



European Parliament

EURACOAL
European Association for Coal and Lignite



Coal the Economic Engine for Development of Pakistan

Irfan K. Ali, Chairman

TharPak Consortium



WORLD COAL
ASSOCIATION

WCA-EURACOAL Workshop:

**Does a prosperous world economy
need coal?**

Tuesday 13 November 2012

Pakistan Energy Crisis

Population:

Energy Consumption:

USA

3 rd

9 th @

12,924.224 kWh per capita

Pakistan

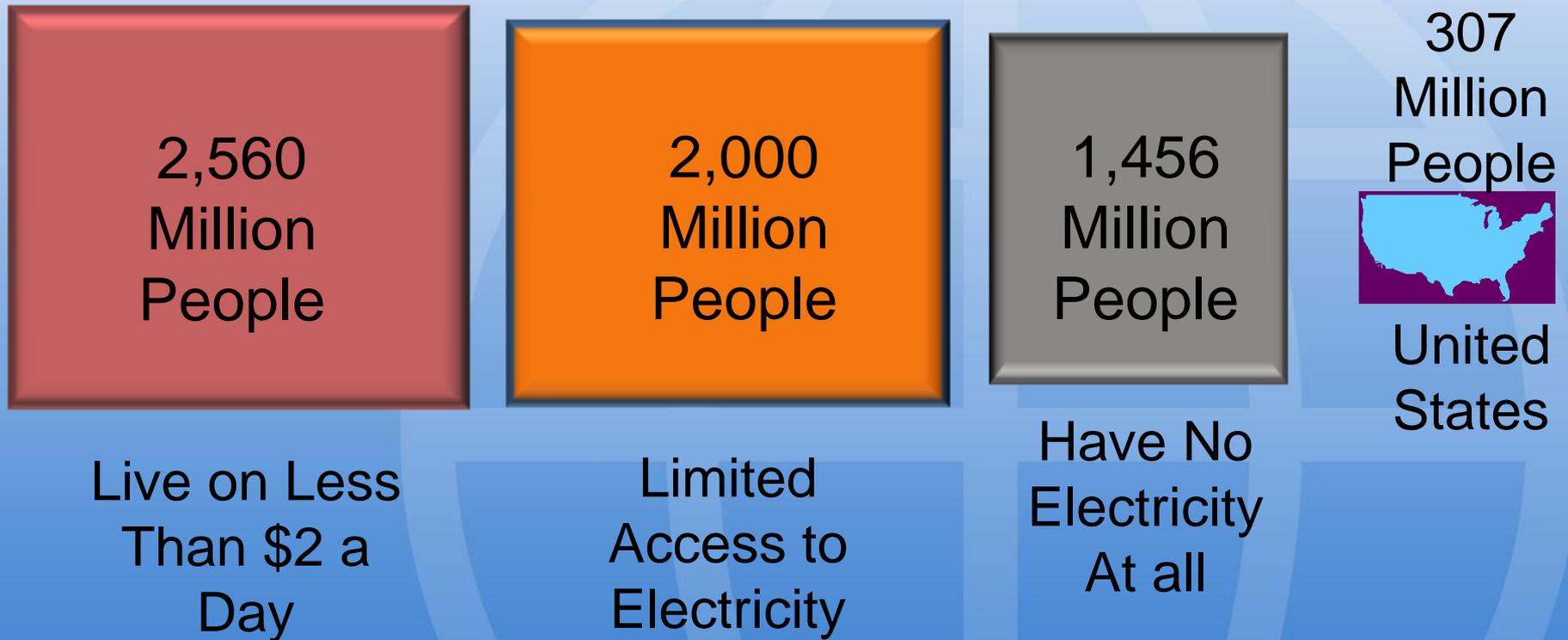
5 th

164 th @

430.183 kWh per capita

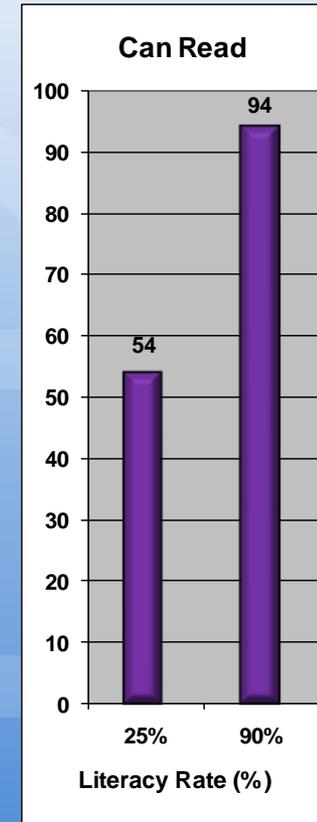
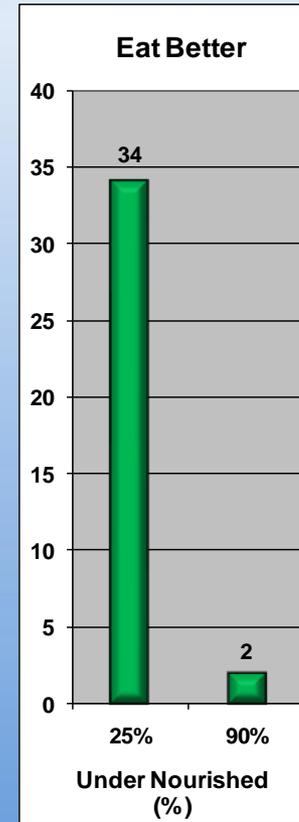
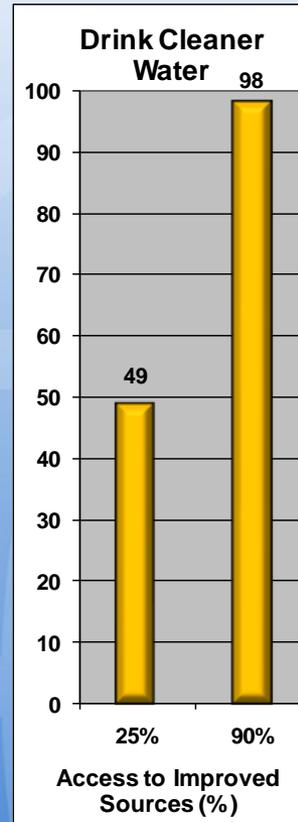
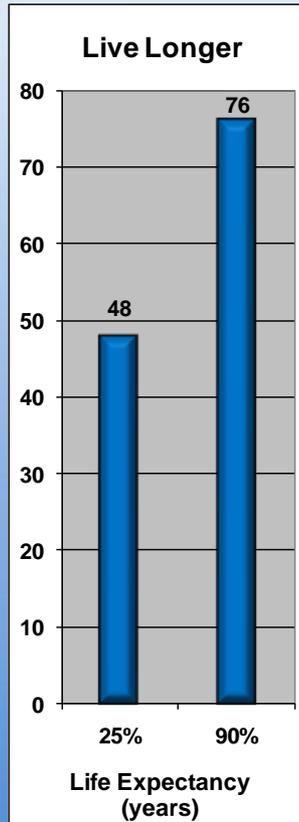
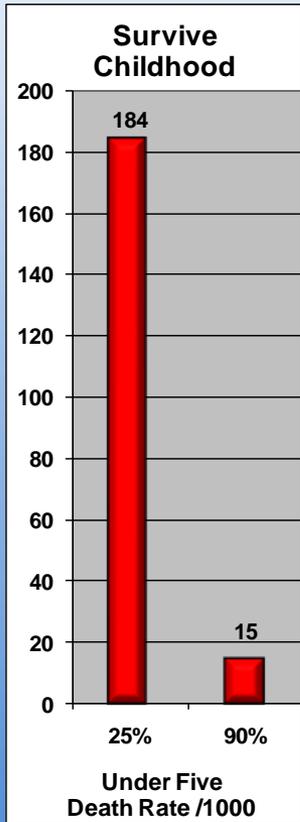
Pakistan Installed Capacity (MW)	Projected Demand		Gap (MW)
	Year	MW	
17,897	2010	24,474	6,577
	2015	36,217	18,320
	2020	54,359	36,462
	2025	80,566	62,669
	2030	1,13,695	95,798

The Scale of Global Poverty and Energy Deprivation



Source: Dr. Frank Clemente, Professor Penn State University

Coal/Energy & Poverty Reduction



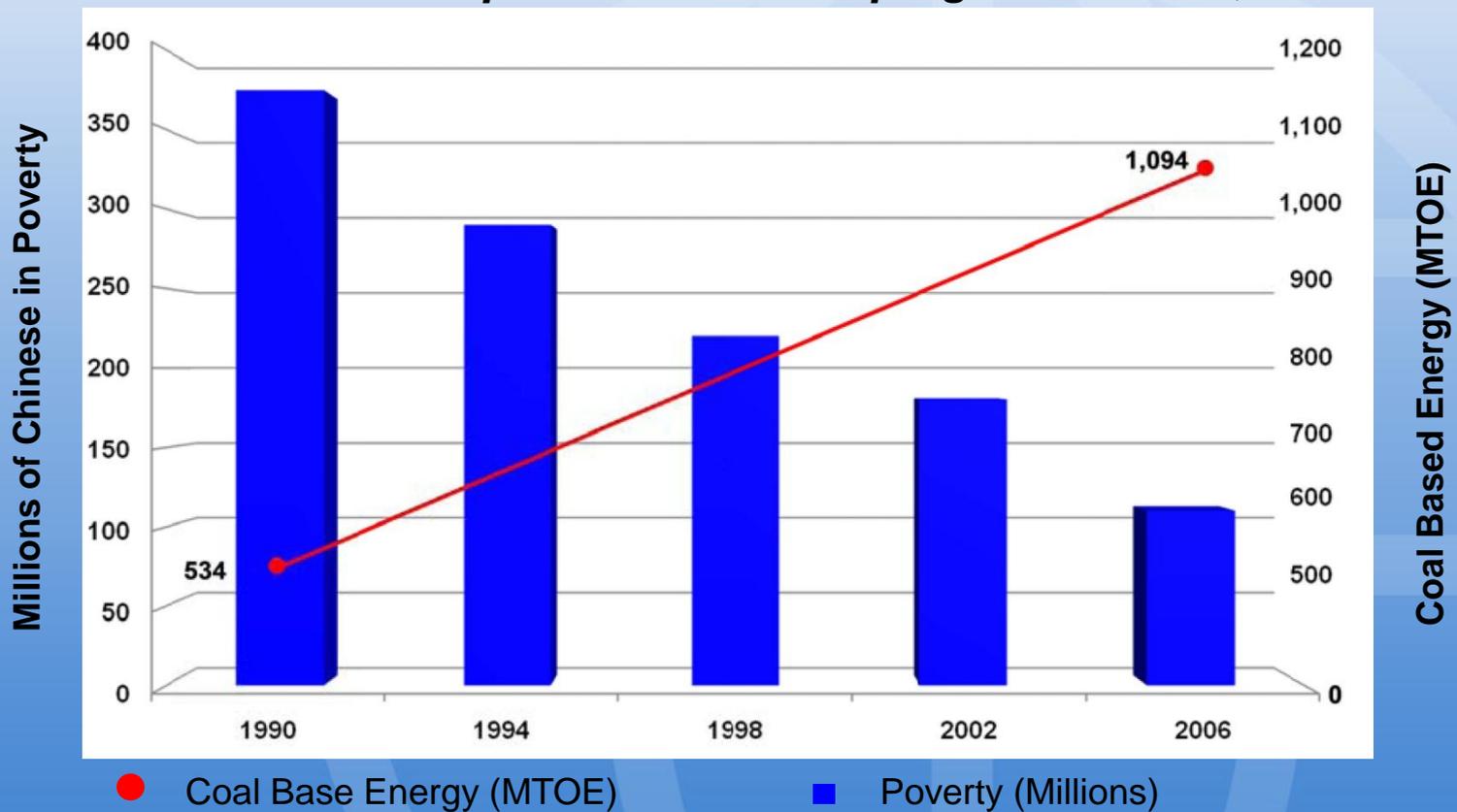
Energy is Good: People in Societies with Greater Access to Electricity

25% and 90% average percent of population with access to electricity

Source: Dr. Frank Clemente, Professor Penn State University

Out of Poverty: Coal Based Energy has Propelled China Forward

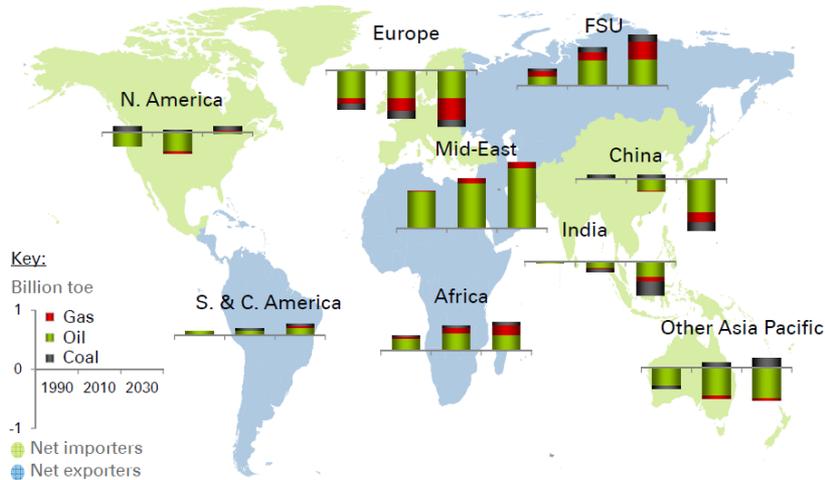
“China is an example for the developing world” IEA, 2007



Note: Poverty measures follow World Bank definition of \$1/day income
Source: IEA, 2007; EIA, 2008

Energy Imbalance

Energy imbalances improve in the Americas...

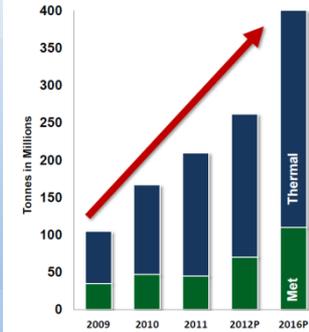


Energy Outlook 2030

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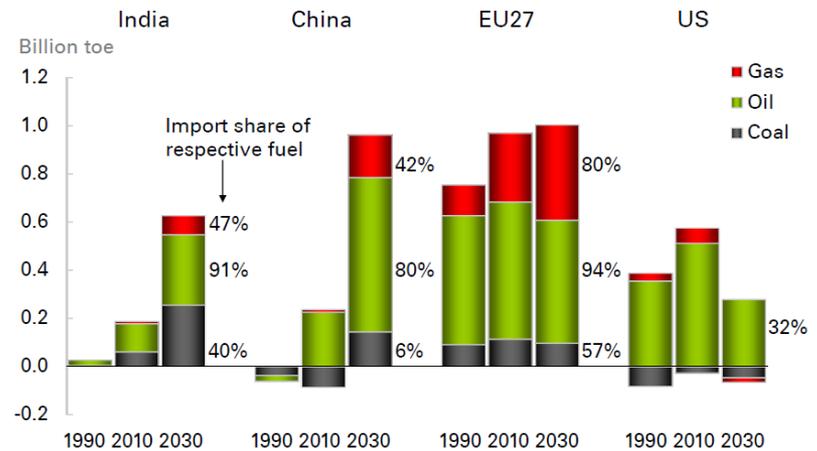
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China Net Coal Imports



Source: Forecasted imports and new coal generation based on Peabody estimates

Import dependency rises in Asia and Europe...

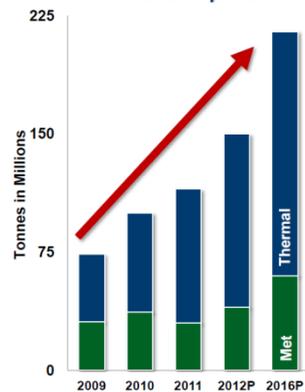


Energy Outlook 2030

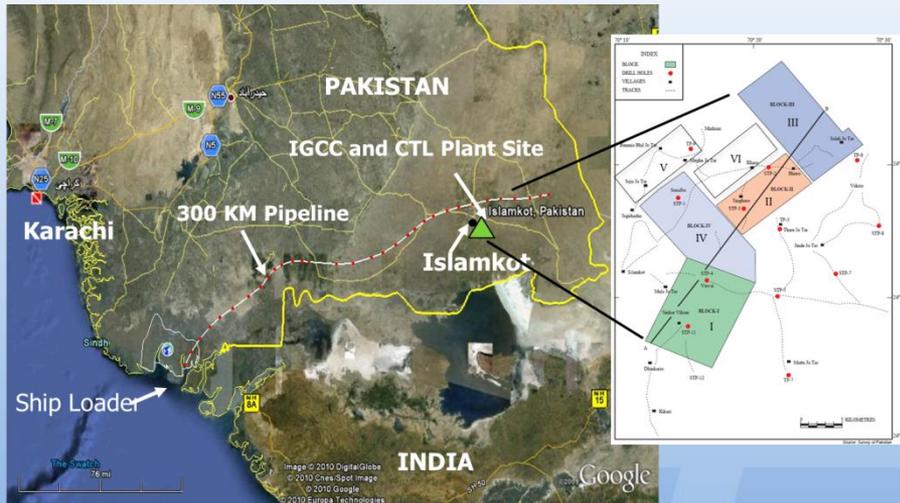
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India Coal Imports



Thar Coal Field

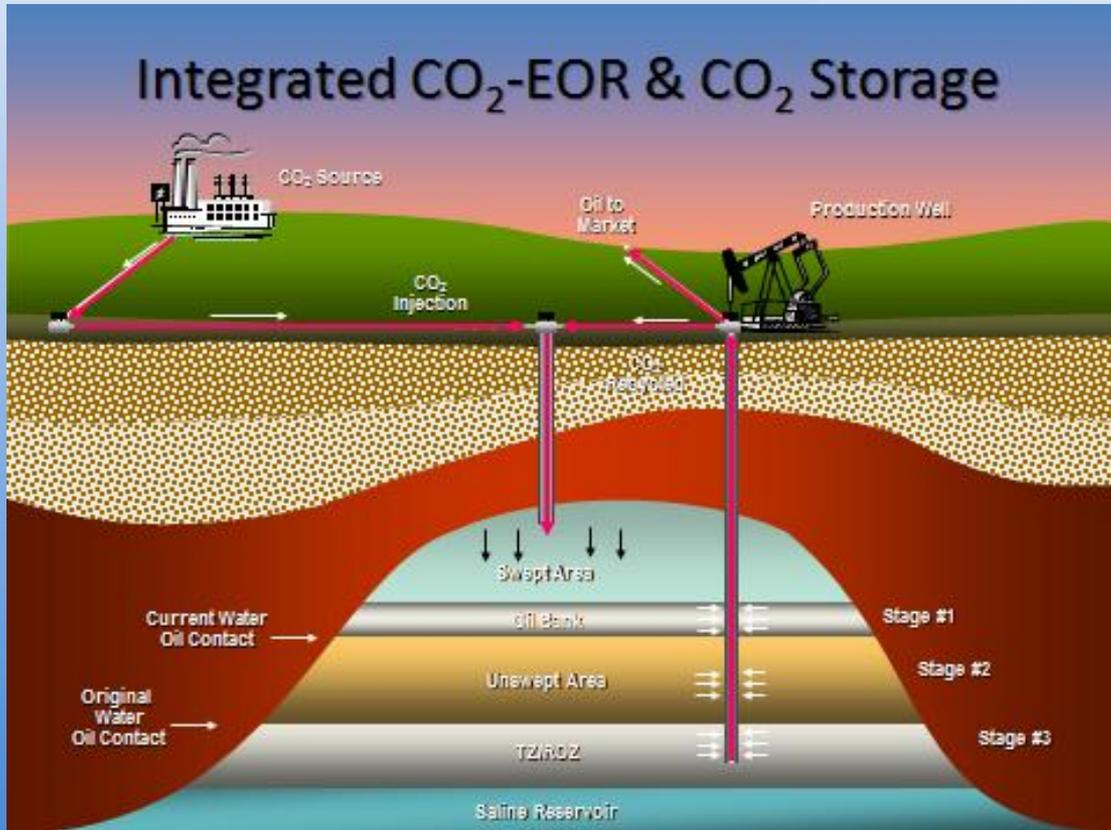


- USGS discovered the resource in 1993
- Estimated at 172 Billion Tons
- 2010 World Bank ban on coal projects
- First mover advantage – sitting idle
- Initial control >2 billion tonne resource
- Remarkable expansion capacity
- Potential to be the Powder River Basin of South Asia

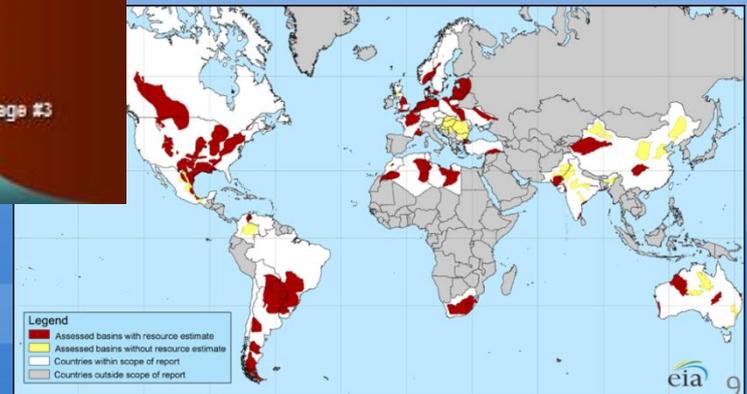
Environmental Importance of Thar

- Demand for expanded energy access is **overwhelming**
- The world **will** exploit Coal for decades and the bulk of the growth will be in developing nations
- Potential environmental consequences of **traditional** large scale coal development are real
- TharPak project can create a viable way forward to limit climate damage from coal development by **demonstrating the potential for advanced carbon capture technologies and mitigation of other pollutants from the production process.**
- TharPak can serve as “**proof of concept**” to replicate throughout the developing world to expand energy access while avoiding climate change and other forms of air pollution.

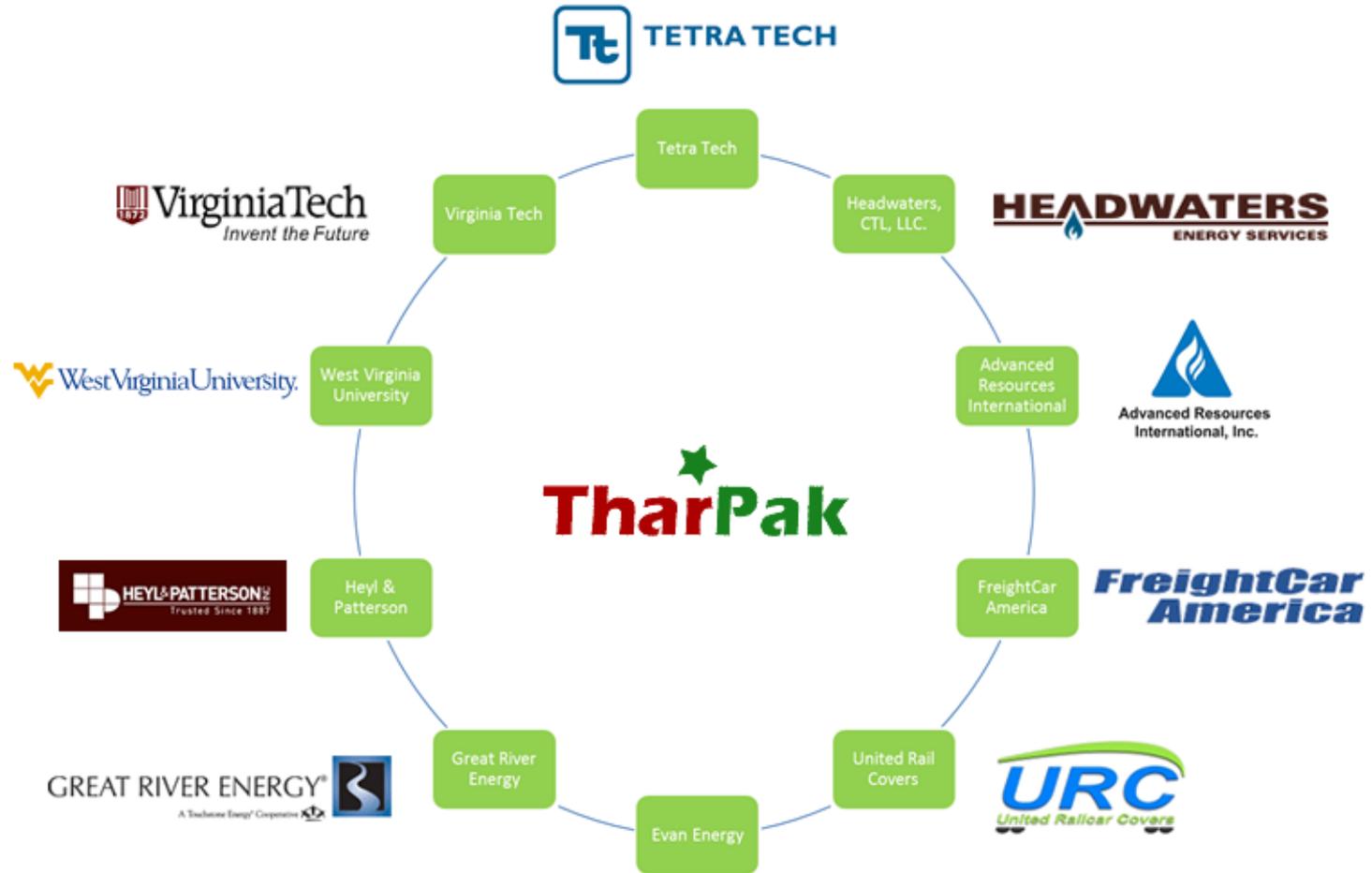
CTL, CCS, EOR, & Emissions



Perfect Synergy:
EOR needs the CO₂ from CCS and CCS needs EOR to store the CO₂



THE CONSORTIUM



TharPak Advisors

E. Morgan Massey - Director Inter-American Coal, former CEO Massey Energy

Dr. Stanley C. Suboleski - Director Inter-American Coal, former executive Massey Energy Company & OKD Coal, former Department Head of Mining Engineering at VT & PSU

Dr. Michael Karmis - Professor Department of Mining and Minerals Engineering and Director of the Virginia Center for Coal and Energy Research at Virginia Tech

Dr. W. Harrison Wellford - energy advisor to three US Presidents, policy analyst and clean coal advocate

Dr. Timothy R. Carr – Energy & Geology Professor at WVU, The National Research Center for Coal & Energy and U.S.-China Energy Center

Usman Aminuddin - Chief Executive of Attock Refinery and Pakistan Oil Fields. Pakistan's former Federal Minister of Petroleum and Natural Resources

Kamal Chinoy - Director and CEO of Pakistan Cables Ltd., International Industries Ltd., Pak Chemicals Ltd., International Steels Ltd., Pakistan Security Printing Corp. Ltd. and Atlas Insurance Company Ltd

Mega Energy Complex - Ultimate Objective



Truck & Shovel



Bucketwheel Excavator



Dragline

20M TPY Feed ← 59M TPY Output → 39M TPY Feed

80,000 BPD
Ultra Clean
Liquid Fuels



CO₂(6.4M)
39.8M TPY of CO₂

600 MW
Captive
Usage



CO₂ (33.4M)
CO₂
Compression &
Transfer Plant

5,400 MW
Industrial &
General
Consumers

Thank You

igracias *благодаря* *děkuji* *tak* *tack*

dank u *kiitos* *merci* *danke*

σας ευχαριστώ *köszönöm* *شكرا* *ačiū*

takk *dziękuję* *obrigado* *grazie*

teşekkür ederim *շնորհակալություն*

Information: <http://www.tharpak.com>