A Roadmap to Strategic Capacity Creation in the Kingdom of Saudi Arabia

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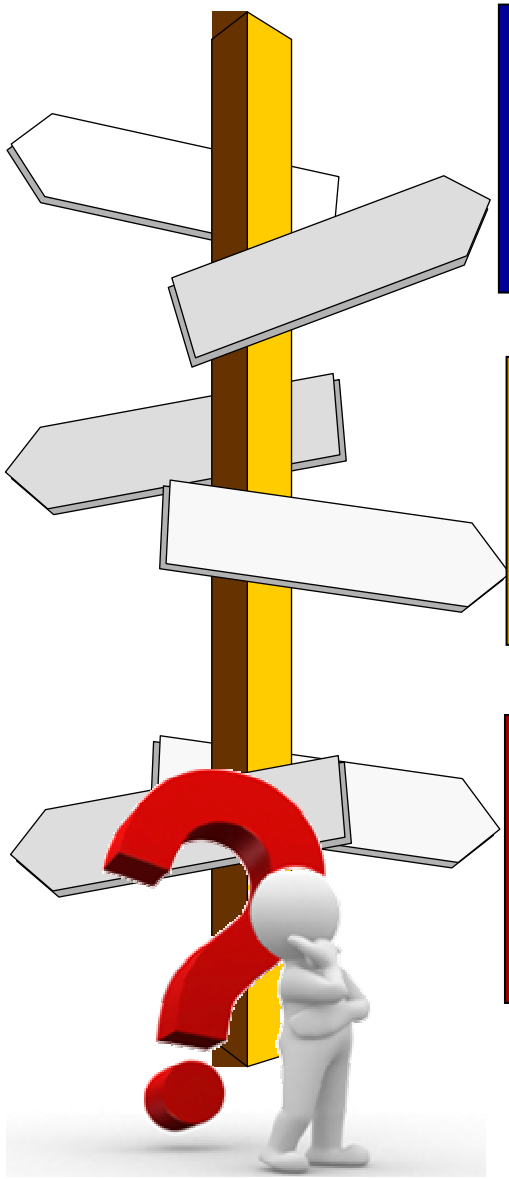
Creating Capacity

Brownfield

Greenfield

Split



How much

Where

When

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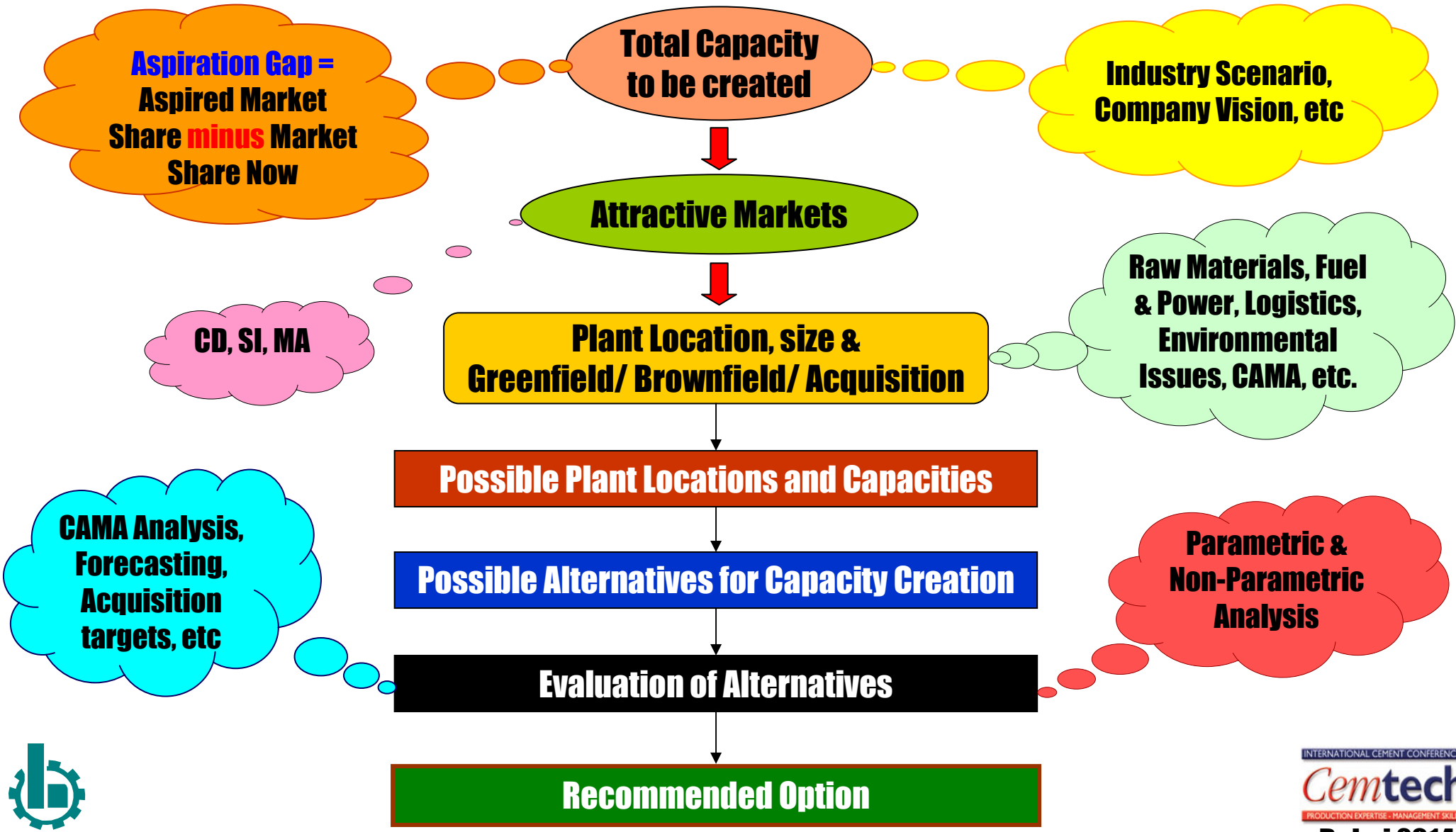
Capacity Creation: Possibilities



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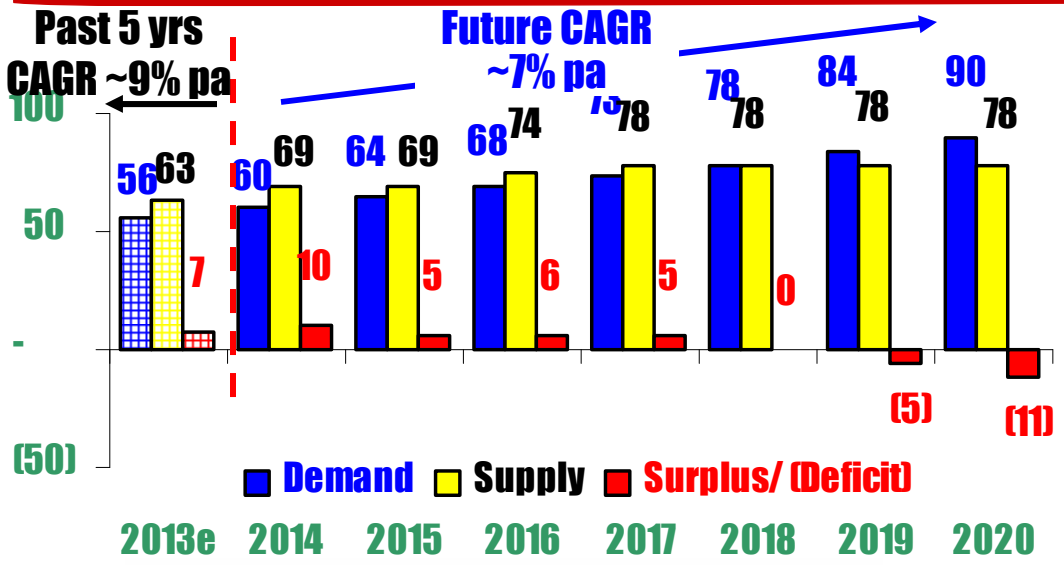
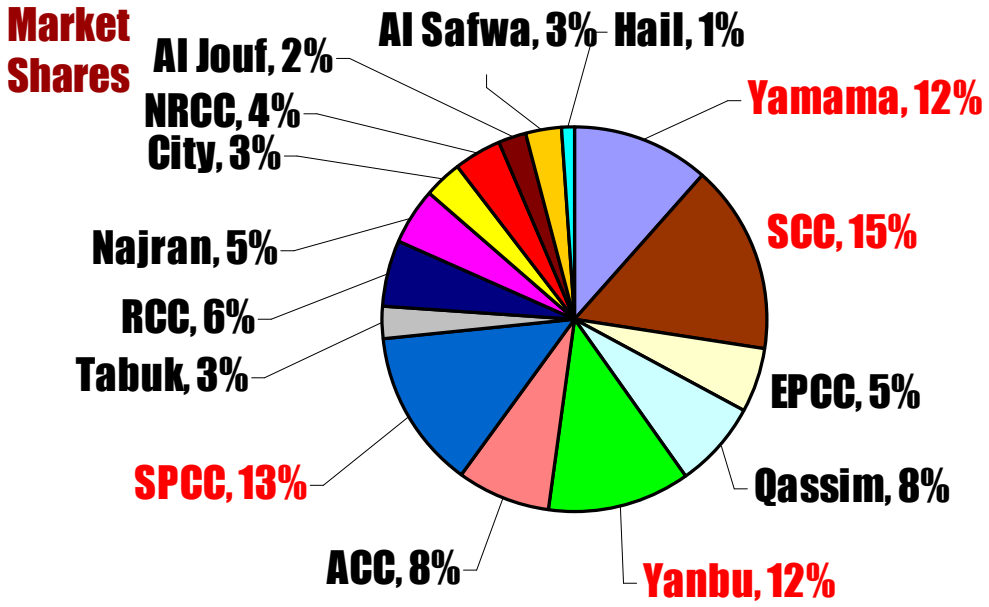
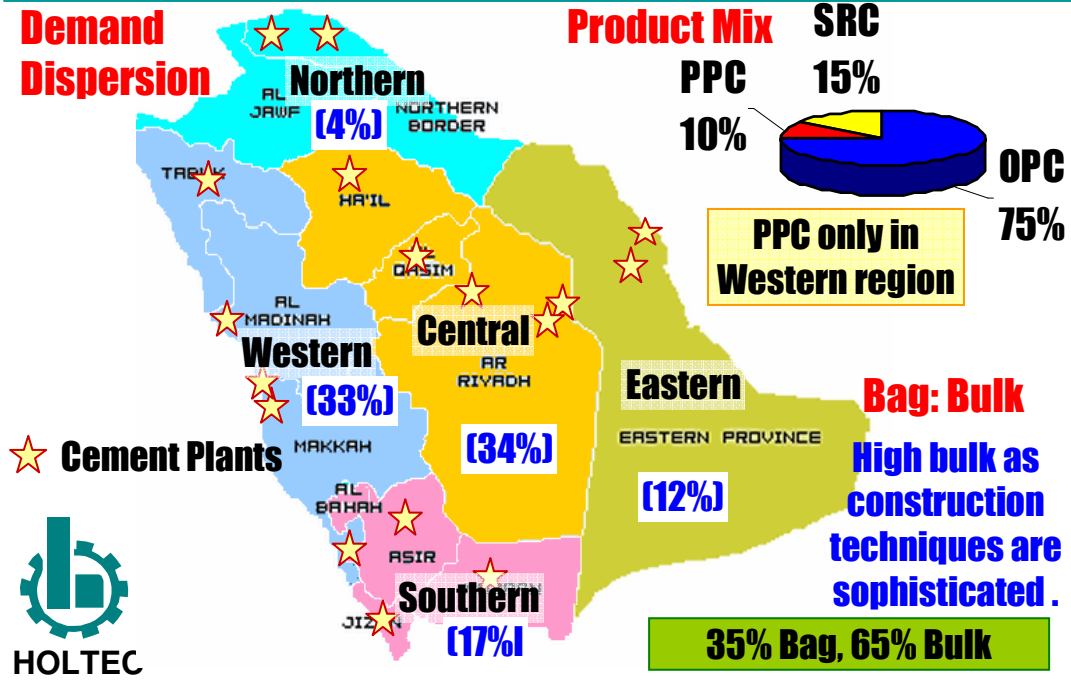
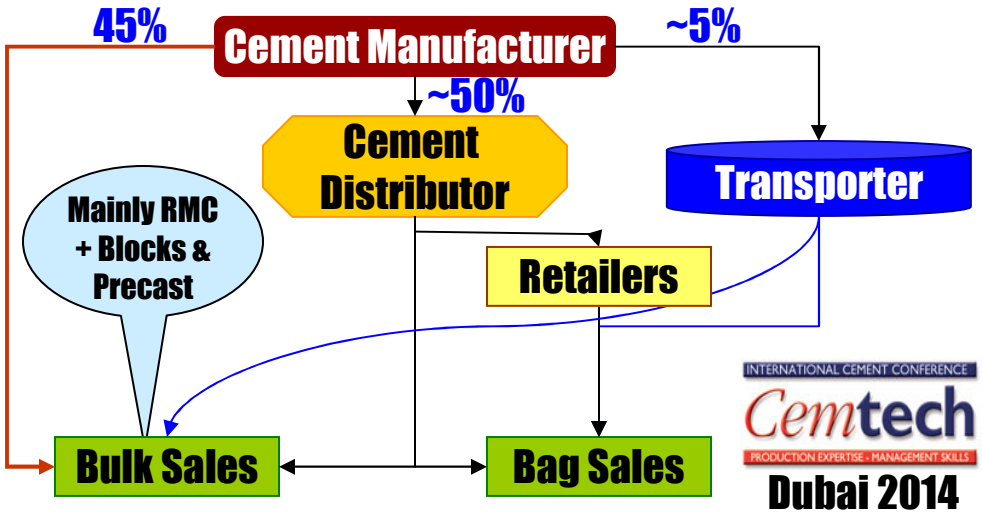
Cement Industry Scenario









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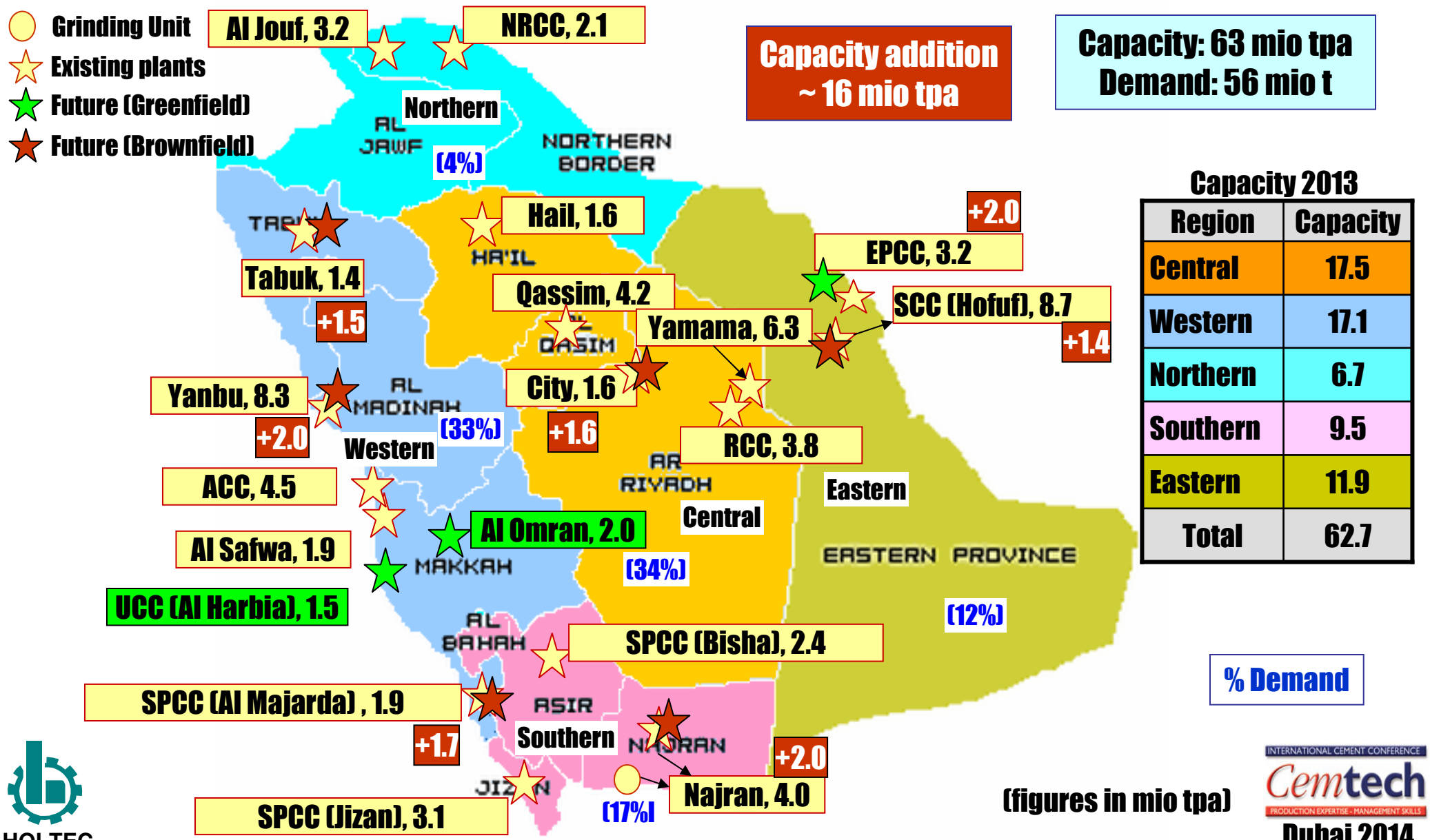
Demand & Supply 2013



Capacity addition ~ 16 mio tpa

Capacity: 63 mio tpa
Demand: 56 mio t

Capacity 2013

Region	Capacity
Central	17.5
Western	17.1
Northern	6.7
Southern	9.5
Eastern	11.9
Total	62.7

% Demand

(figures in mio tpa)

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Industry Overview

- **14 players in the market** but top 4 players command 50-60% share. **Herfindahl Index** shows that the competition is increasing and the trend is likely to perpetuate.
- **Prices fixed ex-factory** by the Govt. since 2012 (USD 64-69/ t based on cement type)
- **Low cement demand** (~5%) in 2013 due to curbs against irregular foreign workers in the construction sector leading to a skill shortage
- While **Exports** are banned, **Imports** of 10 mio over 2013 & 2014 has been mandated by Royal decree.
- Modern **Technology** with 5,000 -10,000 tpd lines, 5-6 stage PH/PC, high efficiency coolers, VRMs for raw grinding & BM/BMRP for cement grinding. **Equipment Sourcing** is largely from China
- **Raw Materials:** Abundant limestone reserves. However local issues related to Chlorides, Alkalies and MgO. Exploration of alternate correctives is called for in the new environment.
- **Fuel:** The Industry HAS to look at substitute/ alternate sources of fuel, with constraints having been placed on allocating additional quota of subsidized HFO. The future availability of Petcoke needs to be harnessed.
- **CAPEX:** USD 180 - 200/ t, **EBIDTA :** 39 – 58 %
- **Water:** Coast based plants use desalination plants and other land locked plants use borewell water. Water is available 800-1,000 ft below average ground level.

Resources	Unit	2013	2020	Increment
Limestone	Mio t	76	111	34
Power	MW	865	1,255	390
Fuel (HFO)	Mio t	4.8	7.0	2.2
Water	Mio cu m	19	27	8

increase from 63 to 90 mio tpa

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Clearances for Capacity Creation

Clearances	Issuing Authority	Purpose
Mine License	Saudi Ministry of Petroleum and Mineral Resources	Exploitation of raw materials
Fuel Linkage for HFO	Saudi Aramco	Fuel for the plant
Clearance for Alternate Fuels (may be needed)	Presidency of Meteorology and Environment (PME)	Maybe required for using alternate fuels. No defined norms currently for cement.
Commercial Registration Certificate	Saudi Ministry of Commerce and Industry	Incorporation and registration of the Company
Industrial Investment License	Saudi Arabian General Investment Authority	Licensing of foreign investment participation in the Company and increasing production capacity.
Chamber of Commerce Membership	Chamber of Commerce of ____(i.e Jeddah, Riyadh)	Certificate of membership at the Chamber of Commerce of Province/ City
Construction permit	Ministry of Municipality and Rural Affairs (Municipality of ___ Province)	The construction of the cement factory
Environmental Compliance Certificate	Presidency of Meteorology and Environment (PME)	Approving the incorporation of xxx Quarry & Cement Factory in the designated location

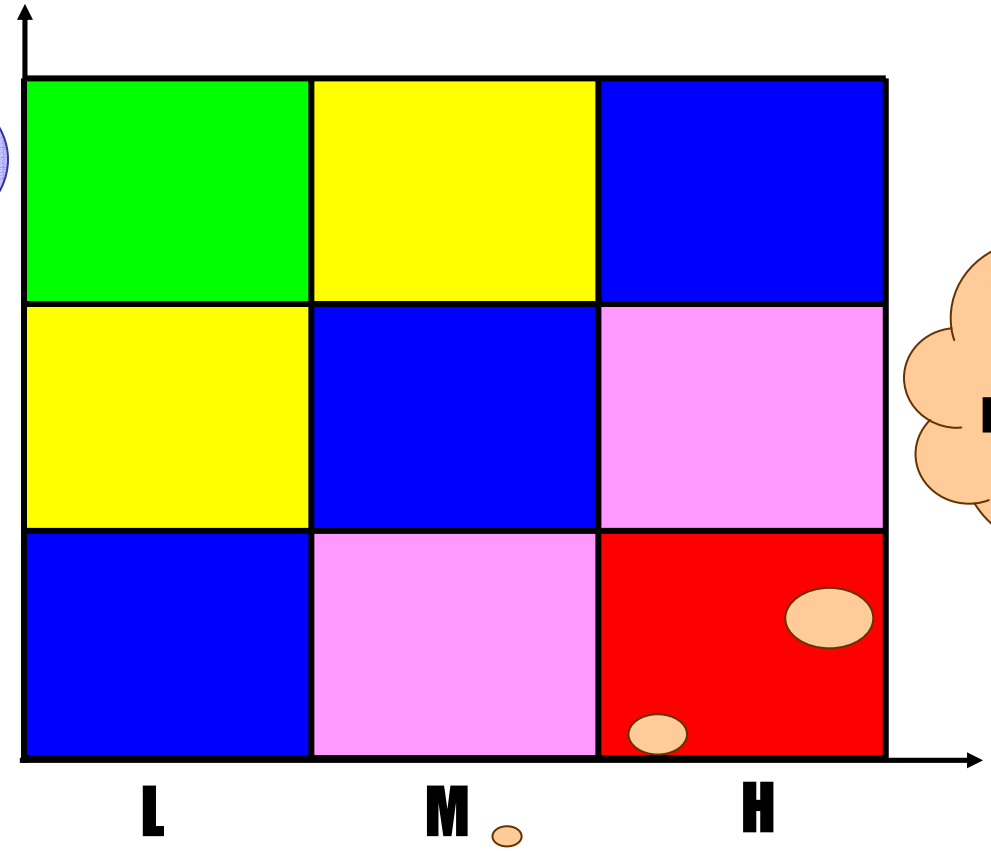
Mineral Concession

- Issued by Ministry of Petroleum and Minerals (MOPM).
- MOPM identify the area for allocation of exploration/ exploitation permit Based on the interest of establishment & Saudi Geological Survey report.
- Initial duration of license is up to 30 yrs (renewal possible for up to 30 yrs subject to certain requirements). License area not to exceed 50 sq km.
- Foreigner investors are subject to the foreign investment licensing requirements administered by the Saudi Arabian General Investment Authority.

Attractive Markets

Market Attractiveness (MA)
= Consumption Density (CD) x 1/ Supply Intensity (SI)

CD measures demand intensity in a particular geographic region.



Very Low
Low
Average
High
Very High

SI measures the propensity of players to supply a market.

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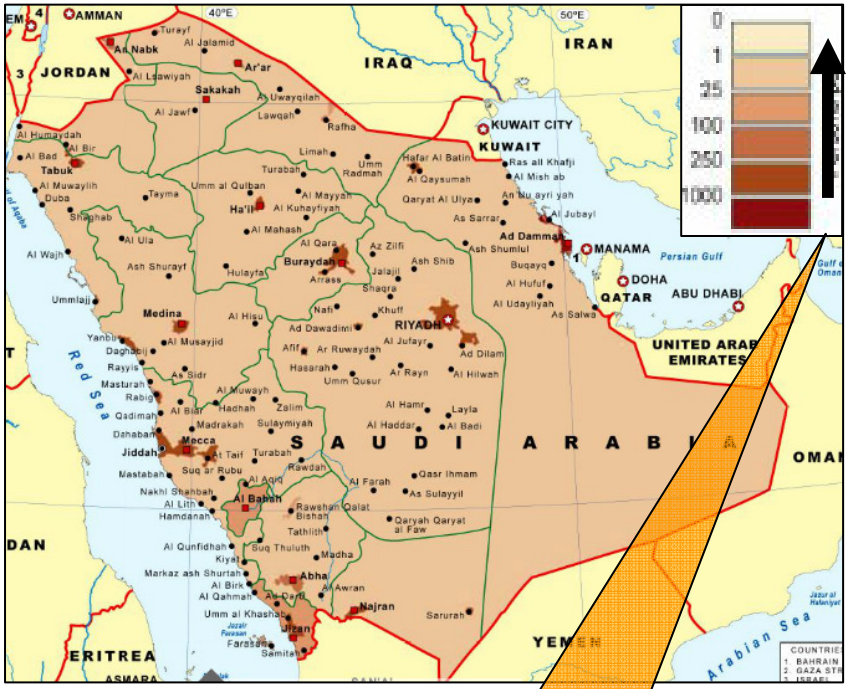
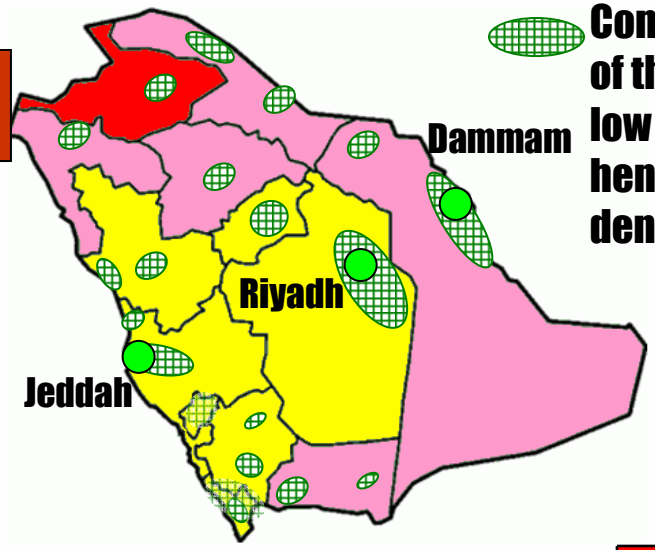
Cement Consumption Density



Decreasing population density

Most of the area is desert and is uninhabited. Population primarily concentrated in and around the cities

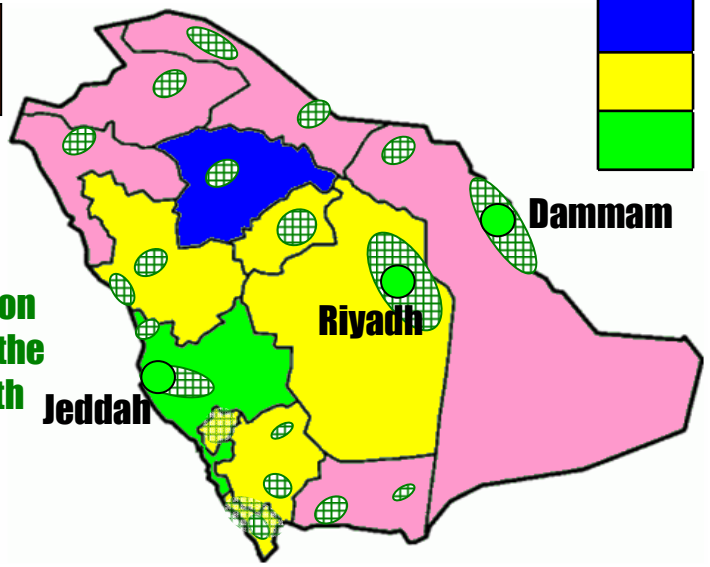
2013



Consumption area, rest of the areas have very low population density hence low consumption density.

Colours indicate average CD in the province

2020



- Very Low
- Low
- Average
- High
- Very High

3 main consumption centers in the country with high CD.

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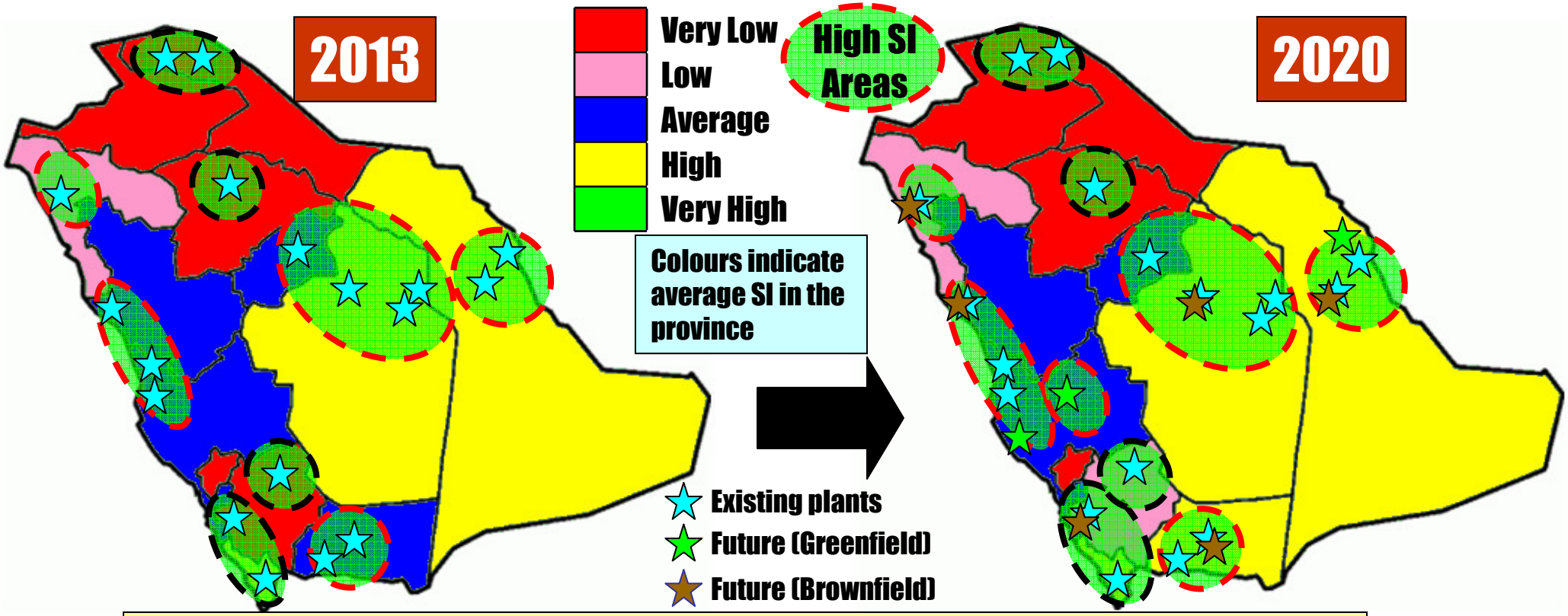
Cement Supply Intensity



- ➔ Measure of the propensity of a player to supply to a market.
- ➔ SI for a market is the summation of the SI of various supplying clusters.
- ➔ Higher the SI of a market, lower is the preference of a player to supply to that market .
- ➔ Markets with higher SI, could, in future, exhibit lower price levels.

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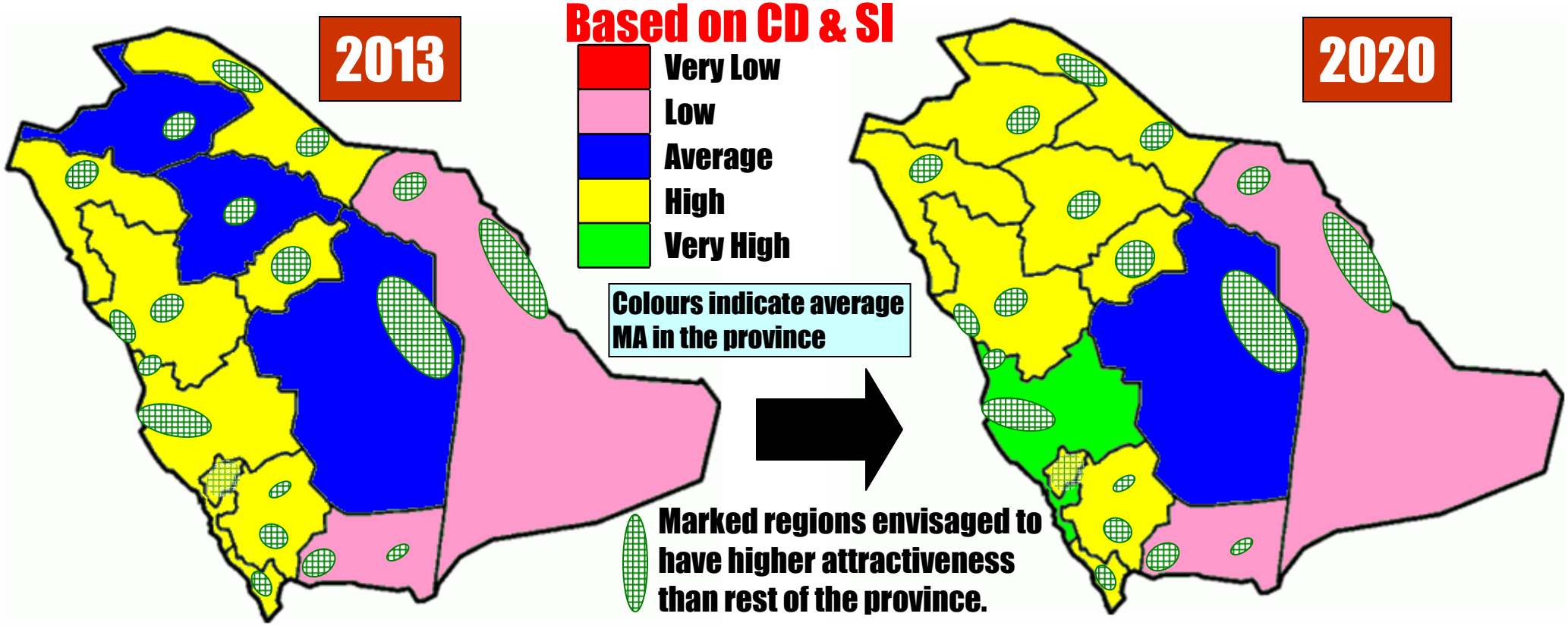
Attractive Markets

Based on CD & SI



- ➔ Eastern & Najran Province continue having low market attractiveness, primarily due to low CD.
- ➔ MA ↑ for Hail, Al Jouf, Makkah.
- ➔ MA ↓ in no market, primarily because KSA is envisaged to be highly deficit in 2020 .

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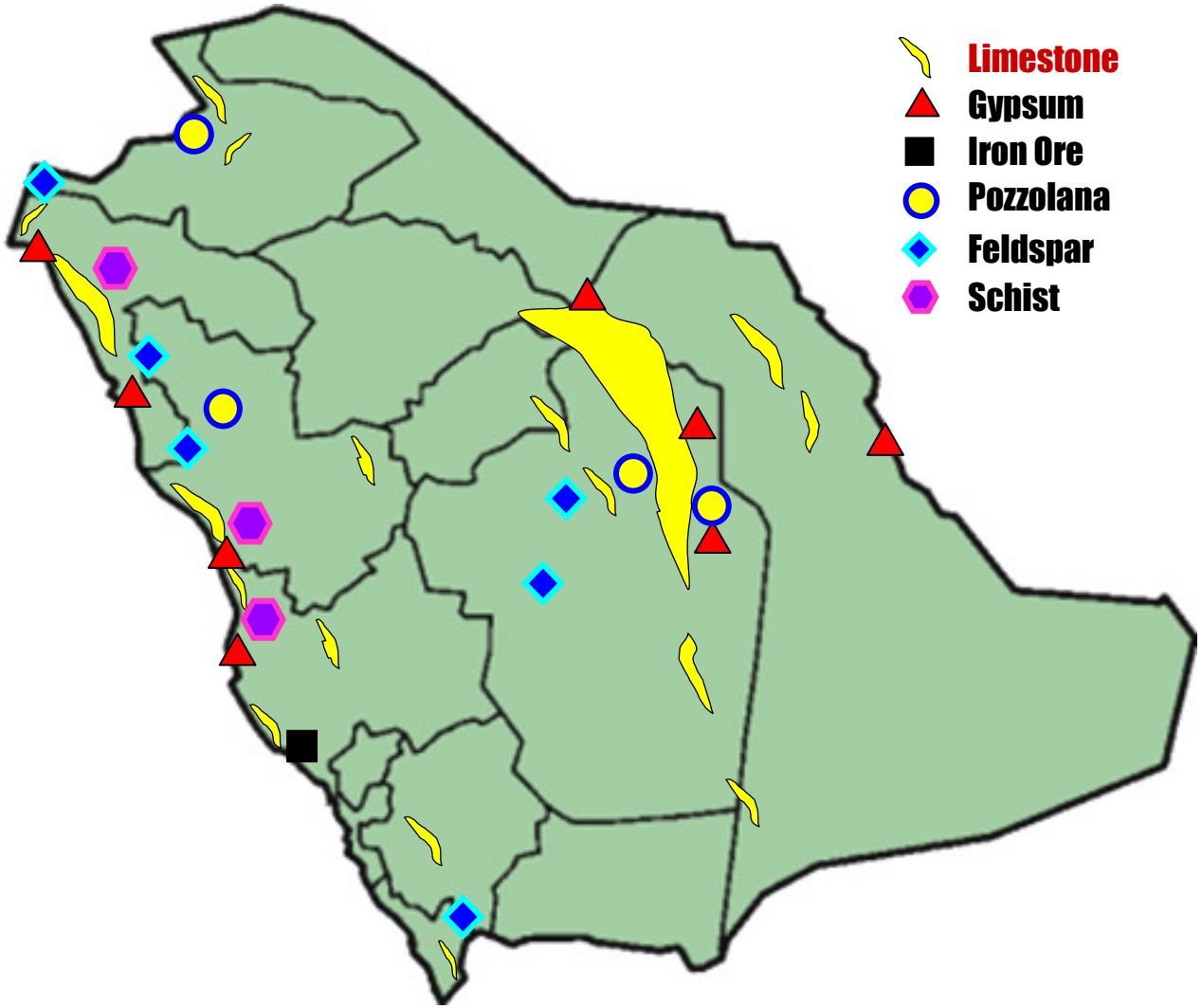
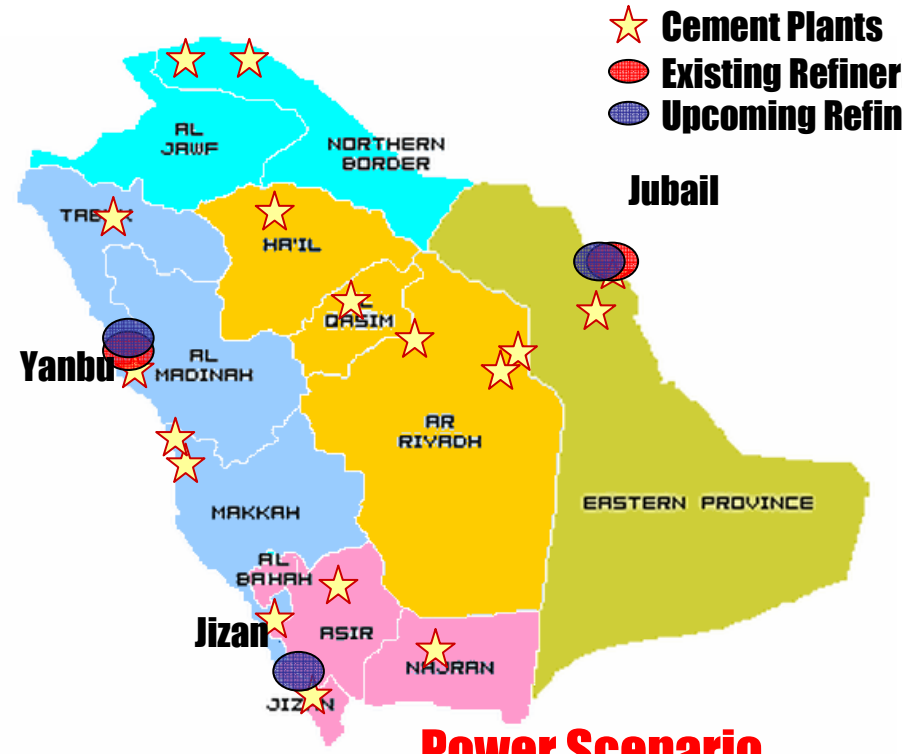
Limestone & Other Raw Materials



- ✓ Abundant limestone in Central Region with high calcium and low magnesium.
- ✓ Western region has crystalline limestone complex geological set up.
- ✓ Clay & Sand available in abundance across the country. Clay is mostly available in close proximity of the limestone deposits.
- ✓ Need to explore Feldspar & Schist in raw mix as fuels other than HFO may be required in future.

Fuel & Power



Power Scenario

- ➔ Almost all cement plants use captive DG sets to meet their power requirement.
- ➔ Companies like Najran and City Cement have also installed WHR system.
- ➔ Some other plants (Yanbu, EPCC) are in the process of installing WHR.

Fuel Scenario Now

- ➔ Fuel used by all KSA cement plants is HFO.
- ➔ Existing HFO sources: Aramco refineries at Yanbu and Jubail.

Fuel Scenario in Future

- ➔ Future HFO sources: Capacity addition at Yanbu & Jubail and new refinery at Jizan
- ➔ HFO subsidy: Additional HFO, restricted; could, in future be at a much higher price
- ➔ Petcoke: Expected to be available from 3 upcoming refineries (6,000 tpd from each plant expected)
- ➔ Alternate Fuels: Tyres, MSW, Refinery waste, Medical waste
- ➔ Coal: Port based plant can explore possibility of importing coal

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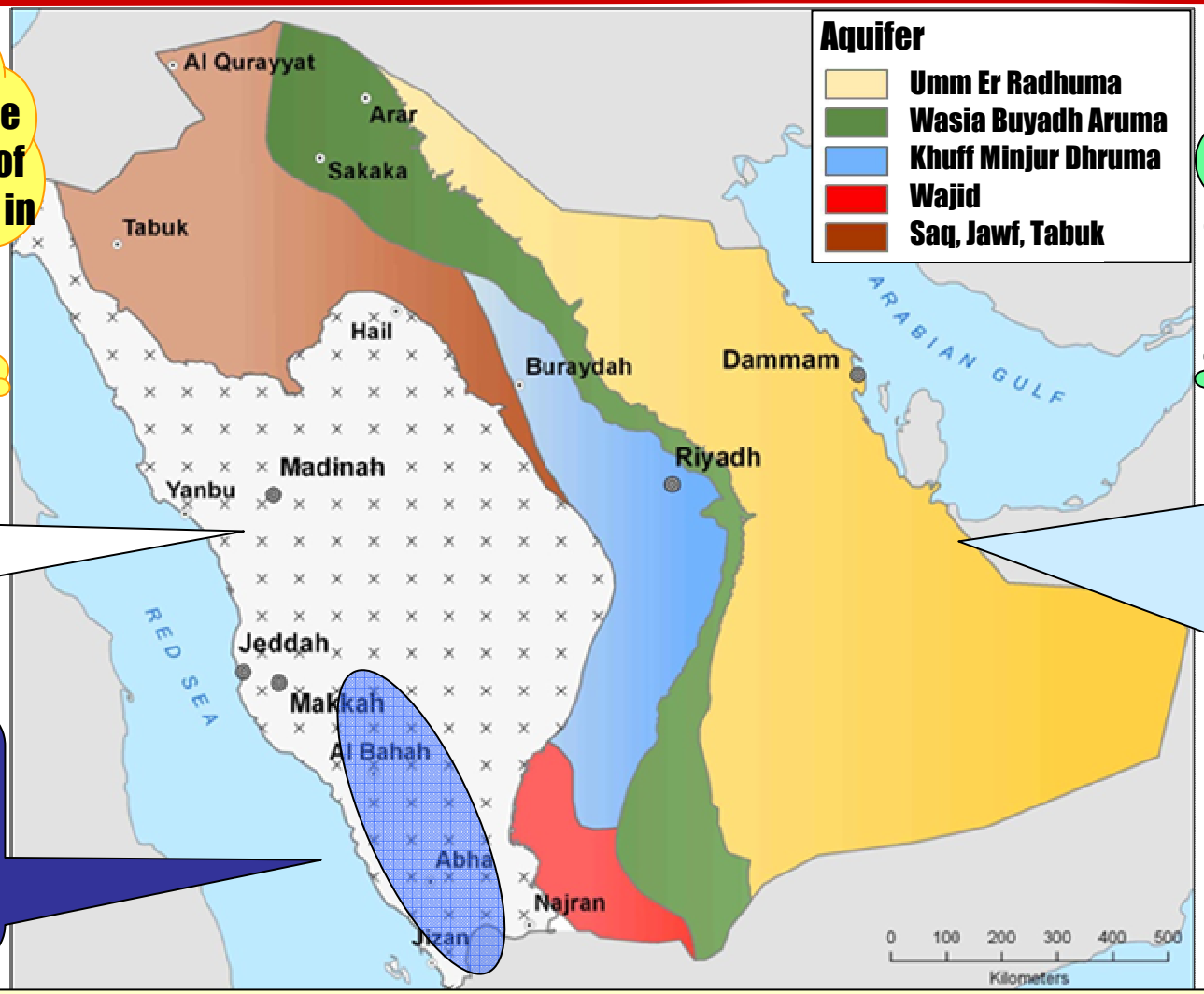
Water

Saudi Arabia is the largest producer of desalinated water in the world .



Drop inGroundwater levels in fossil aquifers due to negligible natural recharge.

Water source is mainly desalinated sea water.

The main source of groundwater comes from 5 major consolidated sedimentary old-age aquifers located in the eastern & central parts of the country known as the Arabian Shelf.

Only region with significant rainfall, thus has renewable water resources.

- **No permanent rivers or lakes** and very little rainfall.
- **Water Sources:** Water aquifers i.e. underground water reservoirs and Desalinated sea water

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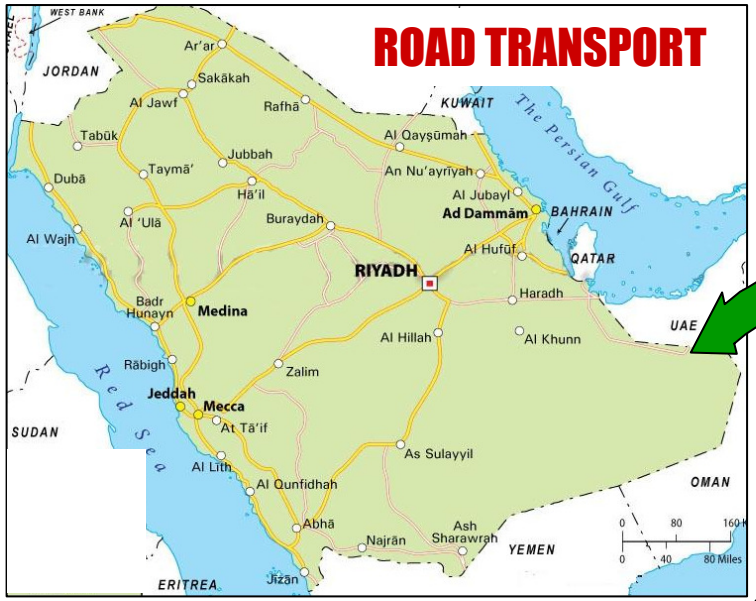
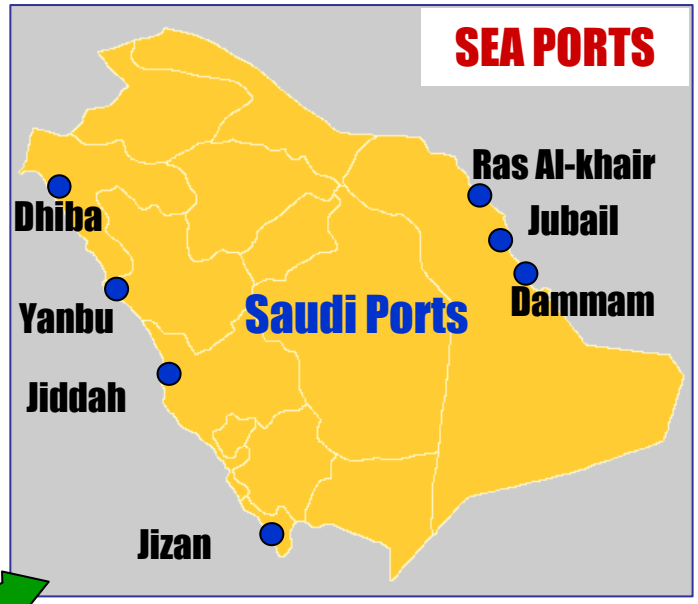
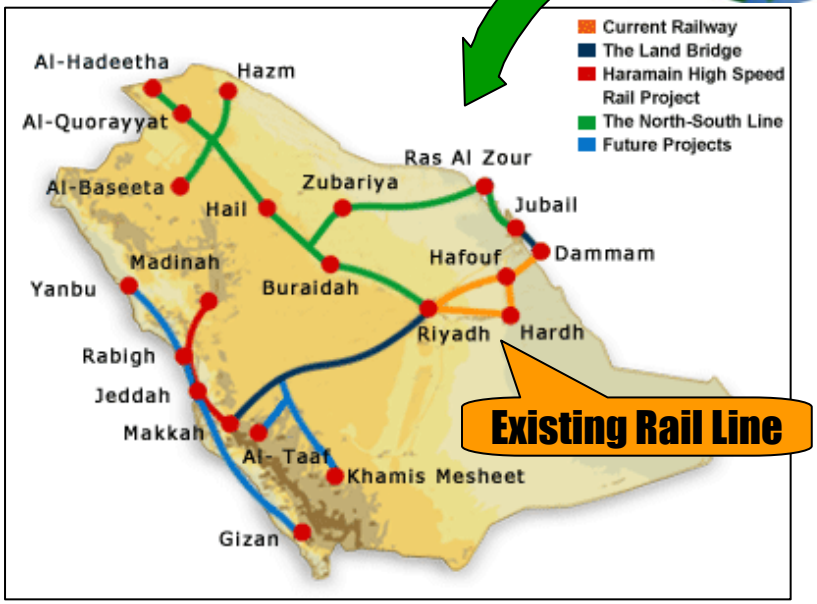
Logistics



- ✓ 1,00,000 miles of road network
- ✓ Trucks capacity: mostly 25-30 t



Yanbu & Jubail have both Industrial & Commercial ports.



RAILWAYS

- Limited connectivity, only two lines both connecting Dammam with Riyadh
- Major projects under execution – Saudi Landbridge, North South Railway & Haramain High Speed Rail Project.

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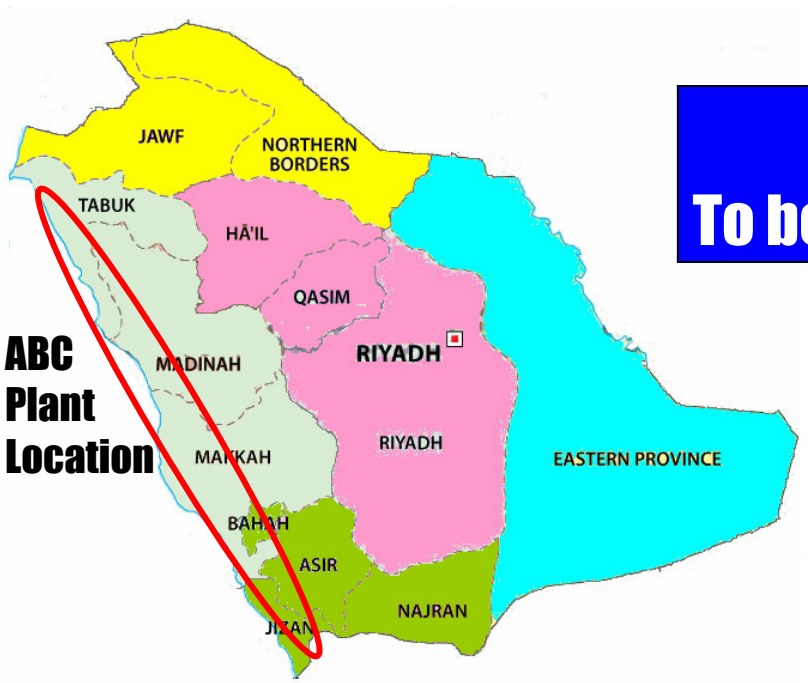
Other Influencing Factors

- ✓ **Environmental Clearance:** Cement plants require a Comprehensive Environmental Impact Assessment during the project feasibility stage to be prepared by an accredited agency. This has to be approved by Presidency of Meteorology and Environment (PME).
- ✓ **Fuel linkage:** Ministry of Petroleum & Minerals grants the fuel linkages to the industry.
- ✓ **Manpower:** Currently, KSA is facing shortage of skilled workers in construction sector due to the correction campaigns against irregular foreign workers.
- ✓ **Taxes:** Income tax (@20%) is levied on non-Saudi's share in a resident corporation and Zakat is levied on the Saudi Share. Zakat is assessed @ 2.5% on the Zakat base on a Saudi Shareholder.
- ✓ **Funding:**
  - **Saudi Islamic Development Fund** provides concessional finance to the cement sector.
  - **Some cement companies like Hail Cement, NRCC have made public offerings (IPO)** to raise money for the expansion projects. IPO is governed by the Capital Market Authority of KSA.

Target Capacity Creation



Company Name: AB Cement (ABC)

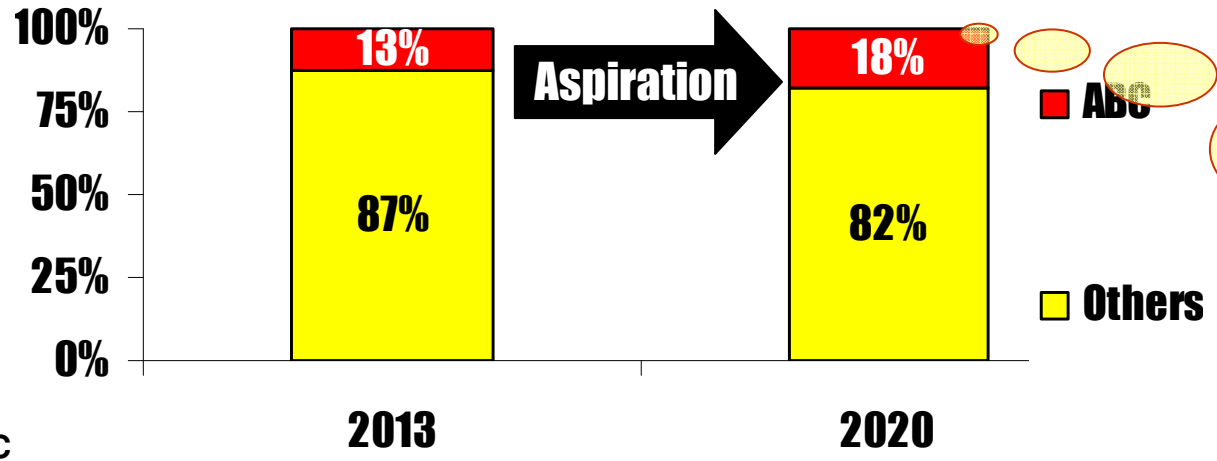
Company's Vision

To become a market leader in Saudi Arabia by 2020.

Location: A cement company based on Western coast of Saudi Arabia with total cement capacity of, say, 8 mio tpa.

Objective: Capacity creation using both organic and inorganic growth.

Market Share



ABC needs to create 8 mio tpa of capacity to achieve a dominant market share of 18% by 2020.

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Possible Locations for Capacity Creation

Additional Capacity Required: 8 mio tpa in 2020.
(based on target dominant market share of 18%)

Possible alternatives for capacity creation, driven also by company vision

Option I

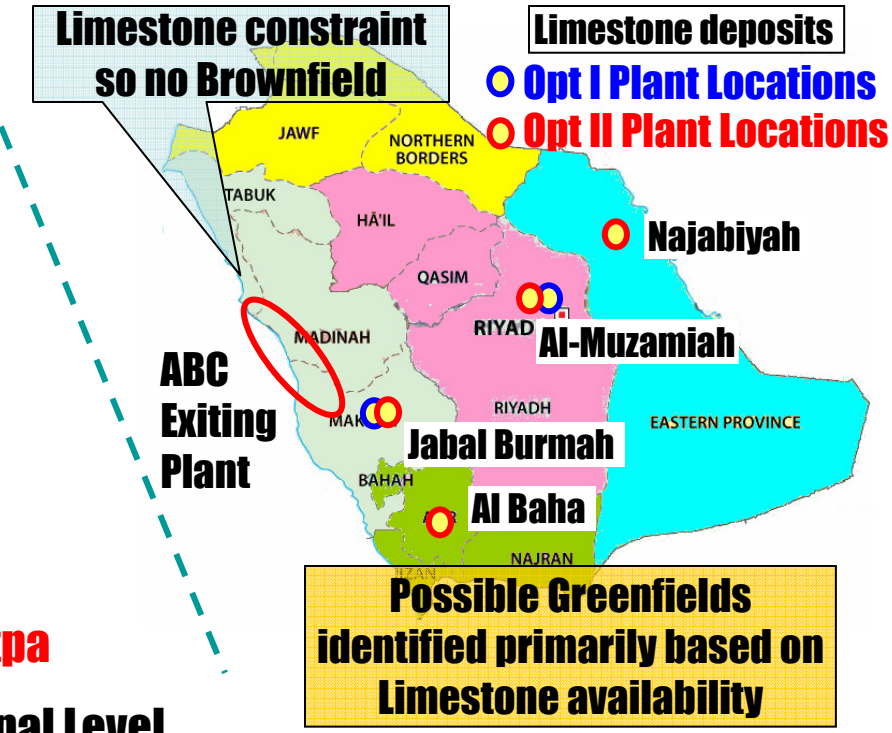
To create capacity only in attractive markets

Central : 4.7 mio tpa +
Western: 3.3 mio tpa

Option II

To have a pan KSA presence

Central : 2.7 mio tpa +
Western: 3.3 mio tpa +
Southern & Eastern: 1.0 mio tpa



ABC's Market Share at Regional Level

Regions	Central	Western	Northern	Southern	Eastern	Total- KSA
2013 Existing	1%	37%	7%	0%	0%	13%
Market Share Aspired						
Opt I - 2020	15%	37%	7%	0%	0%	18%
Opt II - 2020	9%	37%	7%	7%	9%	18%
Aspiration Gap						
Opt I - 2020	14%	0%	0%	0%	0%	5%
Opt II - 2020	8%	0%	0%	7%	9%	5%

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Options for Capacity Creation

Target Capacity Creation: 8 mio tpa

Option I

Central : 4.7 mio tpa (2x7,000 tpd clinker) +
Western: 3.3 mio tpa (10,000 tpd clinker)

Case I-A

Central
4.7 mio tpa (Greenfield)
Western
3.3 mio tpa (Greenfield)

Case I-B

Central
4.7 mio tpa (Greenfield) +
7,500 tpd Clinker Unit (Greenfield)
Western
3.3 mio tpa (Split Grinding Unit*)

**Clinker from Clinker Unit in Central region*

Option II

Central : 2.7 mio tpa (8,000 tpd clinker)+
Western: 3.3 mio tpa (10,000 tpd clinker) +
Southern & Eastern: 1.0 mio tpa each
(3,000 tpd clinker)

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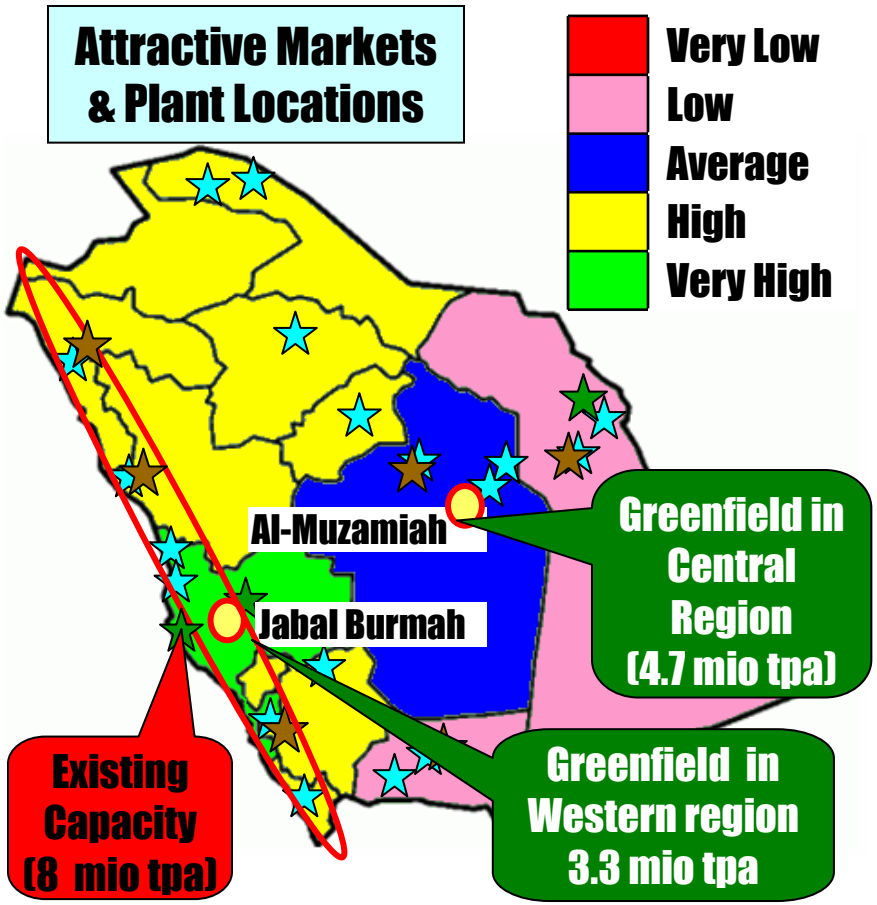
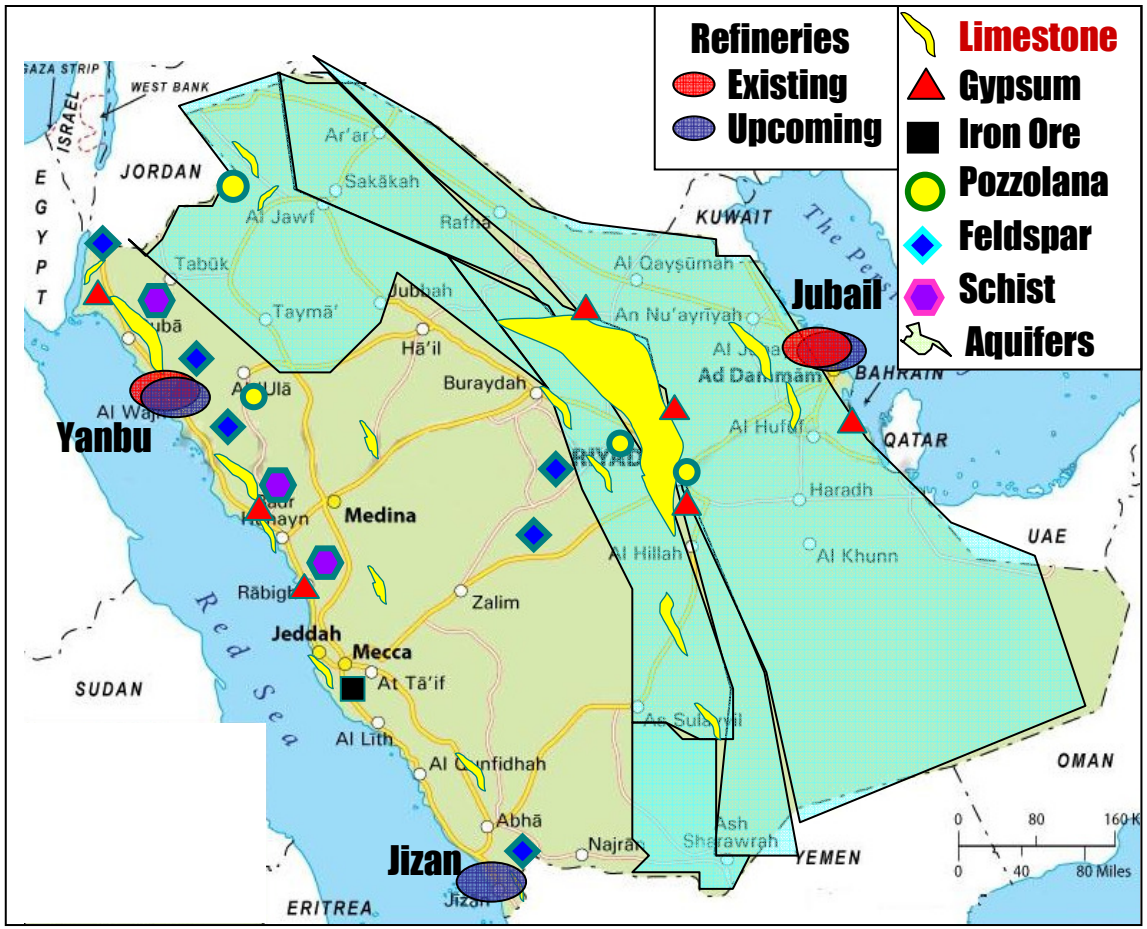
Financial Results

Options	Description	CAPEX (USD mio)	NPV @12.5% (USD mio)
Option I (Case 1 A)	Central: 4.7 mio tpa (GF) Western: 3.3 mio tpa (GF)	1,470	280
Option I (Case 1 B)	Central: 4.7 mio tpa (GF) Central: 7,500 tod clinker (GF) Western: 3.3 mio tpa (Split GU)	1,530	40
Option II	Central: 2.7 mio tpa (GF) Western: 3.3 mio tpa (GF) Southern & Eastern: 1.0 mio tpa each (GF)	1,485	181

**GF: Greenfield, GU: Grinding Unit*

Recommended Option





Recommended plant location & limestone source

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Rationale

- Highest NPV
- Attractive markets
- High demand growth

Risks

- Fuel: Non-allocation of HFO quota
- Limestone: Availability of limestone reserves esp in Western region

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Recommended Option

Parameters	Recommended Option		Typical Plant in KSA	
	Central	Western	Central	Western
Investment Cost (USD/ t)	185	182	140-150	140-150
Fuel Cost (USD/ t)	4.6	4.8	2.7	1.6
Unit Cost of Production (USD/ t)	33	36	31	34
Ex-factory price* (USD/ t)	64-69	64-69	64-69	64-69
EBIDTA Margin	50%	45%	56-58%	55-56%
Return on Investment (ROI)	12%	10%	15%	23%
Return on Equity (ROE)	23%	20%	26%	20%

* Fixed by Govt.

Fuel Mix Considered in the Recommended Option:
Central : 50% HFO + 30% Tyres + 20% Mixed Oil
West : 50% HFO + 50% Petcoke

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Thank you

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