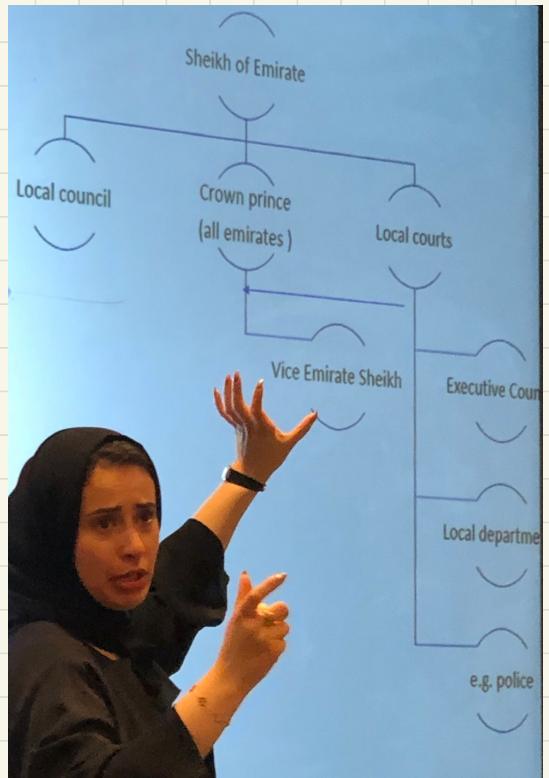
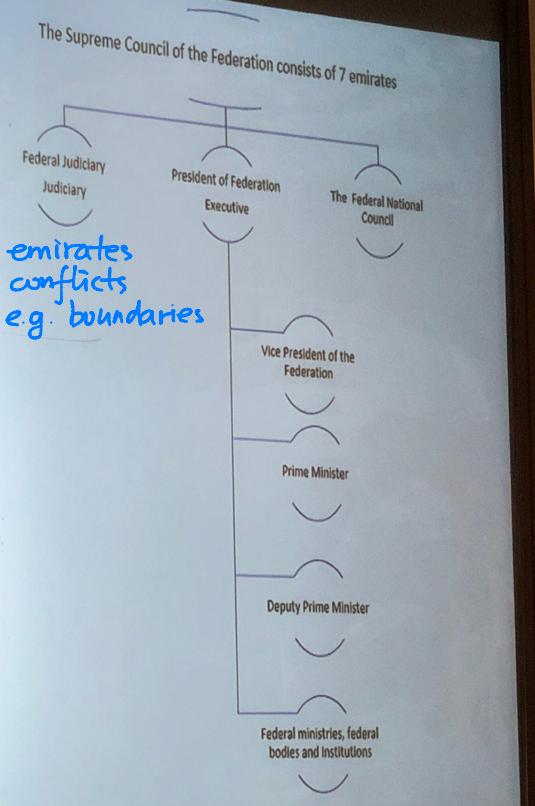
Sheikh Zayed bin Sultan Al Nahyan  $\Rightarrow$  "federate system"  
contribute much to other emirates so that they joined UAE  
现在也是在帮其他 emirates, 用 power 和 money (oil)



2006 . 100% appointed  
 $\Rightarrow$  50% appointed + 50% elected  
 government choose who can vote  
 ~30% of the population

## Elections

- Federal Supreme Council
  - Election every 5 years
- Federal National Council
  - Election every 4 years
  - 40 members
  - 20 elected 20 appointed
    - 2006, 2011, 2015, and 2019
- National Consultative Council
  - Abu Dhabi (55 members, 2 years, appointed)
  - Sharjah (50 members, 4 years, half appointed half elected)



# Future Priority Sectors

## Government & Services

Shaping the future of Government, Public Sector & Services through future trends and develop foresight based action plans

## Energy & Minerals Wealth

Shaping the future of energy, minerals and oil related trends & pre-emptive action plans

## Human Capital and Innovation

Shaping the future of demographics and youth trends and their impact on human capital, economy and jobs market in addition to future skills and jobs to integrate them in future education

## Sustainable Social Development

Shaping the future of sustainable social development through studying future trends and their impact to develop foresight based action plans

## International Political Relations & Security

Shaping the future of international political relations, security and defense based on the relevant future trends and foresights and develop pre-emptive action plans

## Education

Shaping the future of education, schools and skills through future trends, challenges, transformations and develop foresight based action plans

## Infrastructure and Transportation

Shaping the future of infrastructure & its sustainability, supply and demand and future expansion plans

## Technology and Smart System

Shaping the future of ICT & Smart systems based on future trends & their impact on supply, demand & infrastructure future plans

## Economy, Economic & Trade Security

Shaping the future of economy and economic & trade security related trends & their impact on economy and pre-emptive economic policies

## Food & Water Security

Shaping the future of food and water security based on future trends, foresights and develop pre-emptive action plans

## Health

Shaping the future of healthcare demand, trends, predictions and develop foresight based action plans

## Positive & Happy Lifestyle

Shaping the future of Positivity, Happiness & Tolerance based on future trends and their impact on government and society

## Sustainability, Environment and Climate Change

Shaping the future of environmental sustainability, climate change and carbon emissions & their related future trends and pre-emptive action plans

## Financial Resources

Shaping the future of financial resources, their trends, forecasts and relevant pre-emptive action plans

## Cyber Security

Shaping the future of Cyber security and communication based on future trends, foresights and develop pre-emptive action plans

UAE is rich not only because of the oil, but the vision of the leaders.

Social welfare: federal & emirate (larger)

emirate is unchanged, associated with birth

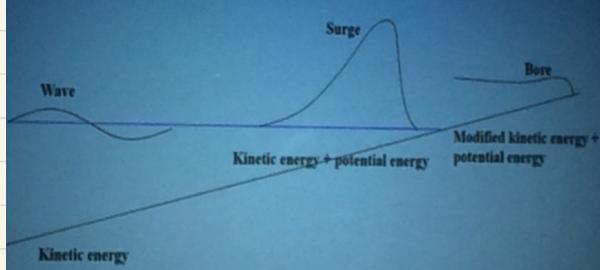
tsunami 津波 great and rapid fluctuations in water

### Tsunami engineering/science

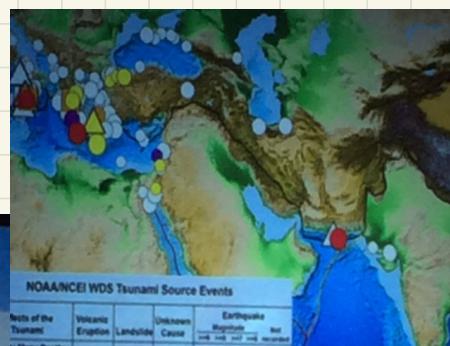
Tsunami waves can be generated in any water body.

Due to Undersea earthquake, submarine landslide (avalanche), submarine explosion, a large object impact, unidentified human activities?

Tsunami is appeared as a wave in deep-water, a surge in shallow water, a bore over ground (overland flow, inundation)

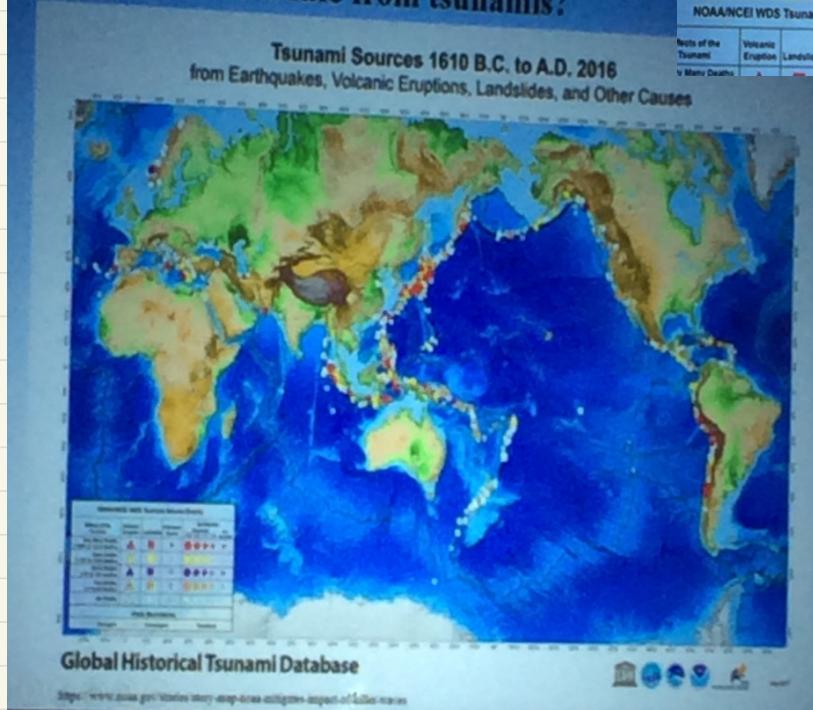


quantify the size of tsunami  
→ height → height  
(wave) (surge) (bore)  
↳ height, length, period



### Is the Arabian sea safe from tsunamis?

Tsunami Sources 1610 B.C. to A.D. 2016  
from Earthquakes, Volcanic Eruptions, Landslides, and Other Causes



UAE doesn't have recorded tsunamis.

no research in UAE

2020.1.21

Lecture : Prof. Nacir Tit, Dr. Wadha Al Falasi

阿尔及利亚人

Energy and Science

## (I) Introduction

### (a) GEOGRAPHY:

- Location: East of Arabian Peninsula (Asia)
- Area = 83,600 km<sup>2</sup>
- Population = 9.68 Million (2019)
- Capital = Abu-Dhabi (1.45 Million in 2019)
- Cities: Dubai (4.177 Million in 2019)  
Al-Ain (0.766 Million in 2019)



### (b) HISTORY:

- Founded: 2/12/1971 (by Sh. Zayed bin Sultan Al-Nahyan) – 2004.
- Seven Emirates: Abu-Dhabi, Ajman, Dubai, Fujairah, Ras Al-Khaimah, Sharjah, Umm Al-Qaywayn.
- President: Sh. Khalifa bin Zayed Al-Nahyan (since Nov. 2004)

### (c) POLITICS & ECONOMY:

- Member of GCC (Gulf Cooperation Council)
- Member of OPEC (Organization of the Petroleum Exporting Countries)



Oil is in Abu Dhabi.

### (d) ECONOMY:

- UAE is the 2<sup>nd</sup> largest in the Middle East (After Saudi Arabia) with a gross domestic product (GDP) of \$b 414 in 2018.
- UAE has been successfully diversifying its economy, especially in Dubai. Yet, it still heavily dependent on petroleum and natural gas, with more than 85% oil exports in 2009.
- Many expansions in: Trading, Tourism, Real Estate, Ports, and Airports.
- Exported 17 b\$ in 2014 to: Iran, India, Saudi Arabia, Oman, and Switzerland
- Imported 298 b\$ in 2014 from: China, USA, India, Germany and Japan

### (e) OIL PRODUCTION:

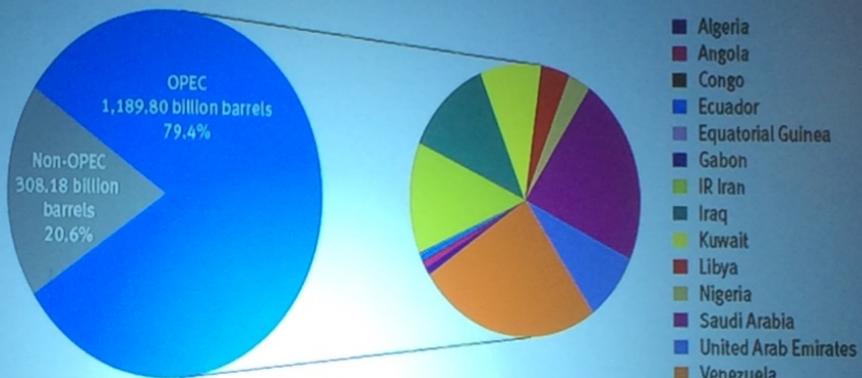
- UAE: 3.062 M bpd in December 2019
- USA: 12.3 M bpd in December 2019
- OPEC: 80.622 M bpd in December 2019

bpd: billion per day

### (f) OIL RESERVE:

### (f) OIL RESERVE:

#### OPEC share of world crude oil reserves, 2018



OPEC proven crude oil reserves, at end 2018 (billion barrels, OPEC share)

Venezuela	302.81	25.5%	Kuwait	101.50	8.5%	Algeria	12.20	1.0%	Gabon	2.00	0.2%
Saudi Arabia	267.03	22.4%	UAE	97.80	8.2%	Ecuador	8.27	0.7%	Equatorial Guinea	1.10	0.1%
IR Iran	155.60	13.1%	Libya	48.36	4.1%	Angola	8.16	0.7%			
Iraq	145.02	12.2%	Nigeria	36.97	3.1%	Congo	2.98	0.3%			

Source: OPEC Annual Statistical Bulletin 2019.

## (II) Energy Consumption in UAE

(a) Petroleum is main source of energy and is used for:

- Water Desalination
- Electricity Production (Cooling, Lighting)
- Run Vehicles
- Run Industry

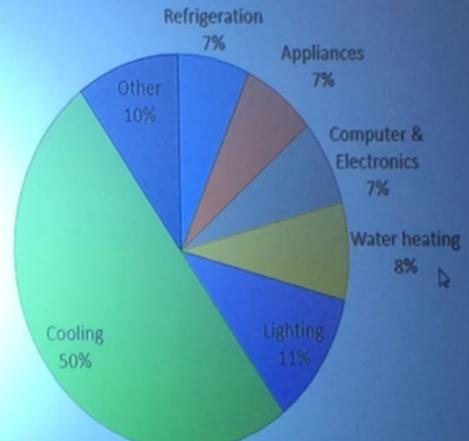
(b) Energy consumption is 80% higher than the global average, because of:

Aridity

High temperature

Inefficient insulation

↑ 传热太快, 空调消耗大



## (c) Electricity Production:

- **Power plants:** Traditionally run on petrochemical products and natural gas.

Power plants provide about 75% of total electricity production.

- **Nuclear plants:** Plan to construct 4 Plants (each of power 1.4 GW) near Abu-Dhabi.

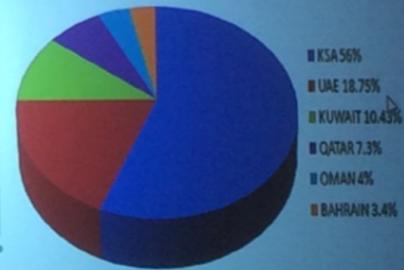
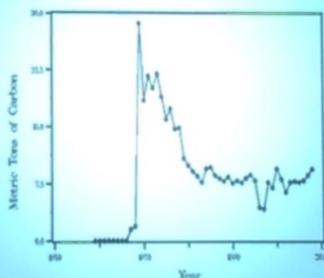
First 2 plants have already operated in 2017. The rest are due 2020. The plants should cover 25% of electricity consumption in UAE.

- **Solar Panels:** Plans to produce more than 7% of electricity using solar panels.

Please refer to: (i) Dubai: Shams Project; (ii) Abu-Dhabi: MASDAR City.

## (d) CO<sub>2</sub> Emissions:

- Constructions (e.g., building)
- Transportation (e.g., Vehicles)



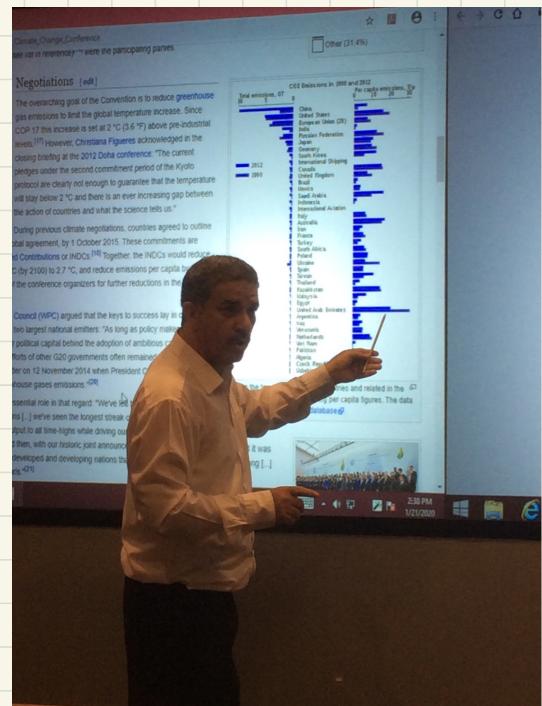
人对CO<sub>2</sub> emission 最高的是 UAE

## Climate change:

- ❖ Increase of average temperature of Planet Earth;
- ❖ Occurrence of Hurricanes very often;
- ❖ Volcanoes, Earth quakes, Tsunami.
- ❖ Rise of water level in oceans,
- ❖ Melting of ice mountains in Greenland

2015 UN Climate Change Conference  
⇒ before 2030

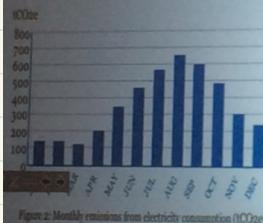
因为只有10%是 citizen,  
所以对UAE右图存疑



#### (IV) Solar Energy

### THE SUSTAINABLE CITY IN DUBAI.

Emissions from grid electricity consumption



生产过程中会产生有害物

MASDA R : 0-emission

CO<sub>2</sub> / kW  
不同类型能源

原本计划2017建成nuclear  
因缺少能源而搁浅

### Emirates Nuclear Energy Corporation (ENEC)

### UAEU Research Funding

#### Sponsorship of Research Proposals in UAEU:

Fiscal Year	College of Science (AED)	UAEU (AED)
2018	3,564,000	
2019	15,839,500	

### (VII) Conclusion

- ❖ UAE is a young country (1971 – Present)
- ❖ UAE is an active member of OPEC: UAE holds considerable energy reserves, for instance:
  - (i) 7<sup>th</sup> largest crude oil producer & 4<sup>th</sup> largest producer of petroleum liquid
  - (ii) 7<sup>th</sup> largest natural gas reserve world-wide
- ❖ UAE Economy grows by 13.9% from 2017 → 2019 to reach \$b 66.2.
- ❖ UAE puts great efforts to invest for renewable energy resource to both substitute oil and Eco-friendly resources (e.g., Nuclear Plants, Solar Panels “Shams-1”)
- ❖ UAE invest in education and research (e.g., in UAEU: Huge budgets are given to research projects within the scopes: Health, Energy and Environmental Science).

2020.1.26

## Cyber Security in Smart Cities

Prof. Saed Rabee

ICT : info. and comm. tech.

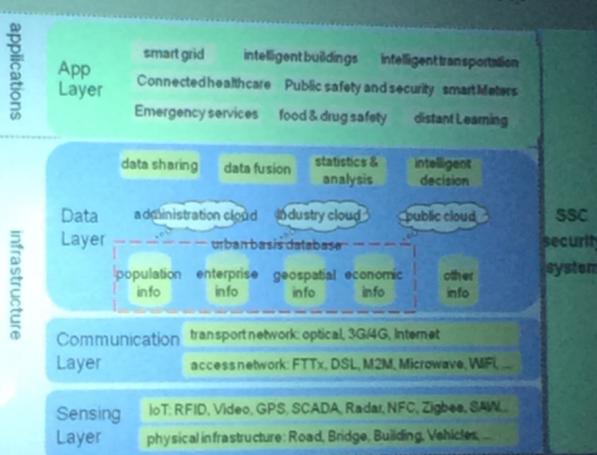
SSC: smart and sustainable cities

① hyper-connectivity

② hyper-complexity

③ high volume of data generated

Layered view, and architecture...



Intelligent transportation: keeping the city moving

- Real-time traffic flow information
- Global Positioning Systems (GPS)
- M2M communication, Wi-Fi and RFID technologies
- Data analytics and prediction techniques



## Definitions

- Resilience:** Ability to recover from security compromises or attacks
- Cybersecurity:** The discipline of ensuring that ICT systems are protected from attacks and incidents,
  - integrity of data,
  - their availability or confidentiality
- Data protection:** The tools and processes used to store data relevant to a certain ICT system or environment,
  - recover lost data in case of an incident - be it fraudulent, accidental or caused by a natural disaster

Dubai & Abu Dhabi have smart grids

Smart metering with IP address and sensors

## Connected Healthcare

- Secure collaborative access for authorized medical services, to Electronic Patient Records,
- Telemedicine solutions for remote areas or in case of natural disaster
- Ageing population: assisted living and monitoring service for independence at home
- All require privacy, identification and cybersecurity

## Public safety and security

- Protecting against crime, natural disasters, accidents or terrorism.
- Tele-surveillance systems to help emergency services
- Secure data access and sharing

## Wireless communications & hotspots

- Increasingly popular service, with increasing vulnerability
- Unsecure access to sensitive and personal data (online banking, social network, etc.)
- Younger population particularly exposed
- Cybercrime increasingly active in these environments

## Cybersecurity Infrastructure

According to S.I. 1901 "Cybersecurity Research and Education Act of 2002":

"The term **cybersecurity infrastructure** includes--

(A) equipment that is integral to research and education capabilities in cybersecurity, including, but not limited to--

- (i) encryption devices;
- (ii) network switches;
- (iii) routers;
- (iv) firewalls;
- (v) wireless networking gear;
- (vi) protocol analyzers;
- (vii) file servers;
- (viii) workstations;
- (ix) biometric tools; and
- (x) computers; and

(B) technology support staff (including graduate students) that is integral to research and education capabilities in cybersecurity."

## The Dams Sector

- UAE built 68 dams in the last five years
  - It aims at protecting the UAE's natural water resources
- In 2016, an Iranian nation-state committed a cyber-attack against
  - the United States at the Rye Brook Dam in New York
- The hackers accessed industrial control systems within the dam but were
  - fortunately unable to release the water behind the dam due to scheduled maintenance.
  - However, this could have been a disaster waiting to happen with just a few clicks.

The Iranian attack happened during maintenance.

## Technologies involved & vulnerabilities

- Network Infrastructure
- Cloud Computing (availability, security)
- Internet of Things (sensors, RFID, M2M, Standards...)
- Data and Big Data (embed security with data, confidentiality, integrity, authentication, availability)

FB checkin e.g. social experiment  
pretend to be an acgu.

Anual ~ 48      undergrad.      math grad.  
                  ~ 22      grad.

## The Energy Services Sector

- The UAE aims to achieve a sustainable infrastructure for generating power through renewable energy.
  - According to The UAE State of Energy Report 2015, the share of power generation from gas will drop from 98 per cent in 2012 to less than 76 per cent in 2021 as clean energy
- A cyber-attack in 2015 took out the energy grid in Ukraine for more than 225,000 people

## The Oil and Gas Sector

- Oil and gas in the UAE represent one of the core elements of the UAE national economy
- UAE has the world's 7th largest proved reserves of both oil and natural gas,
  - estimated at 97.8 million barrels and 215 trillion cubic feet.
- Shamoon attacks against national oil companies including Saudi Arabia's Saudi Aramco

## Emergency Services Sector

- U.S. Police Departments and Fire and Rescue are becoming victims of the latest ransomware cyber attacks like WannaCry.
- These critical services can be taken completely offline which is troubling since citizens rely on these services every day.

## Information Technology Sector

- This sector is key to the country's security, economy, and general wellbeing as
  - organizations, governments, the scholarly community, and
  - private residents are progressively reliant upon Information Technology Sector capacities.
- These virtual and circulated capacities create and give equipment, programming, and data innovation frameworks and administrations, and—in a joint effort with the Communications Sector—the Internet.

## Chemical Sector

- Chemical industry is one of the important industries in UAE economy
  - that produces, stores, uses and transports potentially hazardous chemicals
- Surprisingly, the chemical industry is becoming a target for cyber attacks.
- A notable attack, 'Nitro,' occurred in 2011 whereby hackers used a malware called 'PoisonIvy' to steal sensitive data and information from several chemical companies throughout the U.S.

3 labs in UAEU

percentage of local

20% - 30% in Dubai

company "Dark Matter"

25% - 28% in Abu Dhabi

300,000 AED funding for prof.

2020.1.26

Leadership, Vision, and Opportunity

Prof. Rashed Alzahmi

Pro-Motum

Rise & Collapse of a Nation

(brainstorm) wars, international conflicts

domestic political identity cohesion

Zayed: Education + Security + Health

Ministry of Possibilities, April 2019

"The Bigger Your Vision, the Bigger your achievements will be"  
— His Highness Sheikh Zayed



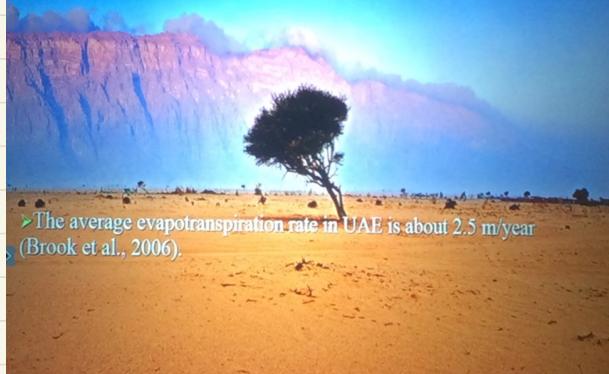
Transparency: 5 best & worst government offices annually

2020.1.26

## Story of Water

### Precipitation & Evapotranspiration

➤ UAE is located in an arid zone with annual rainfall ranges between 80-160mm and the average precipitation is 78mm per year.



➤ The average evapotranspiration rate in UAE is about 2.5 m/year  
(Brook et al., 2006).

2020.1.26

## Justice

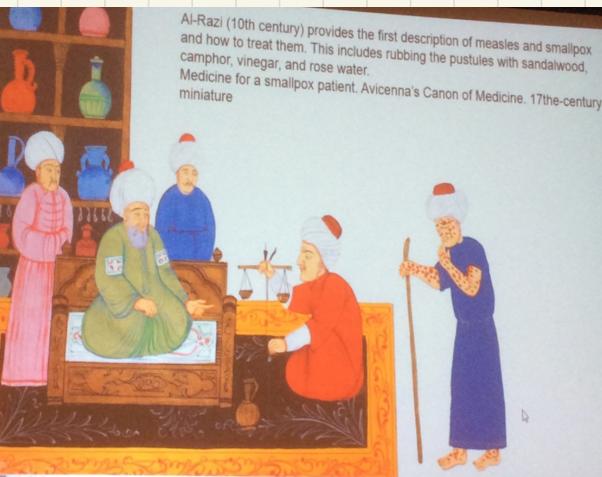
4 supreme courts

Didn't listen

>≤ anxious about 2019-nCoV

2020.1.26

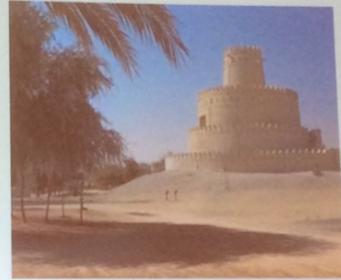
## Medicine School



Many history records .....



Trucial Oman Scouts



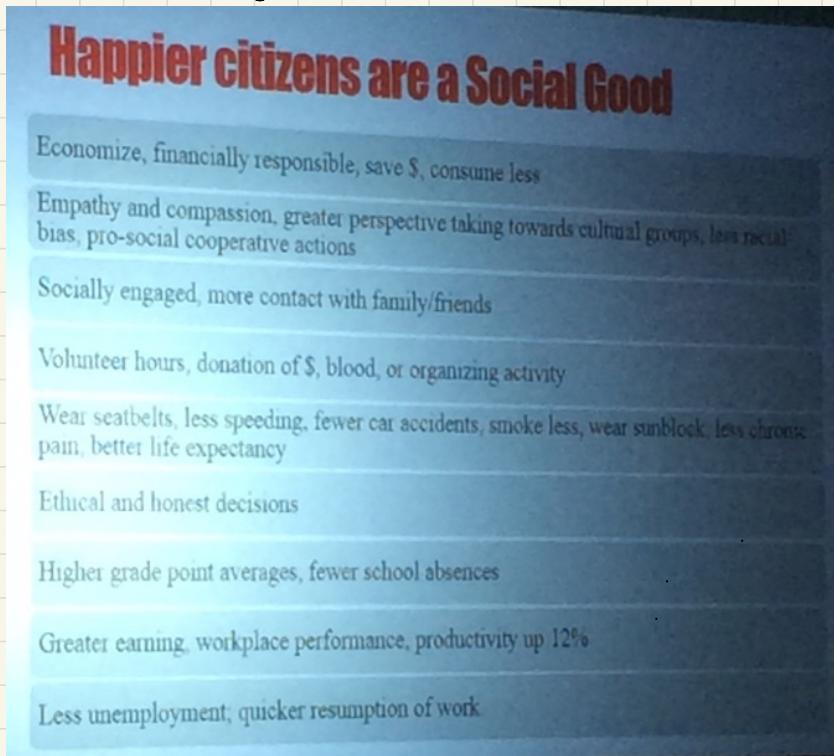
1959.  $\frac{1}{3}$  new born death rate  
 $\frac{1}{2}$  children death rate

2020.1.27

Happiness

takarabchuk@uaeu.ac.ae

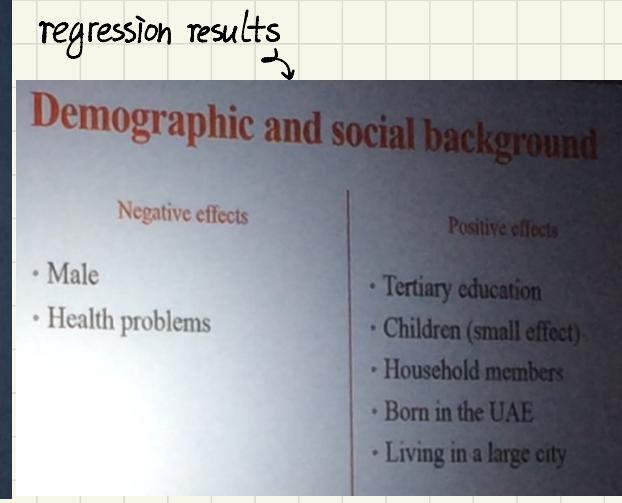
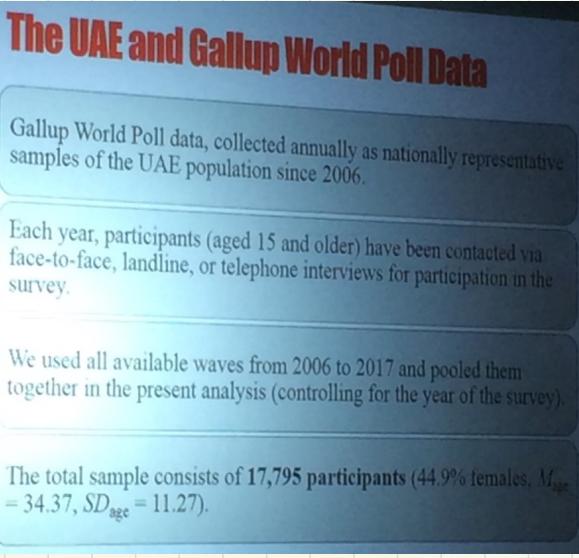
Maxico → 4 years at UAEU (open to discuss about career)



2016 Minister of State for Happiness

2017 Global Happiness Council

2018 Global Happiness Coalition



# Determinants of life satisfaction for men and women, GWP data 2006-2017

corr.  $\neq$  causality

## Males

- Age (U-shape)
- Tertiary education (+)
- Number of children (+)
- Number of family members (+)
- Health problems (-)
- Born in the UAE (+)
- Large city (+)
- no effect
- Income (+)
- Satisfaction with stand. of living (+)
- Negative experience index (-)
- Positive experience index (+)
- Donation (+)
- Helping stranger (-)
- Friends or relatives (+)
- Community Basic Index (+)
- Community Attachment Index (+)

## Females

- no effect
- Tertiary education (+)
- no effect
- Number of family members (+)
- Health problems (-)
- Born in the UAE (+)
- Large city (+)
- Employed full time for self (+)
- Income (+)
- Satisfaction with stand. of living (+)
- Negative experience index (-)
- Positive experience index (+)
- Donation (+)
- no effect
- Friends or relatives (+)
- Community Basic Index (+)
- no effect

## Conclusions

### Paradoxes for the UAE society:

- Unemployment does not have significant effect
- Self-employment increases life satisfaction for women
- Marriage does not have significant effect
- Number of children is relevant only for males
- Donation is important for both genders
- Freedom of choice in your life does not have significant effects
- Friends and relatives do not matter for youth

### Policies:

- ① education
- ② medical care
- ③ labor market  
30% for women

2020.1.27

Prof. Manzoor Khan

Digital Cities: Enablers and Interplay of Stakeholders

## Architecture Tissue of Dubai

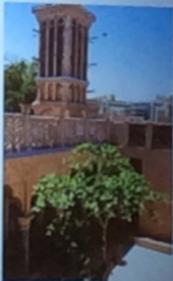
Prof. Mahmoud A. Haggag

### Dubai and its Architecture Tissue

The architectural ideologies of Dubai have been moved from a traditional vernacular style to a modern pattern. The traditional fabric and planning ideologies of the pre-modern era (1950s) reflects three dominant factors:

- The climatic condition: hot and humid (day-time temperatures range from 35°C to 48°C in summer; and from 25°C to 35°C in winter)
- The cultures and customs of the residents, and
- The locally available building materials.

This pattern is characterized by high-density buildings, narrow shaded alleys, courtyard houses and wind-towers.

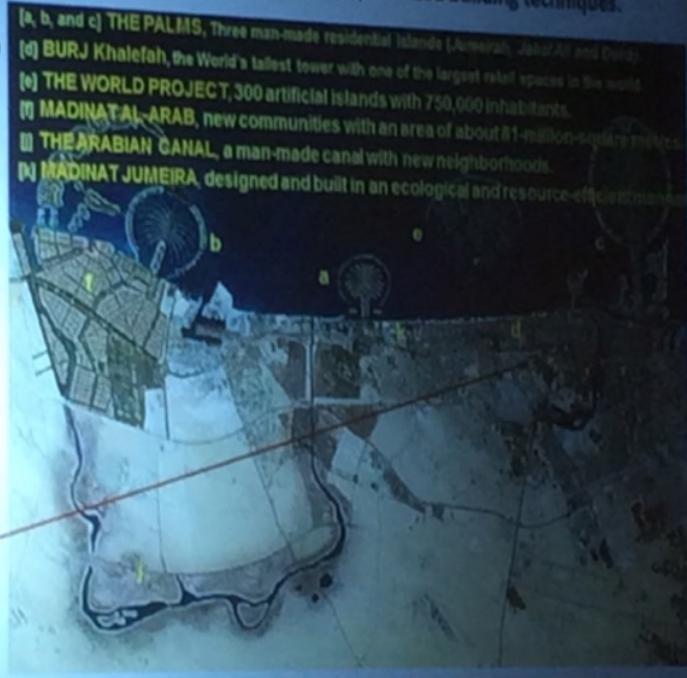
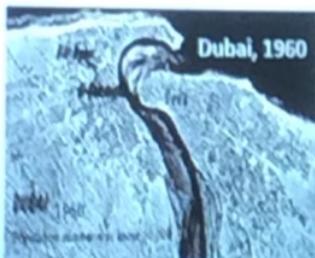


less windows

courtyards

## The modern architecture of Dubai was concerned with highly specialized building techniques.

- A number of mega-projects have been developed, including Burj Khalifa (the world's tallest tower located in Dubai); Madinat Jumeirah (one of the largest modern resorts in Dubai); and Al Seef Dubai Creek.
- Minimizing the impact on the natural environment and improving the ecological performance of any project are the main concerns of urban development.



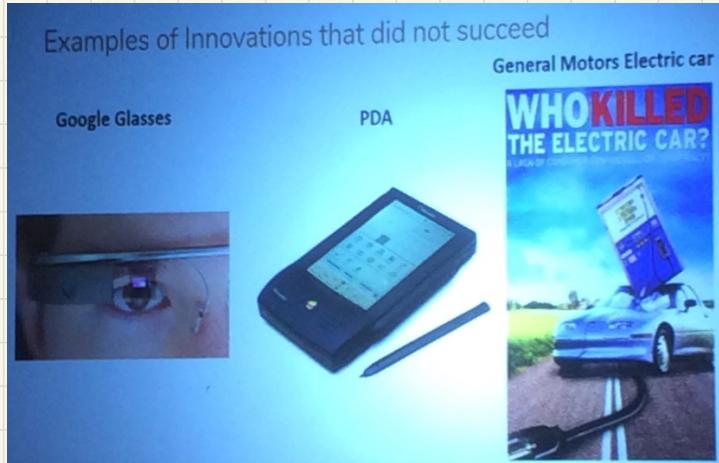
## Conclusion

- Minimizing the impact of urban development on the environment and the trend to improve the ecological performance of buildings are the main concerns of the sustainable building practices in the UAE.
- These ideologies have been acknowledged by architectural firms to develop new projects that are energy efficient.
- Various passive cooling strategies, including natural ventilation, thermal mass, proper shading, and careful siting have been used to develop energy-efficient buildings and cooling load avoidance.
- The use of passive strategies was successfully adopted not only in the new construction projects but also in the old developments
- The combination of the passive cooling strategies will not only increase energy efficiency in buildings and reduce environmental impact, but also increase sound insulation and create more pleasant indoor spaces and air quality improvements.

2020.1.27

Um Elemarat HS

Trade & Transportation



2020.1.28

Education

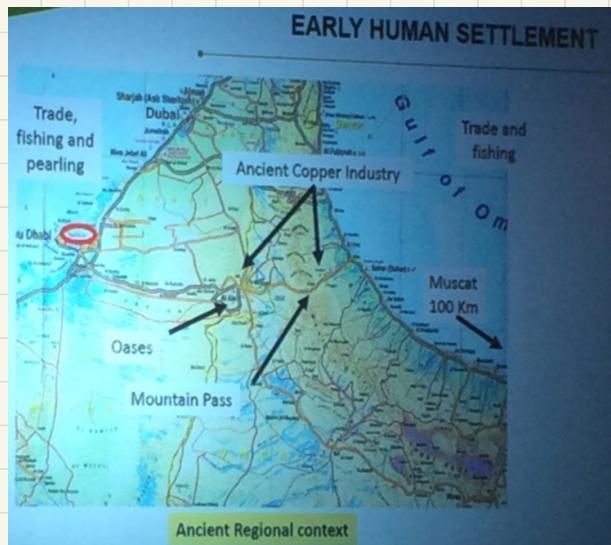
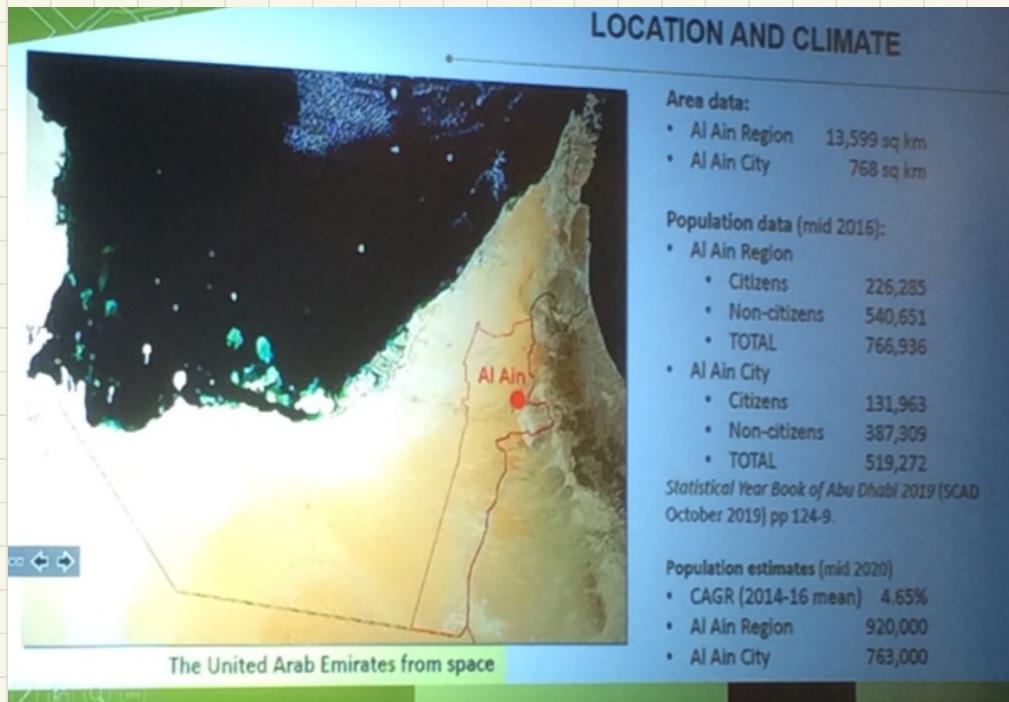
Kataeeb & Mutawa

Semi-organized tutor, paid by parents

UAEU 98% courses are in English

2020.1.28

## Town Planning in Al Ain



city = movement + settlement

Al Ain = "Spring"

## EARLY HUMAN SETTLEMENT #4

气候不如 Abu Dhabi



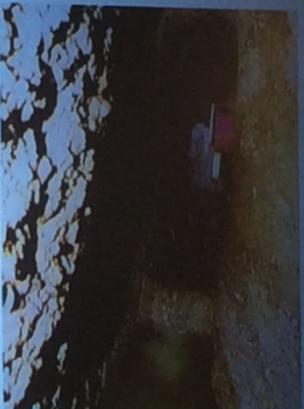
Ice afaj irrigation in Al Ain (Abu Dhabi Environment Agency, 2006)

Al Ain's seven oases have been supplied with fresh water from mountain springs many kilometres away by an ancient irrigation system known as afaj..

The world's oldest known falaj was excavated at the site known as Hilli 15 in 1983.

It is approximately 3000 years old (Iron Age).

(p72 Walid Yasin Al Tikriti Archeology of the Falaj, Abu Dhabi Authority for Culture & Heritage 2011)



Underground afaj being surveyed (p vii Al Ain Tourist and Street Address Guide 2001)

Turning Point:

① Sheikh Zayed

② Umm Shaif, Oil discovered, 1958

## URBANISATION

### Brief History of Town Planning in Abu Dhabi



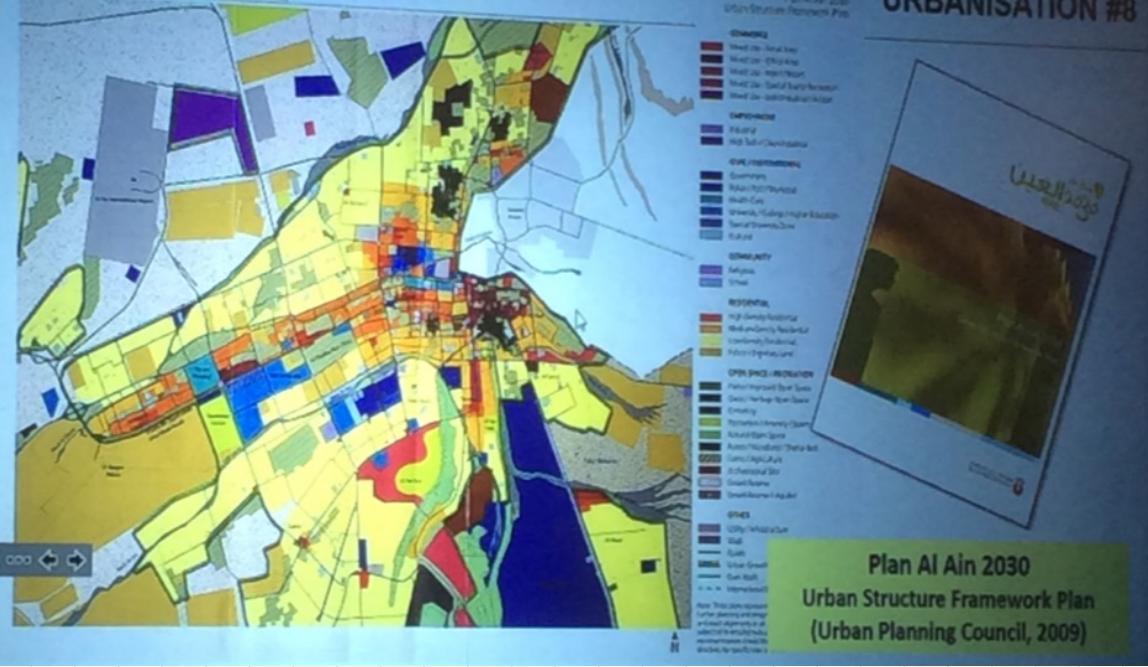
The late Sheikh Zayed and Dr Makhoul discuss plans for Abu Dhabi, circa 1975

- 1961 Initiation of the municipal services
- 1962 Abu Dhabi Master Plan (updated in 1966 to provide for a population of 35,000).
- 1967 Japanese planner Dr Katsuhiko Takahashi appointed to oversee planning in Abu Dhabi & Al-Ain.
- 1968 Master Plan provides for an Abu Dhabi City population of 250,000.
- 1968-1985 Comprehensive Planning of Abu Dhabi, including:
  - The 1969 CDB Plan,
  - 3,400 Ha of waterfront reclamation from 1970 to 94,
  - Development projects at Bain Al-Jusreen, Al Musaffah, public housing in Al-Shahama, International Airport, Zaid City, Al-Dhafrah airbase, Al Taweelah desalination & power generation plants.
- 1976 Town Planning and Survey Department established in Al Ain and master plan prepared
- 1986 2<sup>nd</sup> Master Plan for Al Ain
- 2003 TP&S Departments absorbed into the municipalities.
- 2007 Urban Planning Council established.

### 4.3.2 LAND USE FRAMEWORK (DETAIL)

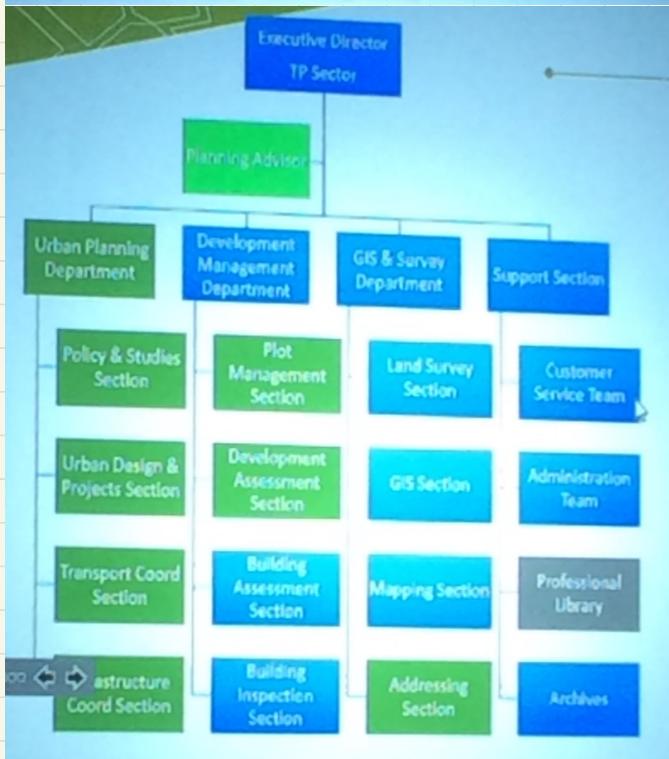
Office Structure Framework Plan  
Plan Al Ain 2030  
Urban Structure Framework Plan

## URBANISATION #8



Plan Al Ain 2030

Urban Structure Framework Plan  
(Urban Planning Council, 2009)



## Development Projects Workflow Model



### VISION

In response to a problem or opportunity, develop a vision and obtain Executive Director's approval to proceed to CMP.



### CMP

Develop a vision into a Concept Master Plan (CMP), then prepare ToR and tender for the preparation of a DMP by a consultant.



### DMP

Supervise the preparation of a Detailed Master Plan (DMP) by a consultant and then obtain all necessary approvals (including private owners).



### D2C2

Assist and advise colleagues in the Municipal Infrastructure & Asset Sector (MIAS) during the detailed design, construction & commissioning process (D2C2).

1-2 weeks

3-4 months

5-6 months

18-24 months

In-house

In-house

Consultants  
(but developing  
an in-house  
capability)

MIAS  
responsibility

## Lecture: UAE High School Students Energy and Sustainability

6th global oil & gas reserves, 98% in Abu Dhabi

Sunrise Champaign  
60+ Earth Hours

UAE Energy Strategy 2050

◊ Shams 1

western region of Abu Dhabi  
175,000 tons of CO<sub>2</sub> per year

◊ Masdar City

18 ~ 22 billions dollars

◊ Barakah

nuclear plant

2020.1.20

## Learn Arabic

你好 Marhaba

مرحب

meem-ra ha-baa

How are you? Kaifa Haluk?

كيف حالك

kaf-ya-fa ha-lam-alif

I am good. Ana Bekhair

انا بخير

alif-noon baa-kha-ya-ra

### How To Write The Letters Of The Arabic Alphabet

Jeem	Tha	Taa	Baa	Alif
				
Ra	Thal	Dal	Kha	Ha
				
Daad	Saad	Sheen	Seen	Zain
				
Fa	Ghayn	Ayn	Tha	Ta
				
Noon	Meem	Lam	Kaf	Qaf
				
Arabic				
Ya	Wow		Ha	
				

2020.1.21

## Learn Arabic

How many ?

كم  
(Kam = kaf + meem)

How many apples in the basket ?  
(kam tu fahatan fis Salla ?)

How much ?

بكم

Bkam = baa + kaf + meem

بكم هذا الكتاب؟

Bekam hatha lkitab?

How much is this book?

Why ?

لماذا أكلت الفطيرة؟

Limatha akalta lfatira?

Why did you eat the pie?

### How To Write The Letters Of The Arabic Alphabet

Jeem	Tha	Taa	Baa	Alif
ج	ث	ت	ب	أ
Ra	Thal	Dal	Kha	Ha
ر	ذ	د	خ	ح
Daad	Saad	Sheen	Seen	Zain
ض	ص	ش	س	ز
Fa	Ghayn	Ayn	Tha	Ta
ف	غ	ع	ط	ط
Noon	Meem	Lam	Kaf	Qaf
ن	م	ل	ك	ق
Arabic		ي	و	هـ
		ي	و	هـ

How many ? = Kam

How much ? = Bkam

Why ? = Limatha

## Activity 1: Kam? Or Bekam?

قلماً لديك؟

كم

kam

qalaman ladaika?

How many

pencils do you have?

## Activity 2: Kam? Or Bkam?

اشتريت هذا الفستان؟

بكم

Bkam

ishtarita hathal fustan?

How much

did you buy this dress?

2020.1.26

## Learn Arabic

Where?

'ayna

How?

Kayfa?

كيف حالكم؟

• Kaifa Halukum?

← 你们 (复)

• How are you?

أين ذهب أليسون في نهاية عطلة الأسبوع؟

• Ayna thahaba Alison fi nehaya otla al esbooaa?

• Where did Alison go this weekend ?

- 'Ayna taskun/taskuneen? - Ana escu fin china.  
Where do you live? I live in China.

- Kayfa wajadta/wajadteen hatta almasaq/alsaf?  
How do you like this class so far?

✓ class

✓ classroom

2020.1.27

## Learn Arabic

Arabic abjad

28 letters

cursive 连写

Name: ~~sheen raa meem laam ayh~~  
sheen - raa - laam - noon

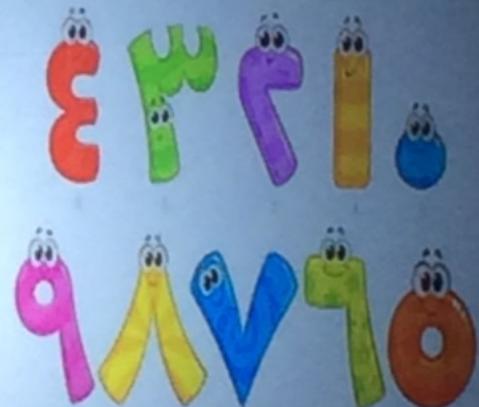
شـرـلـن

شـرـلـن شـرـلـن شـرـلـن  
شـرـلـن شـرـلـن شـرـلـن

# ➤ 1. Count from 0-9 in Arabic

<https://www.youtube.com/watch?v=4ZmxWJGzKY>

- Sefr ٠ .      • Khamsa ٥ ٥
- Wahed ١ |      • Sitta ٦ ٧
- Thnena ٢ ٤      • Saba'a ٧ ٨
- Thalatha ٣ ٣      • Thamanya ٨ ٩
- Arba'a ٤ ٤      • Tesa'a ٩ ٩



shutterstock.com • 506736381

## 2. Bargaining in emirate dialect



You need words such as

- **Kam /becam hatha?** → How much / how many
- **Floos** → Money
- **Lesh Gaali** → why expensive
- **Rakhes/ naqes baa'd** → lower the price/ more
- **Akhr kam?** → How much last
- **Bashtrih** → I'll buy it.
- **Atny kees** → give me bag



Kam Floos?	~	How much money
Lesh Ali	~	Why expensive
La la	~	No. No.
Atoni gis	~	Give me a bag.
Shuhada?	~	What is it?
Endercada X	~	Do you have X?
Shukerum	~	Thanks



### 3. Appreciating someone's beauty in Arabic



- Standard Arabic

Anti Jamila



- Emartie Dialect

Anta Jamil/Wasim



Enti Helwa



Enta Hulu



### 4. Look on online resources.



- <https://arabiconline.eu/>
- [http://arabicquick.com/learn\\_arabic\\_alphabet/](http://arabicquick.com/learn_arabic_alphabet/)
- <https://l-lingo.com/free-lessons/en/learn-arabic>
- Google Translation
- YouTube

B.khanbooli@uaeu.ac.ae