



Thirst World Country

Opening Ceremony - KAIZEN

18 Oct 2014 – Jeddah, Saudi Arabia



Presented by:

Nizar Kammourie

General Manager
SAWACO-Water Desalination

AGENDA

1. **Water Availability / Resources**
2. **Water Demand**
3. **Water Desalination**
4. **Water Re-Use⁴**
5. **Key Players**
6. **Conclusion**



WATER AVAILABILITY / RESOURCES

One of the
most water-
stressed
countries in
the world

➤ **Lack of Natural Water Resources**

➤ **No permanent Renewable Source of Potable surface water**

ESTIMATED WATER RESOURCES IN KSA, 2010

Water Resources	Volume (km ³ /yr)
Surface water & renewable ground water source	6.000
Groundwater (non-renewable)	10.421
Desalination	1.082
Wastewater reuse	0.400
Total	17.903



DESALINATED WATER



➤ **KSA is the leader in production of desalinated water (18% of world production)**

➤ **50% of Domestic Water Demand in KSA is supplied by Desalination Plants**



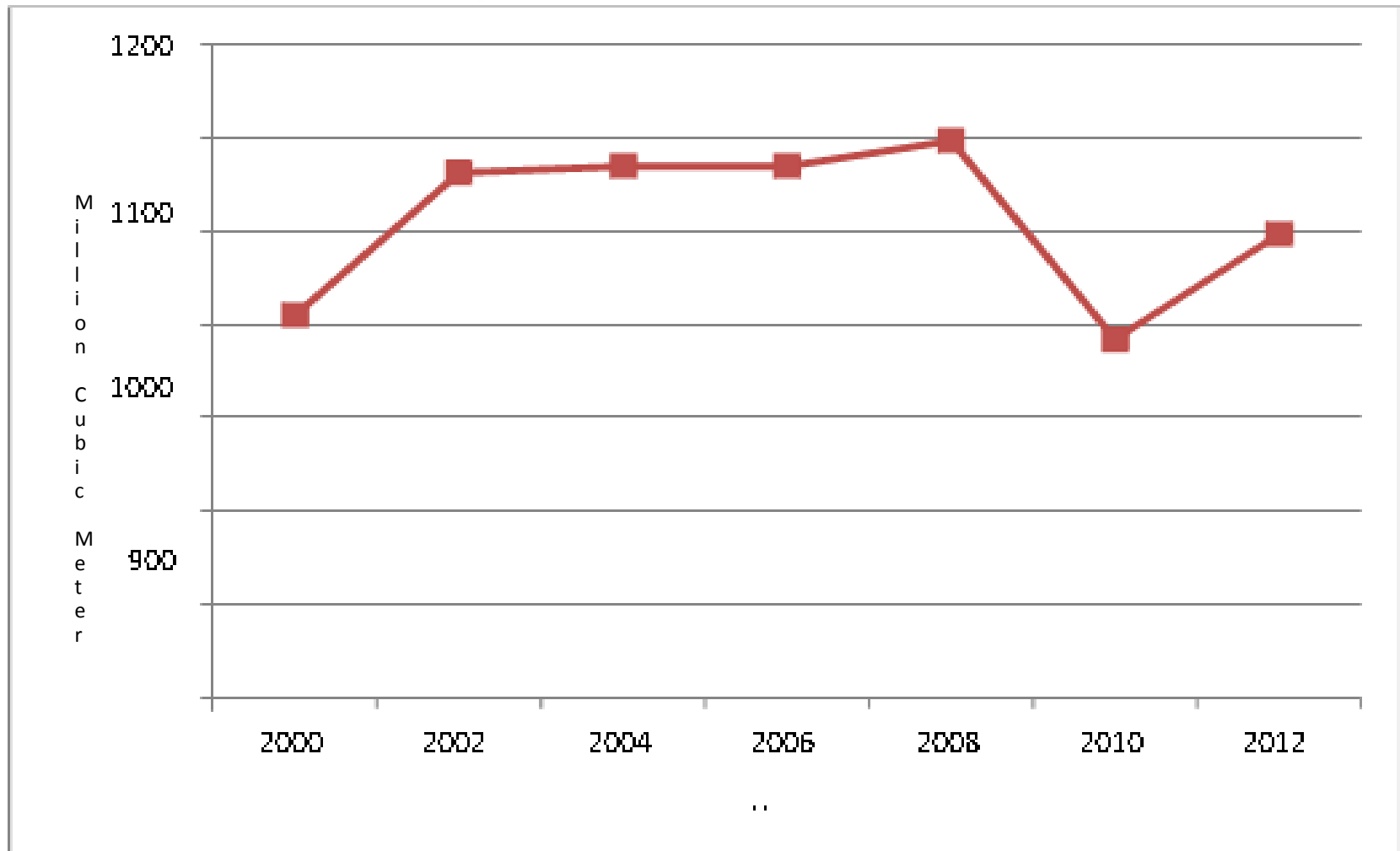
➤ **KSA will need Desalinated Water Capacity about 4.5 billion m³/year in 2040**



5040

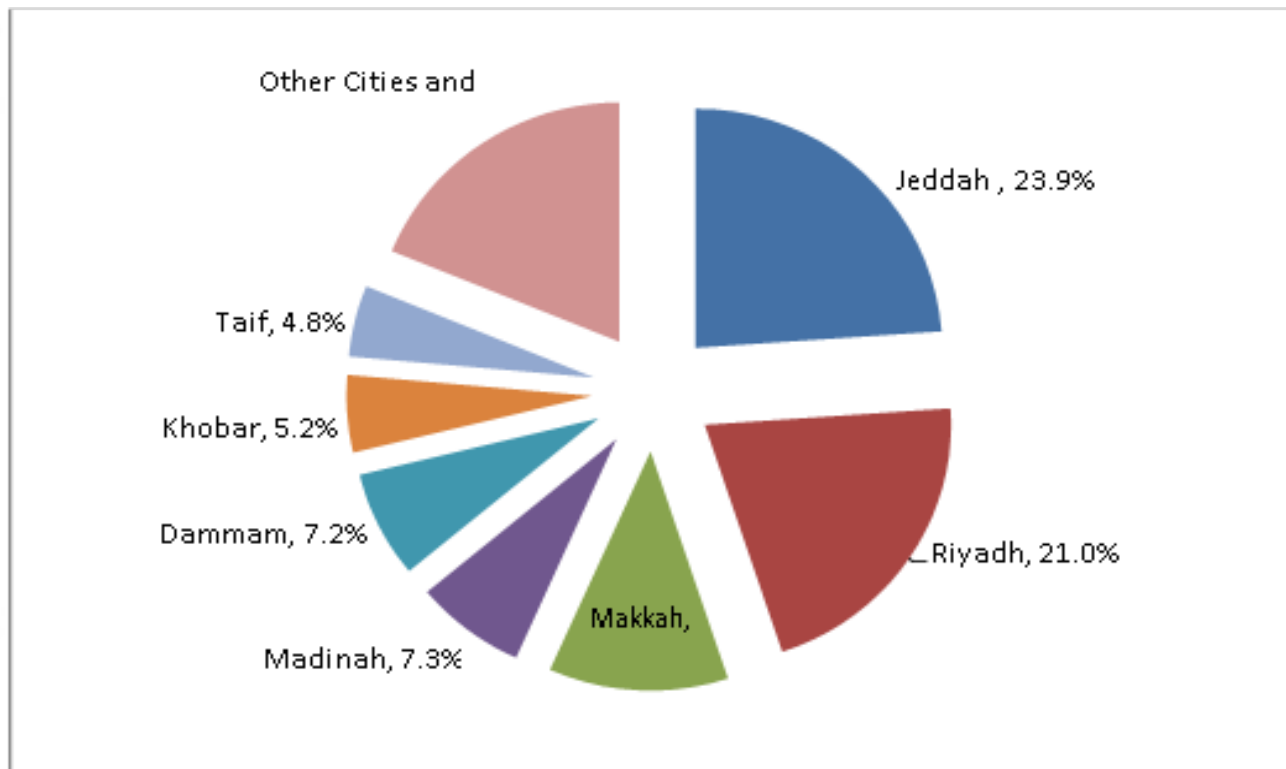
DESALINATED WATER

Total annual desalinated water production



DESALINATED WATER

% distribution of water export to major cities in Y2012



DESALINATED WATER



- Requirement of Huge Capital Investment coupled with substantial annual Operation & Production costs
- 50% of existing Desalination Plants have exceeded useful life
- Existing Desalination Plants solely depending on crude oil (country's major revenue)
- Long-term ability to meet ever-increasing Domestic Water Demand

WATER DEMAND

**Factors
driving
Water
Demand**

Growth in population

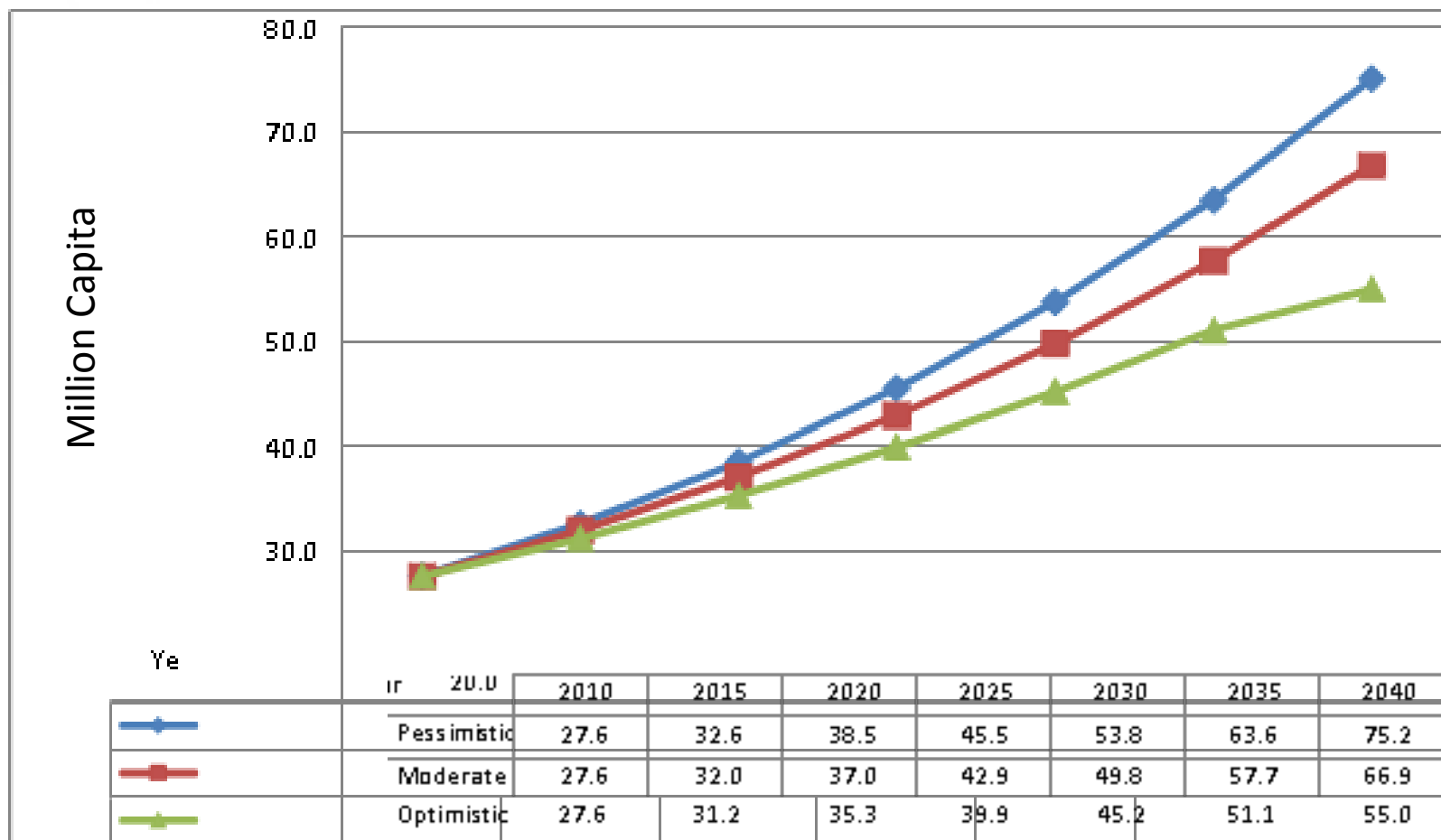
**Economic & Industrial
Development**

Government strategies



POPULATION PROJECTION

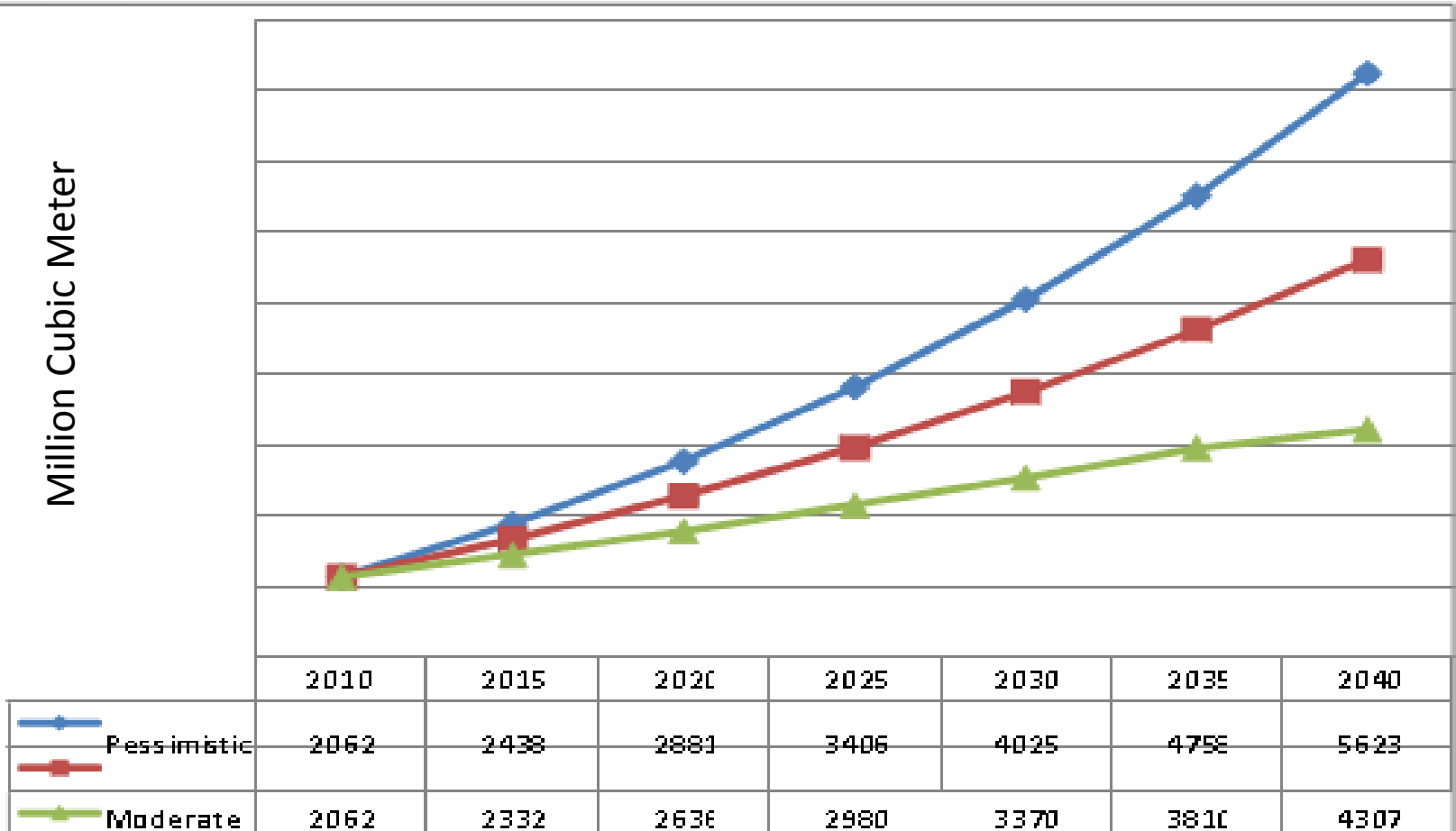
Population forecast results



DOMESTIC WATER DEMAND

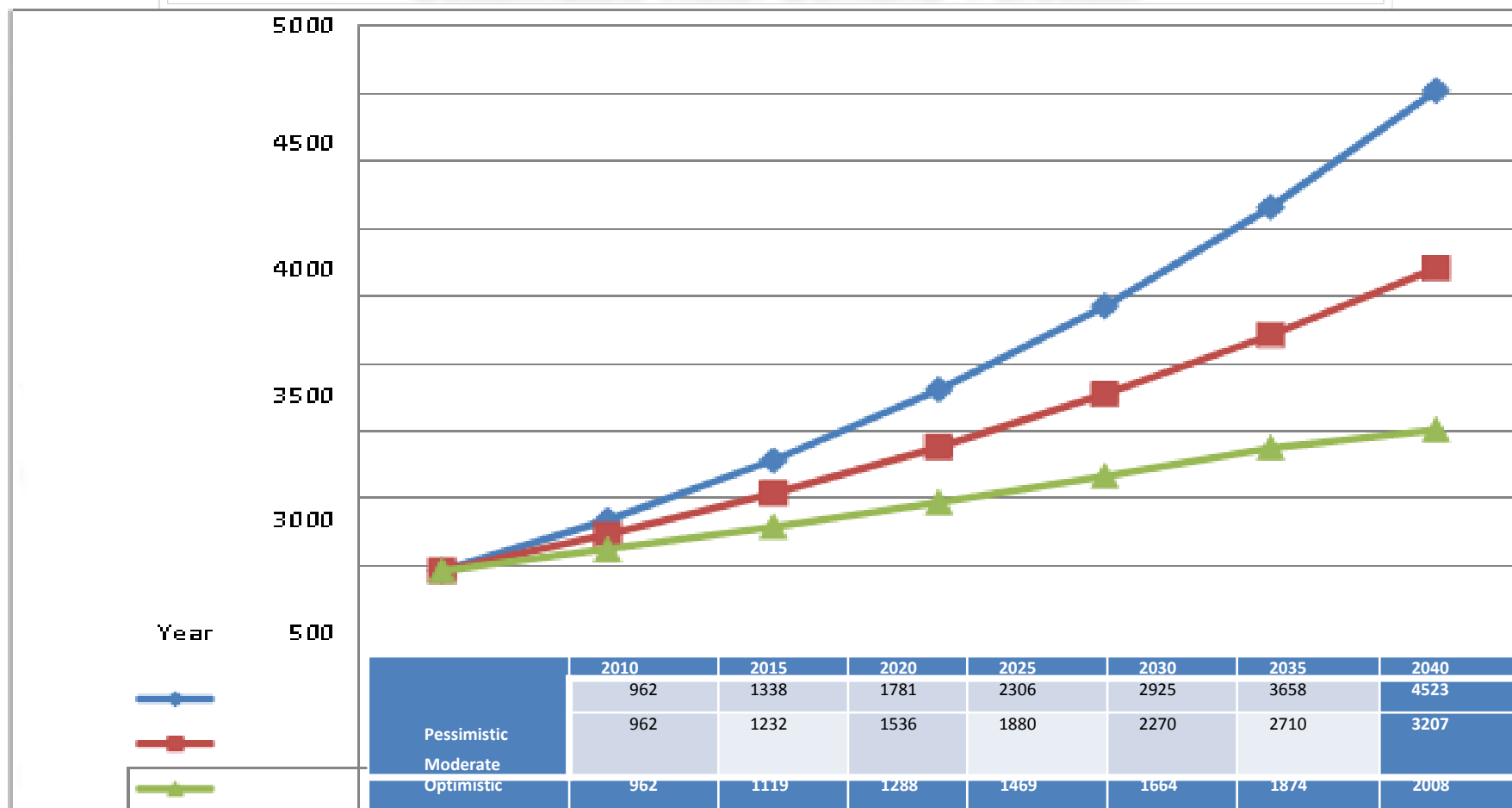
Domestic Water Demand forecast

Million Cubic Meter



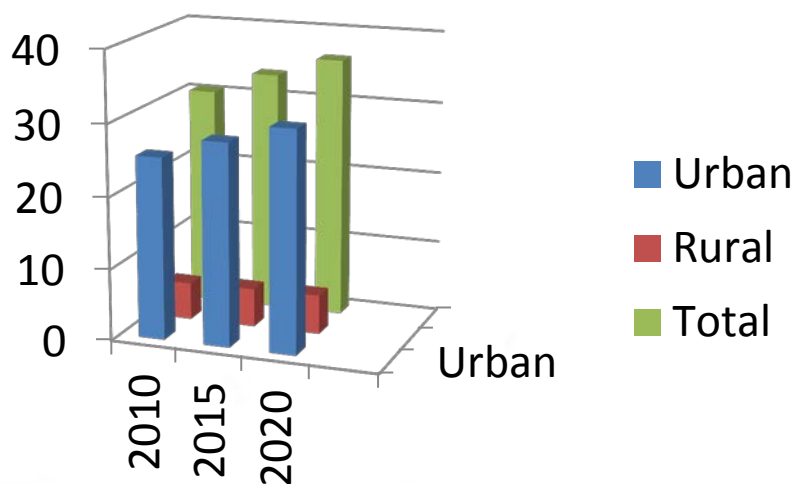
DESALINATED WATER DEMAND

Desalinated Water Demand Forecast



POPULATION PROJECTION

Population (Million)	2010	2015	2020
Urban	25.38	28.19	30.76
Rural	5.16	5.35	5.46
Total	30.54	33.54	36.23



**KSA population
grown from
7 mill. to 27 mill.
in the last 40
years**

ECONOMIC INDICATORS

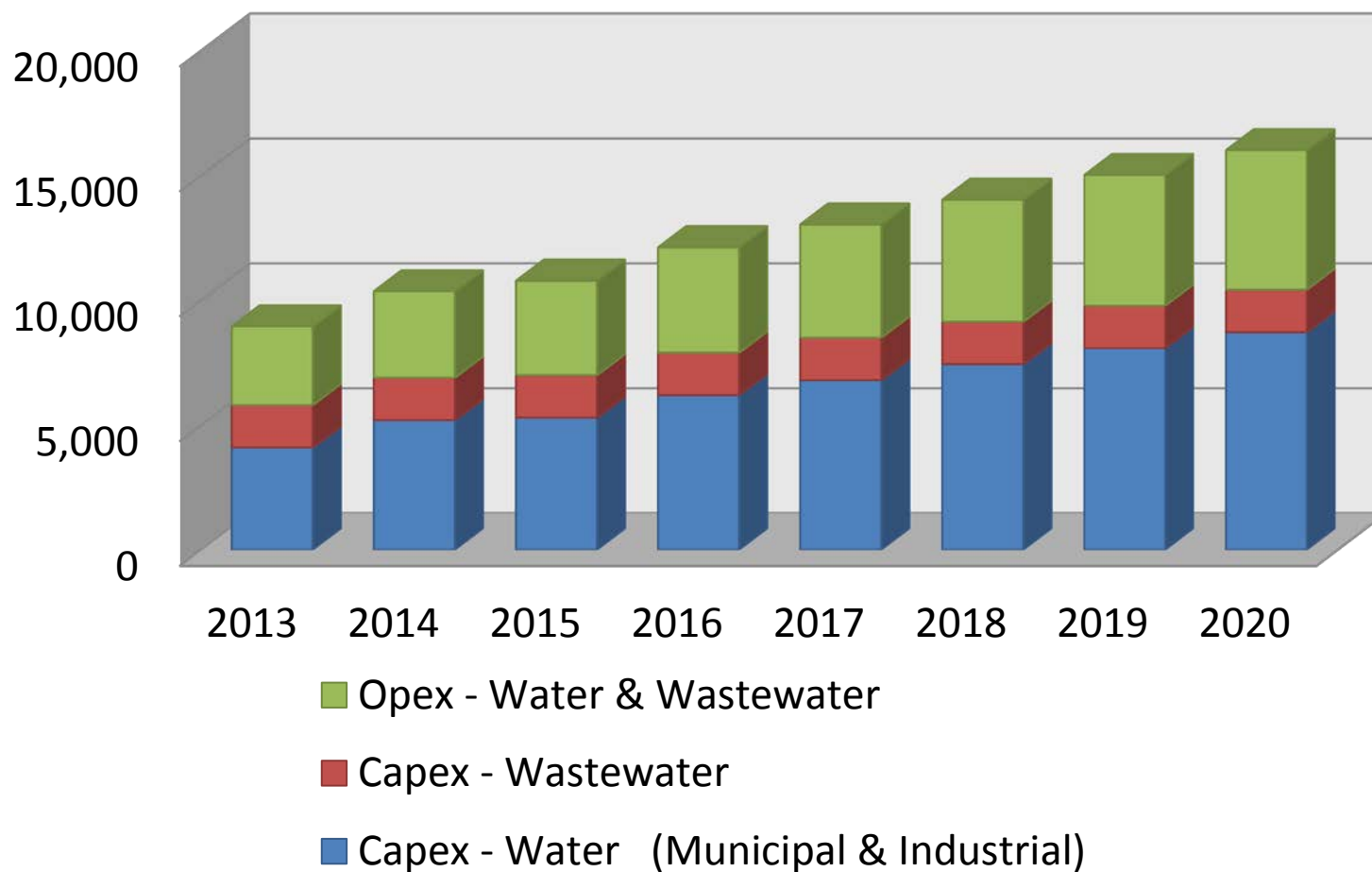
➤ Kingdom is the largest country with the largest economy in the Middle East

- ❑ Total GDP (\$ billion) - 657.0 (nominal)
- ❑ Total GDP (\$ billion) - 740.5 (at PPP)
- ❑ GDP per capita (\$) - 22,822.8 (nominal)
25,722.4 (PPP)



MARKET FORECAST - 2020

Capex & Opex Forecast 2020 (Million USD)



WATER RE-USE (Definition)

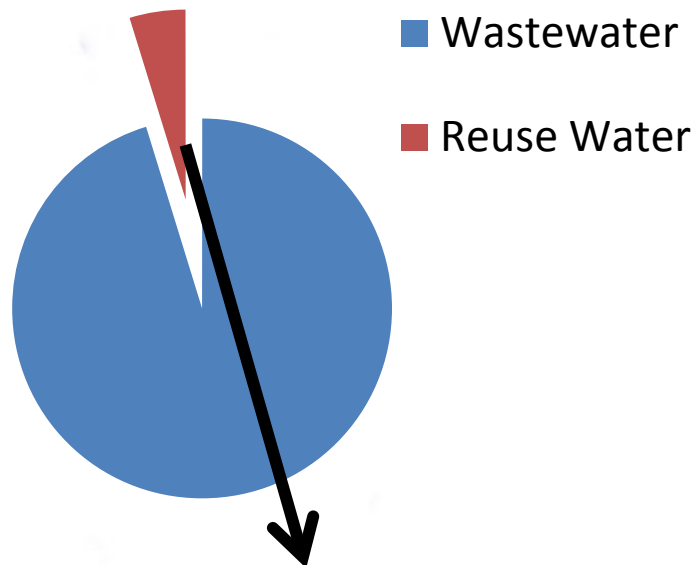
- **Reuse** → using a product / component in its original form more than once.
- **TSE** → might require further treatment if it needs to be used in industrial applications



Treated water quality

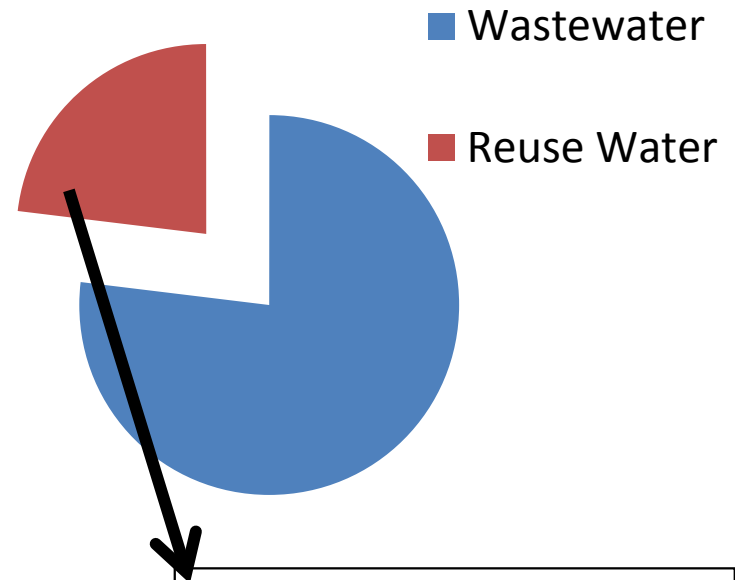
WATER RE-USE (Opportunities)

Projected Water Reuse 2010



Water reuse account for 2
< 2 % of Saudi Arabia's
water supply

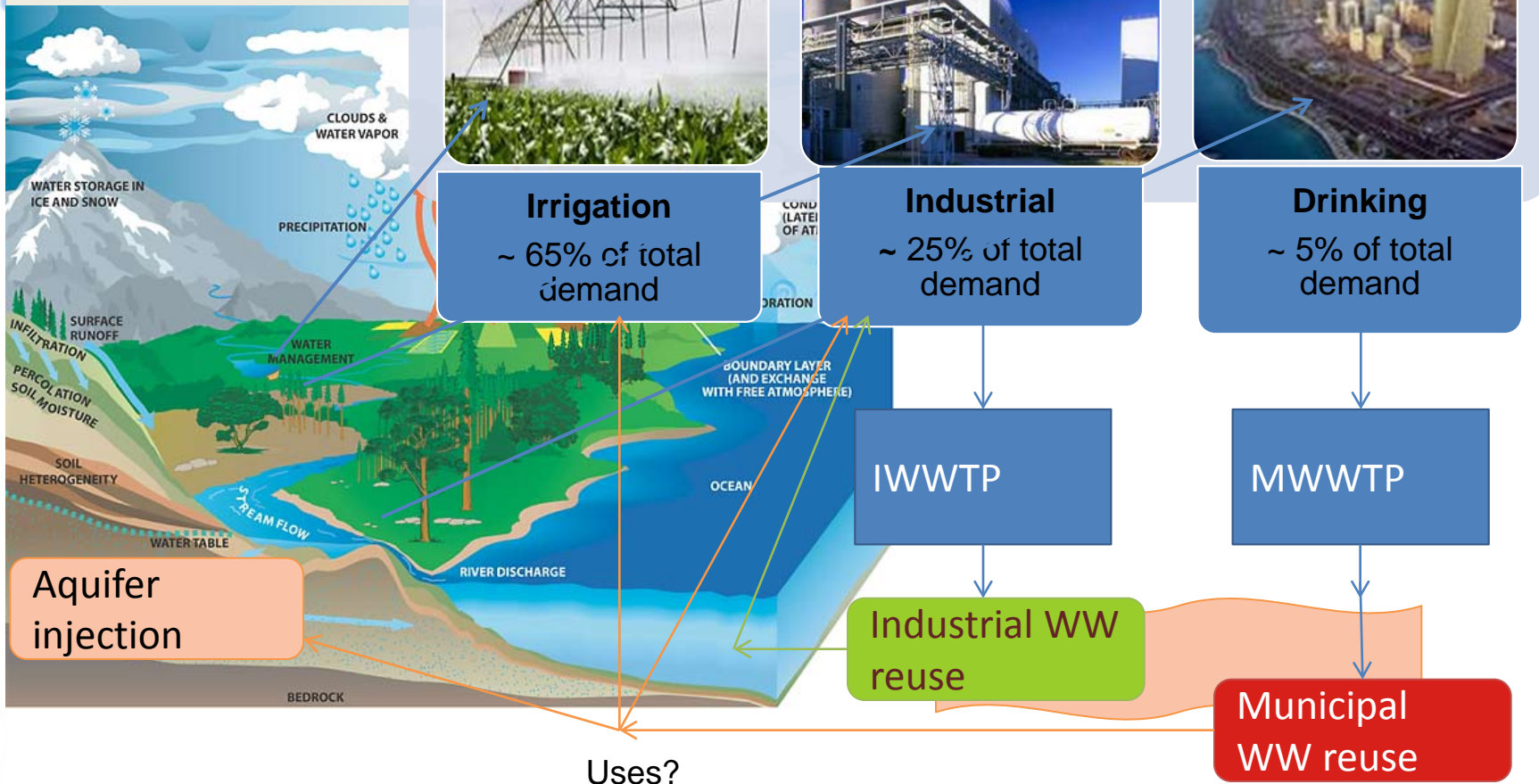
Projected Water Reuse 2020



Water reuse account for
about 30 % of Saudi
Arabia's water supply

WATER RE-USE (Application)

15-25% of total water demand can be covered with WW reuse!



KEY PLAYERS IN WATER SECTORS

1- The Ministry of Water & Electricity

- takes overall responsibility for water & power sector in KSA.

2- The National Water Company

- Responsible for underground water production & treatment , water distribution & wastewater treatment & collection.
- Covering Riyadh, Jeddah, Makkah & Taif which represents ± 40 % of water facilities in KSA.

3- The Water & Electrical Company (WEC)

- formed in 2003 to carry out the IWPPs.

4- The Saline Water Conversion (SWCC)

- Responsible for water treatment plants & water transmission in KSA.
- Production facilities are in process of being privatized.



CONCLUSION

- **Public Awareness about the Chronic Water Shortage and Conservation**
- **Impact on the Socio-Economic Development**

**Challenges
that KSA
will face in
long term**

1. Increasing Population

2. Diversion of more than 30% oil reserve to energy for water desalination

3. Cheap water tariff



Thank You

Nizar Kammourie

**General Manager,
SAWACO – Water Desalination / Saudi Arabia**
Email: nizarkam@sawaco.com

