

# KSA Future Schools: Building a Sustainable Future for the Kingdom's Youth



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KEO Corporate Sustainability Director

# Agenda

1. Sustainability: a key driver for prosperity for KSA
2. Energy macro-economics
3. The Nitiqat initiative & the Tatweer Future Schools program
4. An introduction to KEO International
5. Case study of KEO Collaboration with the Abu Dhabi Future Schools program



# Four Pillars of Sustainability in the Gulf

- Environment
- Economy
- Social
- Culture



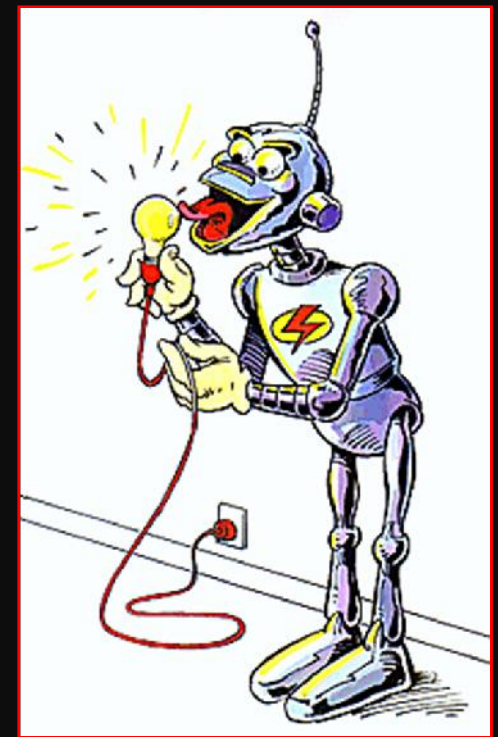
# Ban Ki-moon

## Secretary-General, United Nations



**“Sustainability has become the foundation for almost all economic thinking nowadays. It is essential not only to economic recovery today, but to ensuring peace and security tomorrow.”**

- GCC energy & power demand consumes approximately 30% of its oil & gas production internally;
- By 2030 the region could consume 60% of its current energy production, & its entire gas production;
- Even with increase in production this situation is not sustainable;
- Energy & demand efficiency can bridge almost 30% of this demand surge.





# KSA FUTURE SCHOOLS SUSTAINABILITY

## Environmental Considerations

- Low carbon planning to reduce the Kingdom's reliance on fossil fuels.

## Economic Considerations

- Strategic planning to capitalize on the value of oil in the global marketplace, & reinvest profits back into citizens through social infrastructure.



Sustainability is a Global Issue...



Why is a Sustainable Built Environment  
Important for KSA?

# Drivers for Sustainable Development in KSA: Accelerating Demand for Social Infrastructure

## Challenges:

- ✓ Aging or nonexistent infrastructure: water, power, & waste require modernization & expansion;
- ✓ Environmental degradation;
- ✓ Increasing air pollution;
- ✓ Social development & public health;
- ✓ Desire for diversified economy;
- ✓ Significant stakeholder expectation & needs.

## Sustainable Development Goals:

- Provision of modern infrastructure;
- New public leisure & recreation spaces;
- Increased supply of educational facilities & affordable housing;
- Solving environmental problems;
- Contribute to creating a sustainable economy.



# A Prosperous Kingdom: Nitikat

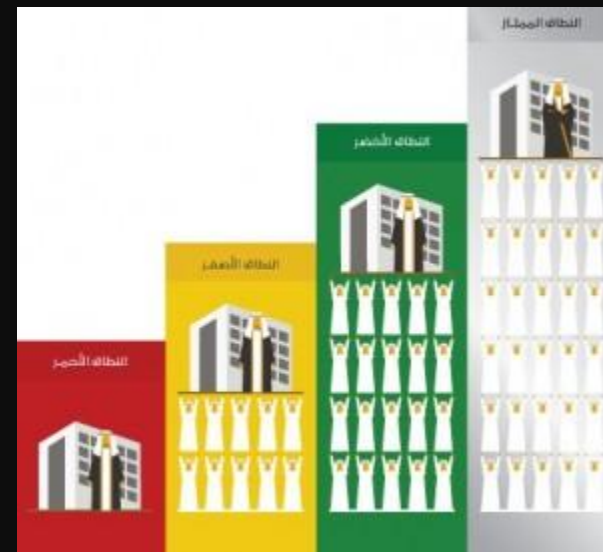
## Importance of Employment in Building a Sustainable Middle Class

Saudi Males  
Unemployment

- 10.8% in 2012

Saudi Youth  
Unemployment  
Ages 15-24

- 28.2% in 2012



# Education for Employment: Key to a Sustainable Middle Class

## *Nitiqat Goals*

- Reduction of unemployment of Saudi Nationals;
- Reduce welfare expense;

## *Successful implementation:*

- Requires creation of highly skilled local labor pool;
- Imperative to diversify away from the Public sector;
- Increases demands on primary & secondary education to prepare youth to compete.



**KSA Will Need to Upgrade & Expand Public Educational Facilities**

## KSA SCHOOLS: CURRENT BASELINE IN KINGDOM

- Saudi Arabia's nationwide public educational system comprises more than 33,000 schools with over 5 million students;
- Private schools have adapted to keep pace with international best-practices;
- It is essential to provide younger generations with high-class public education in a system that is unified across the country.









Tatweer:

## Taking Action To Create The Best Future For Kingdom's Youth

*“Education is the foundation for building the economy... and the future for young people to participate in building a progressive society in all areas.”*

- Lift KSA's current educational schemes up to international best practices;
- Develop educational process that facilitates proper learning;
- Achieve sustainable development in the Kingdom of Saudi Arabia.



Source:

[www.tatweer.edu.sa](http://www.tatweer.edu.sa)



## Economic Considerations

- Restricted plot sizes for school sites;
- Modular design scalable for growth;
- Low cost per m<sup>2</sup> & efficient to operate;
- Design to resist misuse (kids wear and tear)



## Cultural Considerations

- Schools serve as community hub;
- Schools must be a safe place for students, teachers, & families.
- School must be multifunctional spaces that serve the needs of communities;
- Government authority establishing system to develop future generations that can contribute to country's prosperity.



## Social Considerations

- Shared Curriculum
  - Islamic education
  - Arabic language
  - Science & Math
- Male Focus
  - Business development
  - Vocational training
- Female Focus
  - Fashion design
  - Domestic skills





# Our Practice, Our Projects



# Firm History



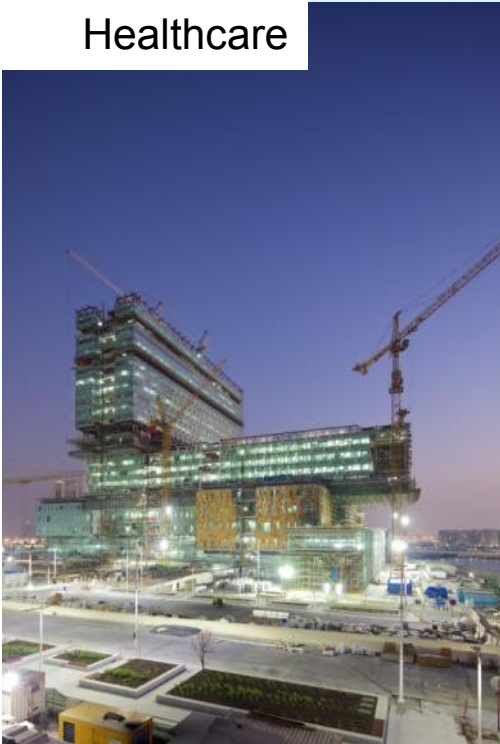
For close to 50 years, KEO International Consultants has provided highly sought after professional services in the construction industry. Today, KEO is recognized as a dynamic international leader in the delivery of sustainable master planning, iconic architecture, comprehensive civil engineering and award winning project & construction management.



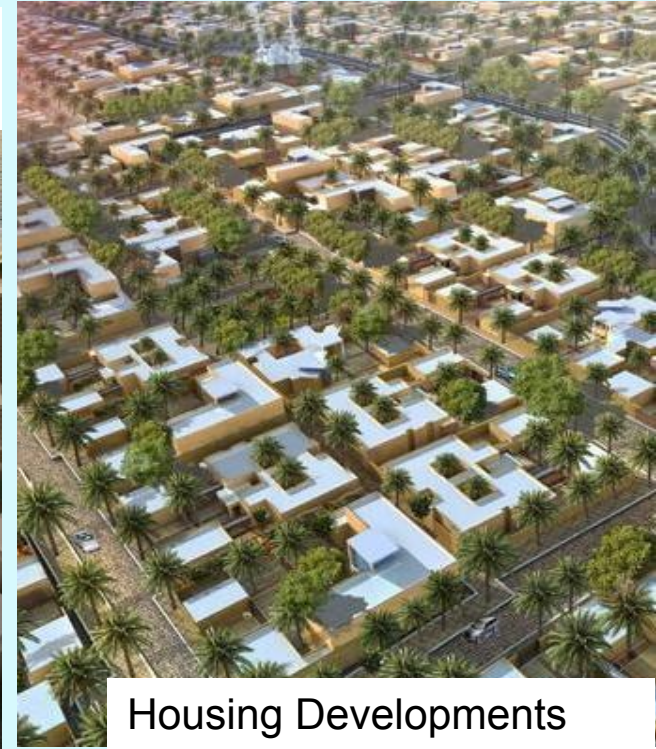
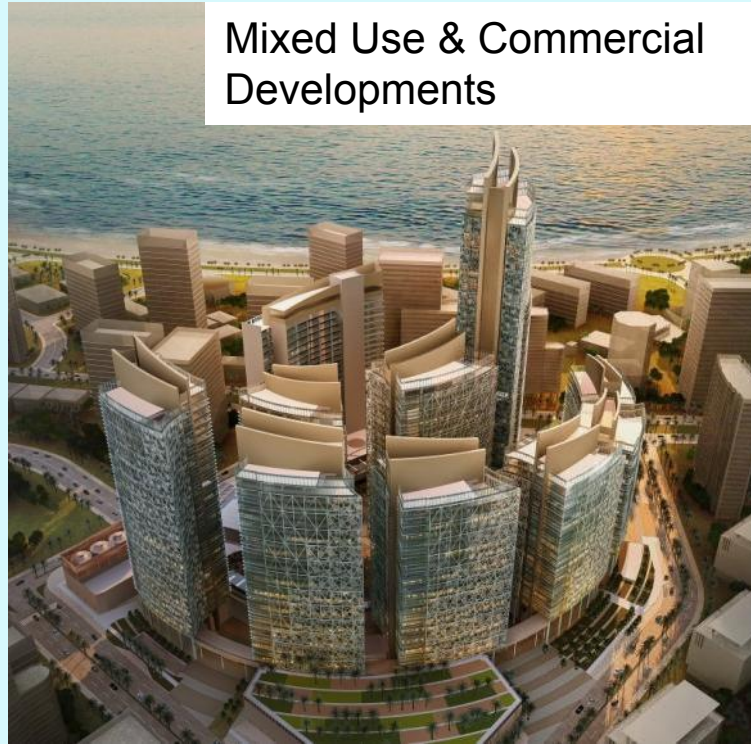
# KEO Project Types



Healthcare



Mixed Use & Commercial Developments



Housing Developments

Landscape & Public Realm



Aviation



# KEO Project Types



Convention Centers & Auditoriums



Sports Facilities

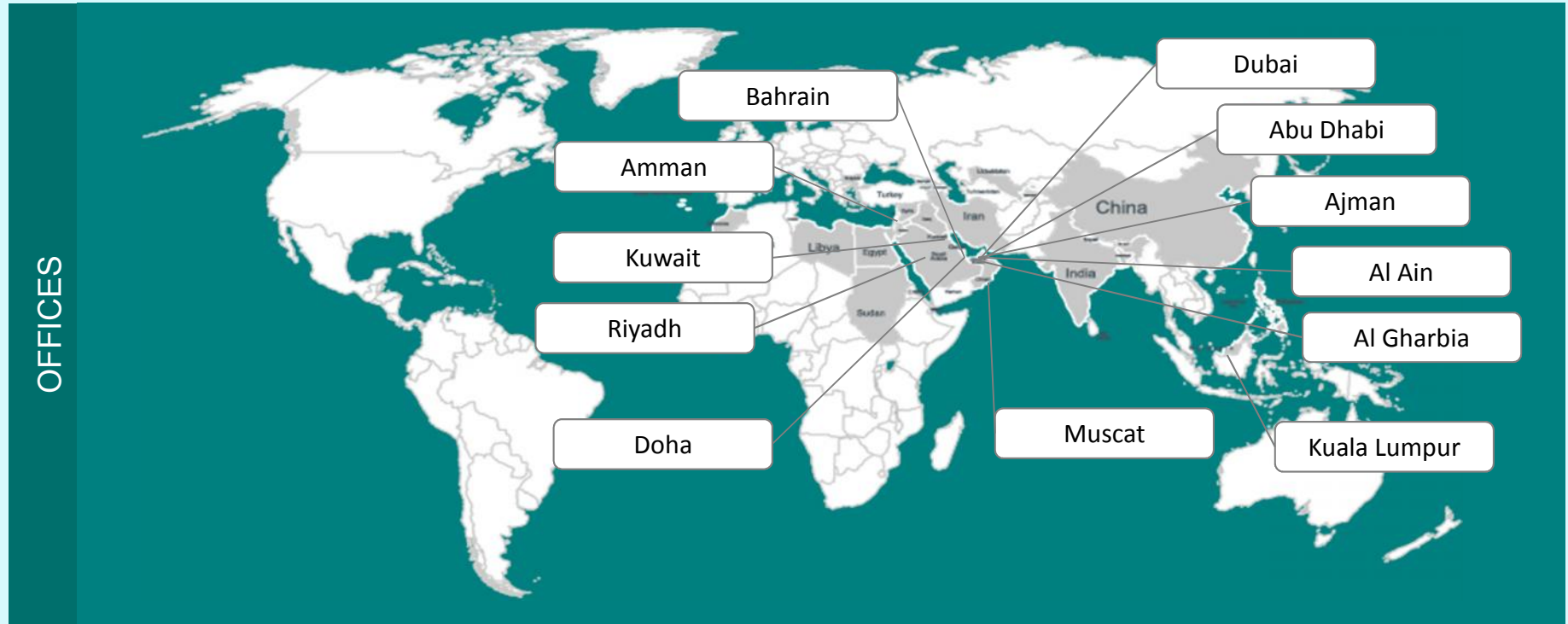


Infrastructure, Roads & Rail

Educational Campuses



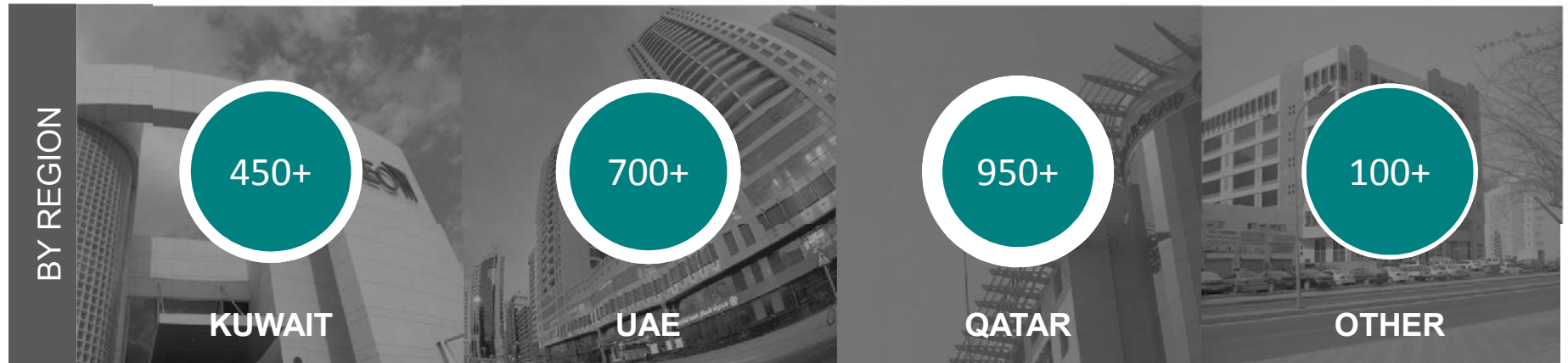
# International Presence



## Global Experience

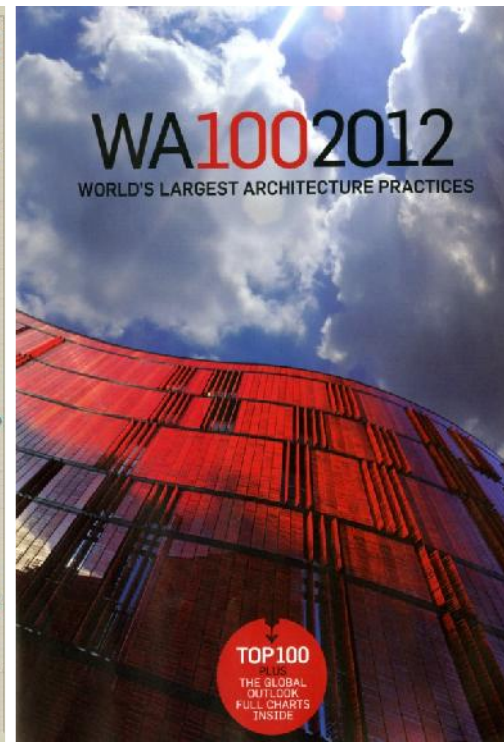
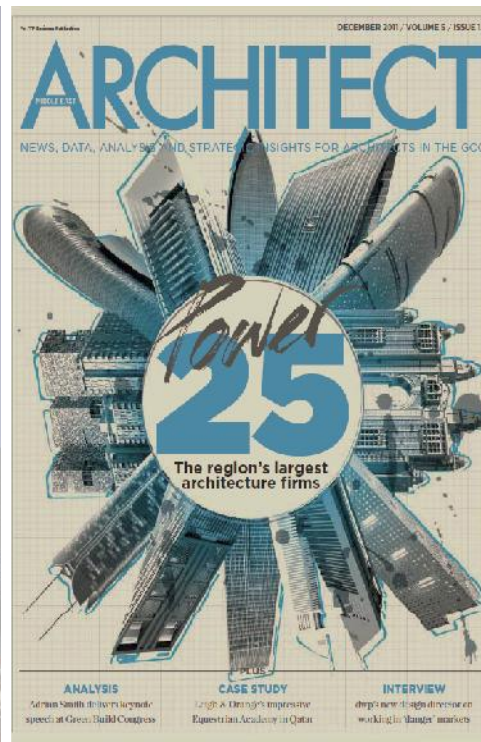
Abu Dhabi . Al Gharbia . Ajman . Al Ain . Bahrain . Bangladesh . Bulgaria . Cape Verde Islands . China . Dubai . Egypt . India . Iran . Iraq . Jordan . Malaysia . Kuwait . Lebanon . Oman . Philippines . Qatar . Ras Al Khaimah . Saudi Arabia . Sharjah . Syria . Uzbekistan

# Growth





# Rankings & Awards



## BD World Rankings

- # 40 Firm by Number of Architects 2012
- # 01 Firm in Middle East Region 2012
- # 02 Market Sector, Infrastructure 2012
- # 01 Construction Management 2012

## Arabian Property Awards

- Best High Rise Architecture 2009-2011
- Best Office Architecture 2010

## ITP Architect Awards

- # 1 Firm in Middle East for 2011
- Firm of the Year, finalist 2010
- Principal of the Year, finalist 2010
- Sustainable Design finalist 2010
- Residential Project finalist 2010

## MEED Quality Awards

- Al Tijaria Tower Kuwait 2011
- West Bay Transmission Qatar 2011

## Construction Week

- A Most Admired A/E Firm for 2011

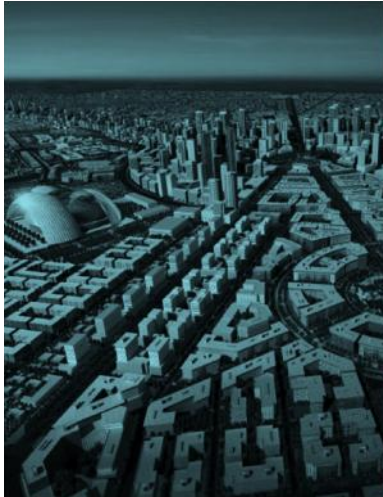
## ENR Rankings

- # 90 Top 200 Design Firm 2011
- # 10 Top 20 PM-CM Firm 2011
- # 14 Top 20 Total PM-CM Firm 2011

## ITP MEP Awards

- Sustainable Project of the Year, 2011





## KEO Strategy, Planning & Urban Development

Master Planning  
Urban Design  
Design Guidelines  
Development Management  
Institutional Building  
Feasibility Studies  
Landscape Architecture  
Sustainability Consultancy



## KEO Design

Architectural Design  
Structural Engineering  
HVAC Engineering  
Plumbing Engineering  
Fire Protection  
Electrical Engineering  
Executive A/E Services  
Interior Design



## KEO Project & Construction Management

Program Management  
Project Management  
Design Management  
Design Reviews  
Health & Safety  
Schedule Management  
Cost Management  
Construction Management  
Construction Supervision  
Owners Representative  
Claims Management  
Dispute Resolution Services  
Commissioning Services



## KEO Infrastructure

Infra Master Planning  
Civil Engineering  
Traffic Impact Studies  
Environmental Impact  
Roads & Highways Design  
Bridge Design  
Water Engineering  
Wastewater Engineering  
District Cooling Design  
Power Supply & Distribution  
Solid Waste Engineering  
Asset Management



## KEO Contracts & Quantity Surveying

Cost Engineering  
Value Engineering  
Bills of Quantities  
Contract Documentation  
Tendering Services

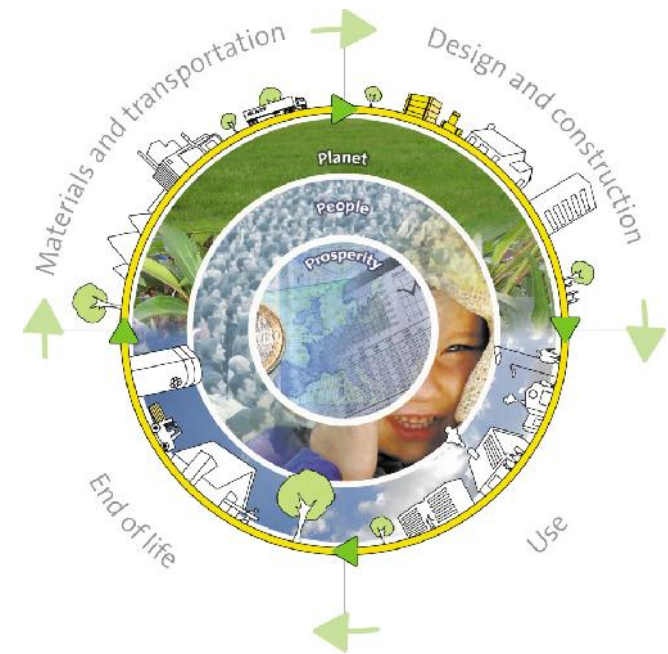
# The CEO's Strategic Plan for Sustainability



**“KEO will build quantifiably more sustainable communities compared to baseline projects.”**

-Donna Sultan, CEO

KEO's commitment to the environment, to sustainable design, & contributing to any nation's sustainability regulatory system is a cornerstone of our corporate core values.



**Goal: Cost neutral sustainable design, innovation & improved competitiveness.**

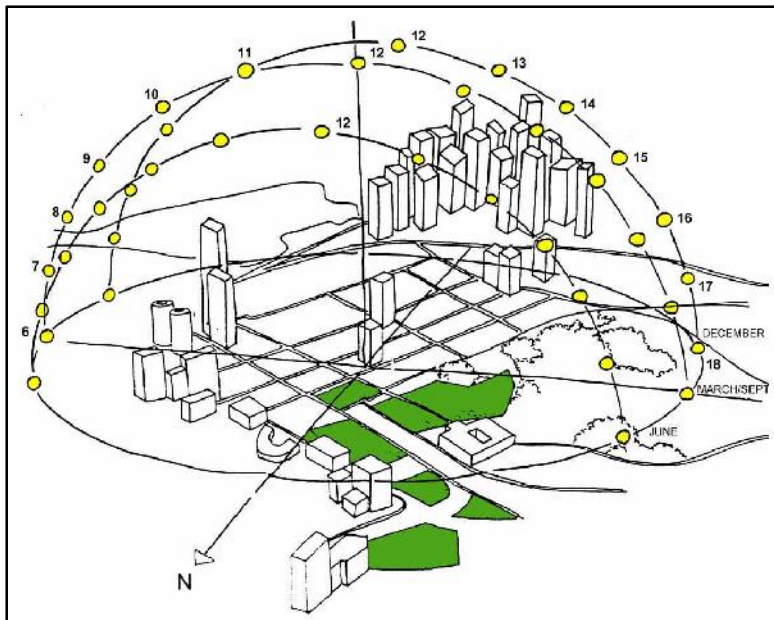
# Project Sustainability: What does it mean at KEO?

- Sustainable master planning & infrastructure;
- Thermal modeling: microclimate & passive design modeling;
- Ecology;
- Durability;
- Renewable energy technologies;
- Energy demand assessments;
- Site sustainability management.



KEO Sustainability is committed to creation of socially sustainable communities.

# Integrated Environmental Planning (IEP)



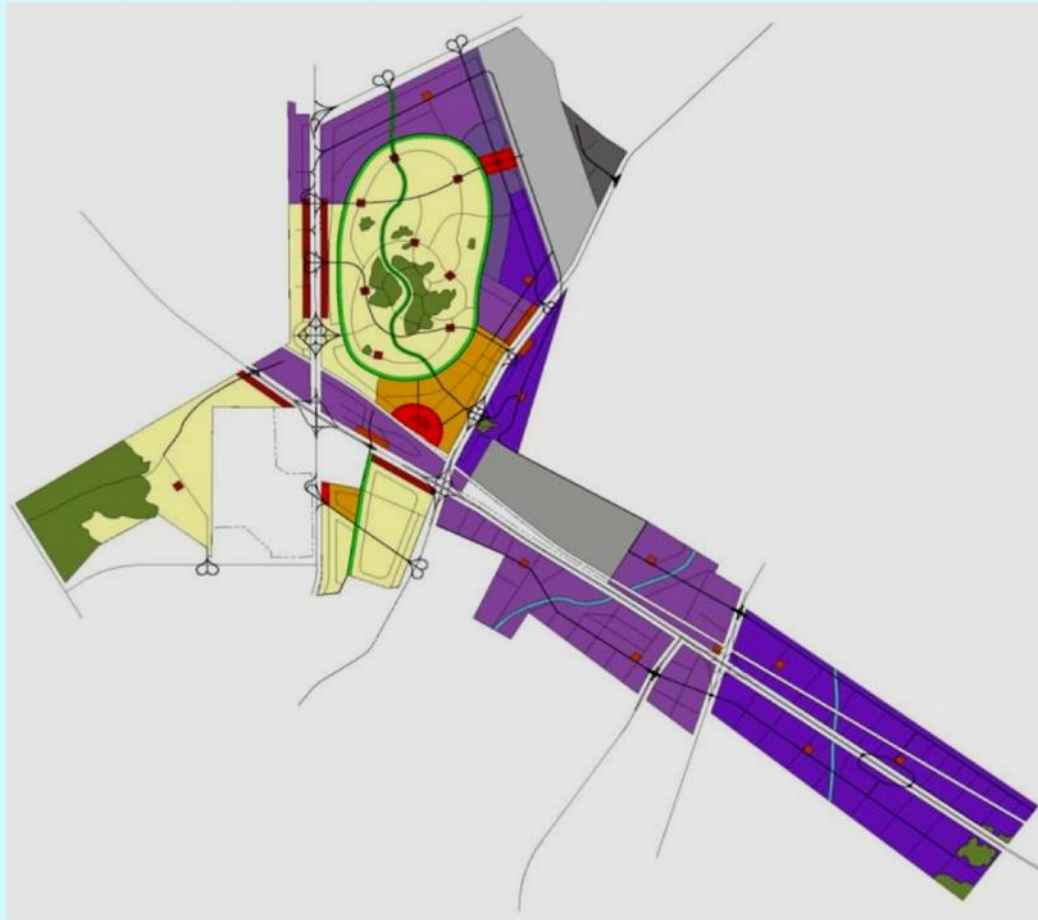
**IEP facilitates development with appropriate consideration for the natural environmental, social, political, economic and governance factors.**

**IEP provides a holistic framework to achieve sustainable outcomes.**



# Ha'il Economic City

Saudi Arabia



156 km<sup>2</sup> of residential, industrial and commercial for a future population of 400,000

Master Planning, Urban Design, Landscape Architecture, Sustainability Services, Project Management, Infrastructure Master Planning, Infrastructure Detail Design, Solid Waste Management Planning



# Tijara Resort

Unaiza, Saudi Arabia



Master Planning, Concept Architecture, Infrastructure Master Planning, Sustainability Services



# Tijara Resort

Unaiza, Saudi Arabia



Master Planning, Concept Architecture, Infrastructure Master Planning, Sustainability Services





# KAFD Monorail System, Riyadh Saudi Arabia



## DESIGN

Architectural Design, Structural Design,  
MEP Engineering

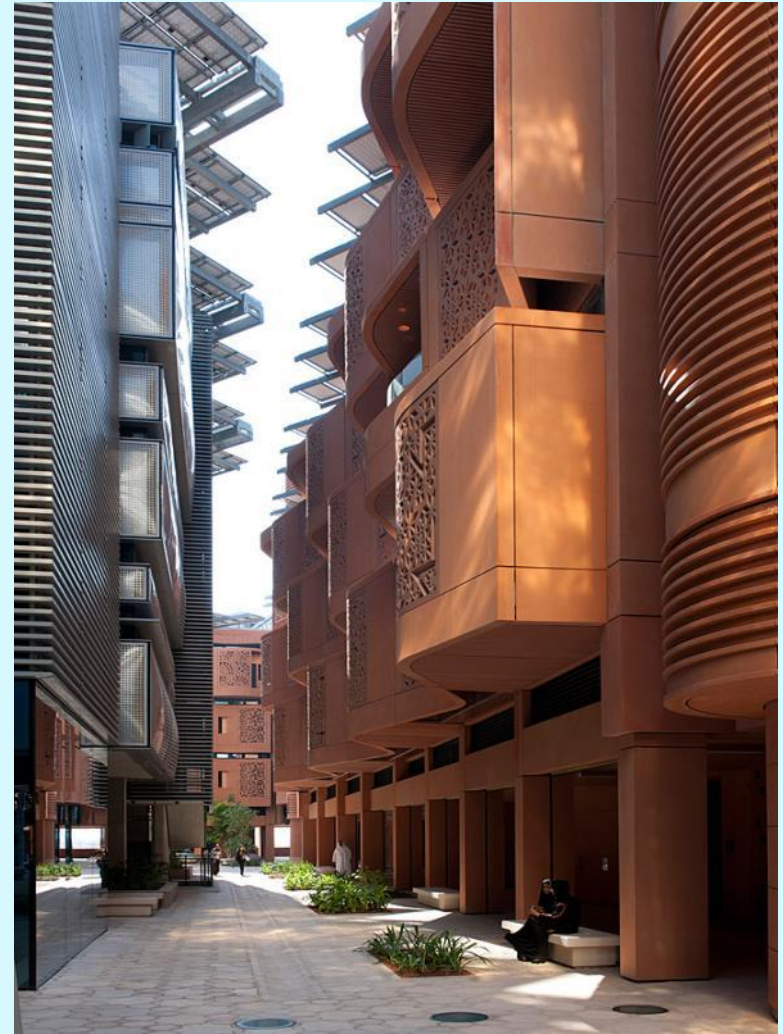
## INFRASTRUCTURE

Bridge & Structural Design



# MIST-1A

Masdar Institute of Science & Technology, Abu Dhabi, UAE



Sustainability Management services during construction that included tracking and documentation of data for carbon footprint analysis; evaluating materials for sustainability and environmental impacts; developing methodologies to reduce waste, energy and resource consumption; and supervising on-site activities to ensure compliance with Masdar CEMP



# QSTP Solar Test Facility

Doha, Qatar

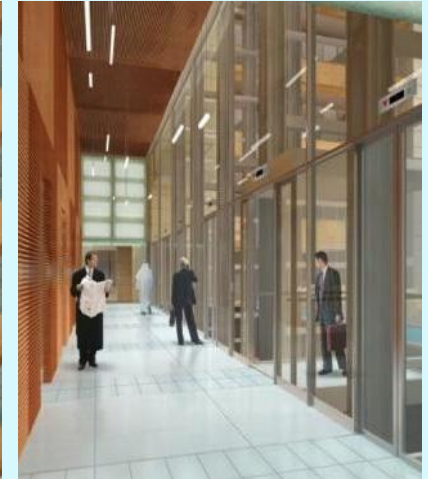


Architectural Design, Structural Engineering, MEP Engineering, Landscape Design, Sustainability Services, Infrastructure Design, Environmental Engineering, Quantity Surveying Services



# SAIF Center

Sabah Al Ahmad International Financial Center, Kuwait



Architectural Design, Structural Engineering, MEP Engineering, Landscape Design, Interior Design, Sustainability Services, Project Management, Construction Management, Construction Supervision, Quantity Surveying Services

A magnifying glass with a wooden handle is positioned over a white document. The document has the words 'Case Studies' written on it. 'Case' is in green and 'Studies' is in blue. The magnifying glass is focused on the word 'Studies', making it appear larger and more prominent. The background is a light blue gradient.

Case Studies



# Abu Dhabi Education Council Sustainable Schools

Abu Dhabi & Al Ain, UAE



Executive Architect, Structural Engineering, MEP Engineering, Interior Design, Data Collection and Analysis, Landscape Design, Sustainability Services & Estidama, Construction Supervision, Quantity Surveying Services



# Abu Dhabi Education Council Sustainable Schools Competition



- Concept competition with a singular goal of creating the best schools in the world;
- Competition bound only by imagination, not budget;
- After competition, the design concepts were revisited to determine the best way to cost effectively implement.



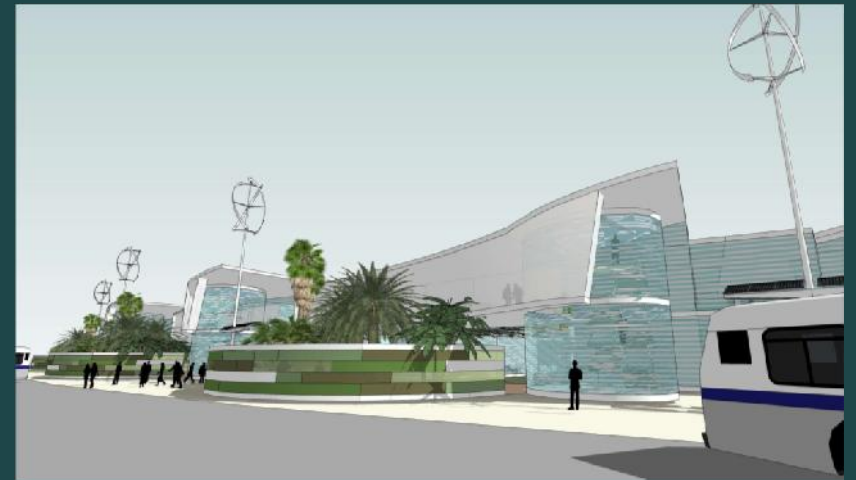
KEO's Challenge to achieve sustainable, optimized design solutions :

- Minimum cost;
- Gender segregation;
- Innovation in educational process;
- Three Pearl Estidama rating.



## Cost reduction: Sustainable value engineering

- Original high tech systems were rethought;
- Structural systems were simplified;
- Significant consideration given to initial & running costs.





## Abu Dhabi Education Council Sustainable Schools

### Iconic community center

- School designs are unique
- Facades are culturally neutral & self-identifiable





## Abu Dhabi Education Council Sustainable Schools

### Iconic Community Center

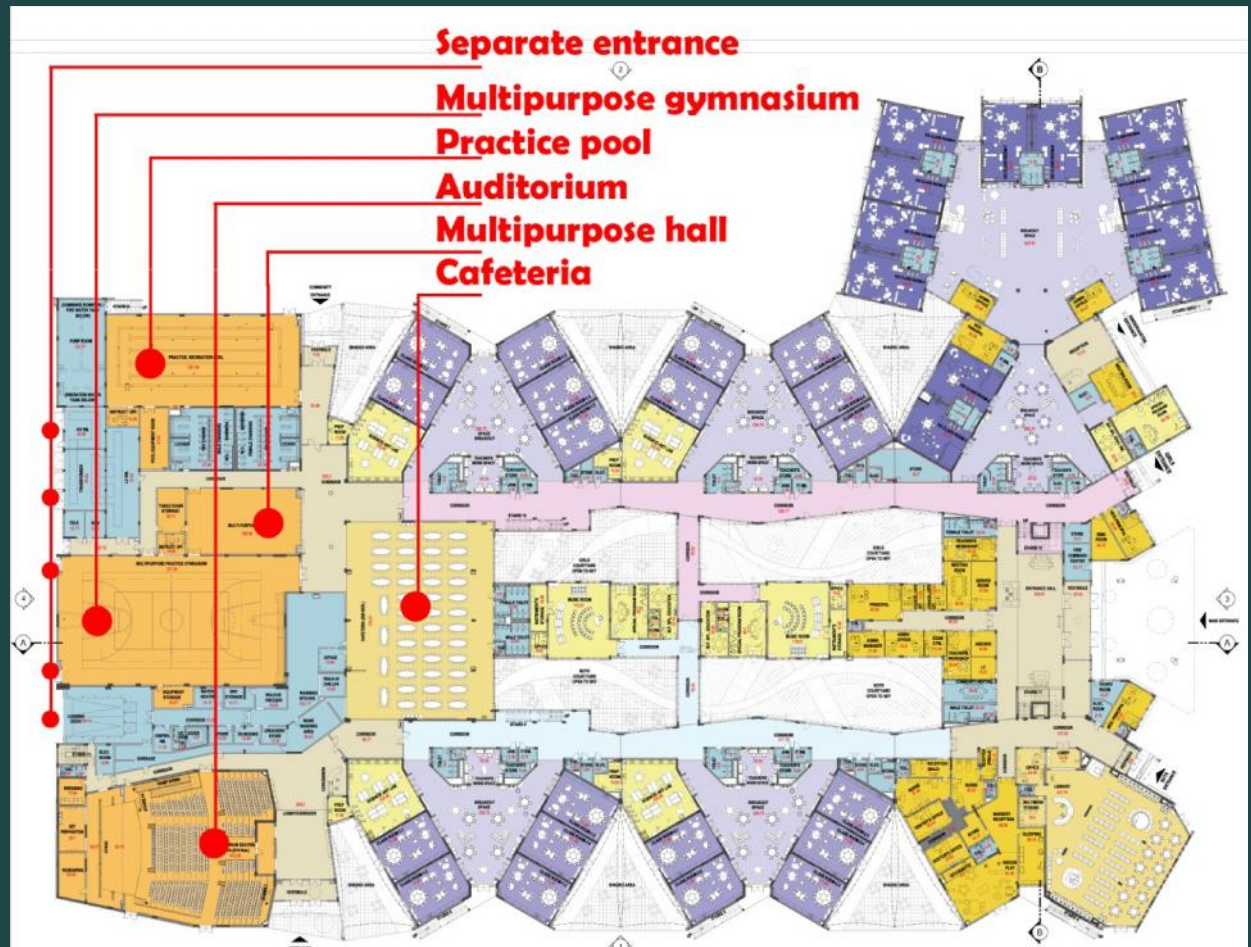
- Facilities are used by surrounding community;
- Pool, auditorium, library, playgrounds, gym/multipurpose room, & sports fields.



■ Cost reduction

**Iconic Community Center**

- The dual role of the school for students & to serve community.
- Separate entrance for the community including its amenities & utilities without interruption to the educational function.





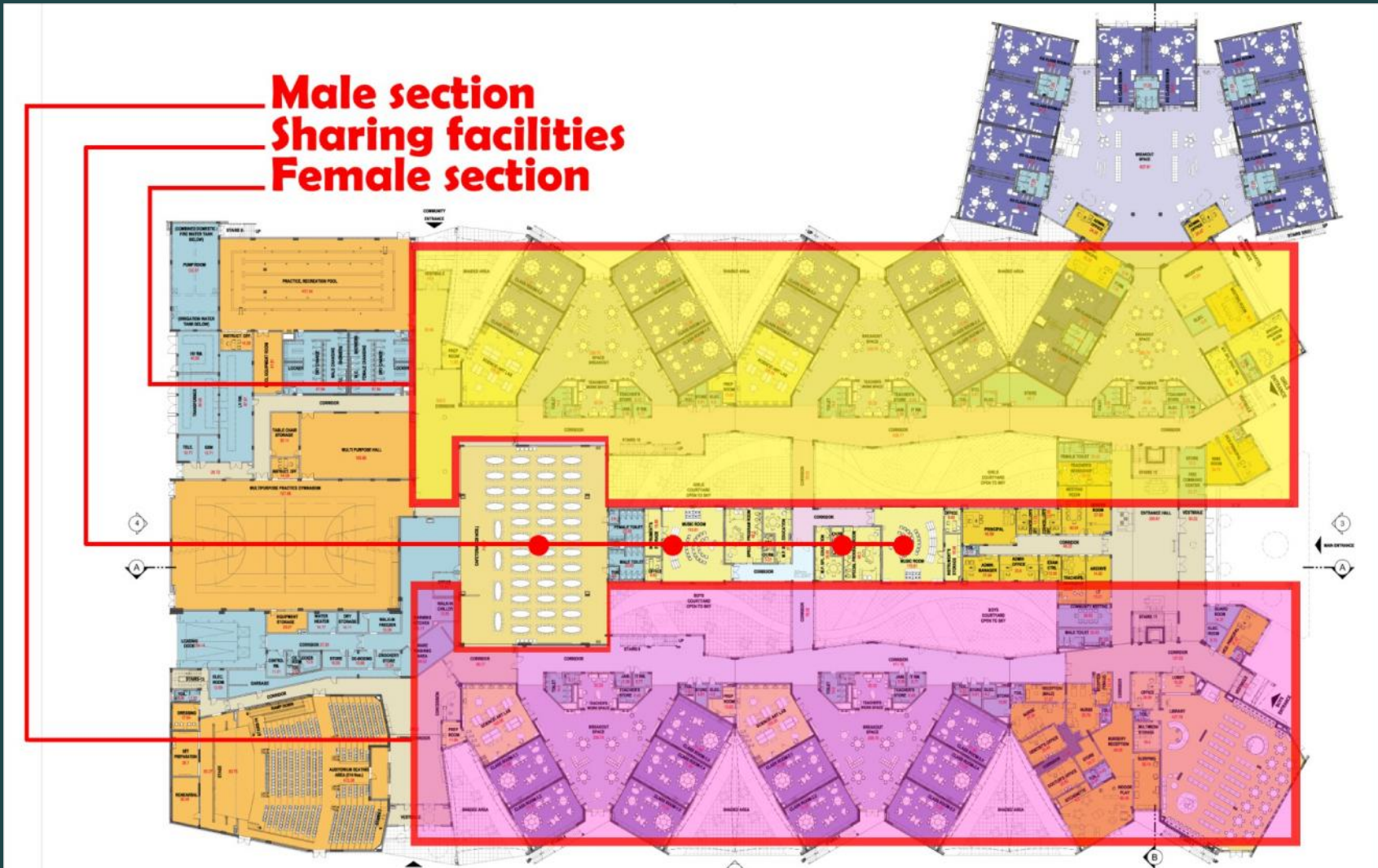
## ■ Innovation of educational process

- New approach to integrate the learning process, the cycle 1 classrooms share a large breakout area;
- 60% of the total classrooms area students can interact & learn together;
- Indoor area opens onto outdoor shaded breakout area to be used seasonally, & to an open playground area shared by all students.

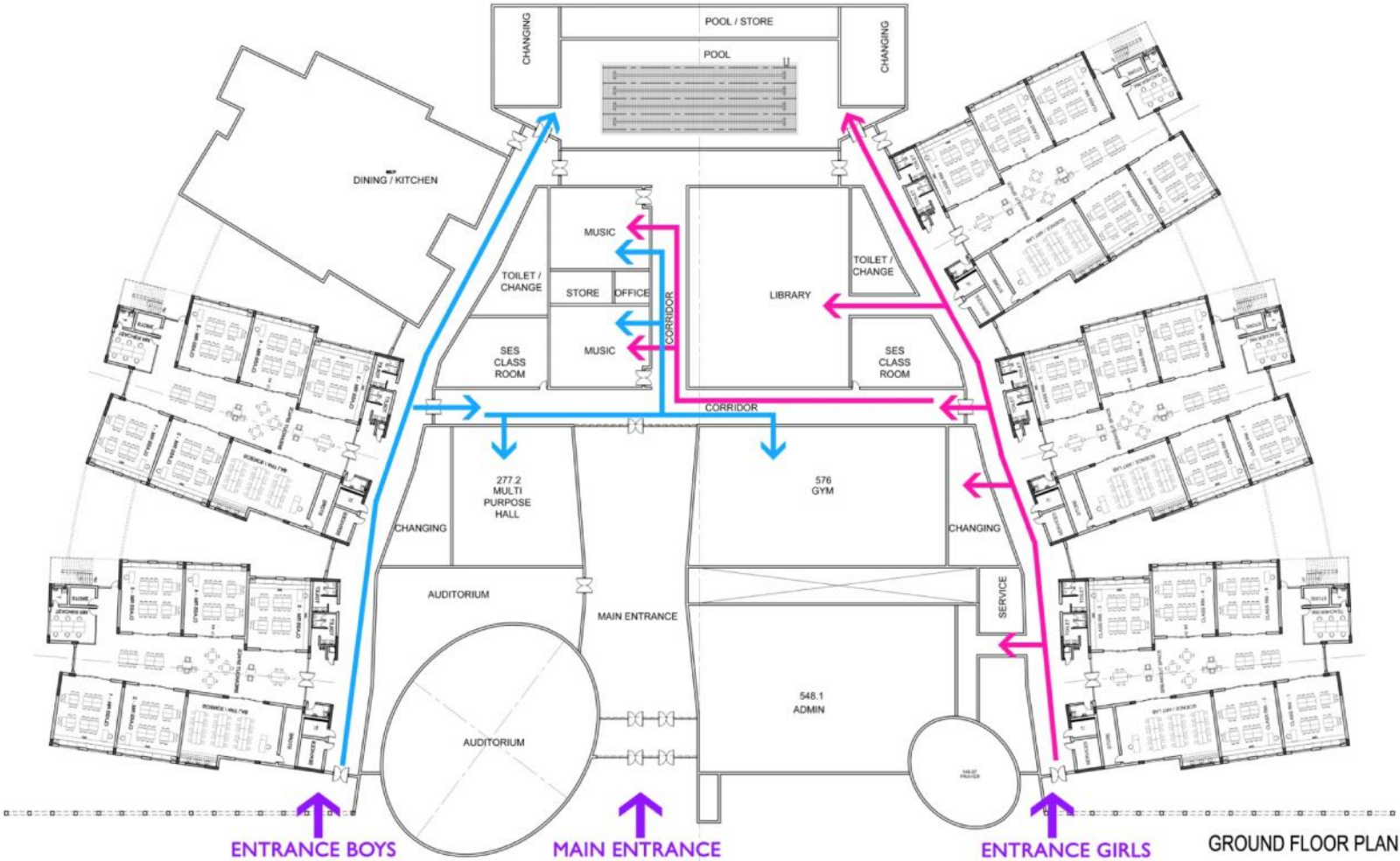




- Gender segregation



## Considerations For Gender-Specific Learning





# Abu Dhabi Education Council Sustainable Schools Competition









## KSA FUTURE SCHOOLS: APPLYING LESSONS LEARNED IN THE KINGDOM

- KEO International look forward to helping KSA Achieve Sustainable Development through development of world class, future schools!



# KSA FUTURE SCHOOLS APPLYING THEMES IN THE KINGDOM

## KEO Is Committed To Partnerships That Will Foster Sustainability



Thank You!

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