



25th world gas conference  
"Gas: Sustaining Future Global Growth"

# Opportunity and Sustainability of NGV in Asia Pacific

**Strategic Panel 7: Natural Gas Vehicles – Sustainability & Opportunity**

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**Kuala Lumpur Convention Centre**  
**Malaysia**



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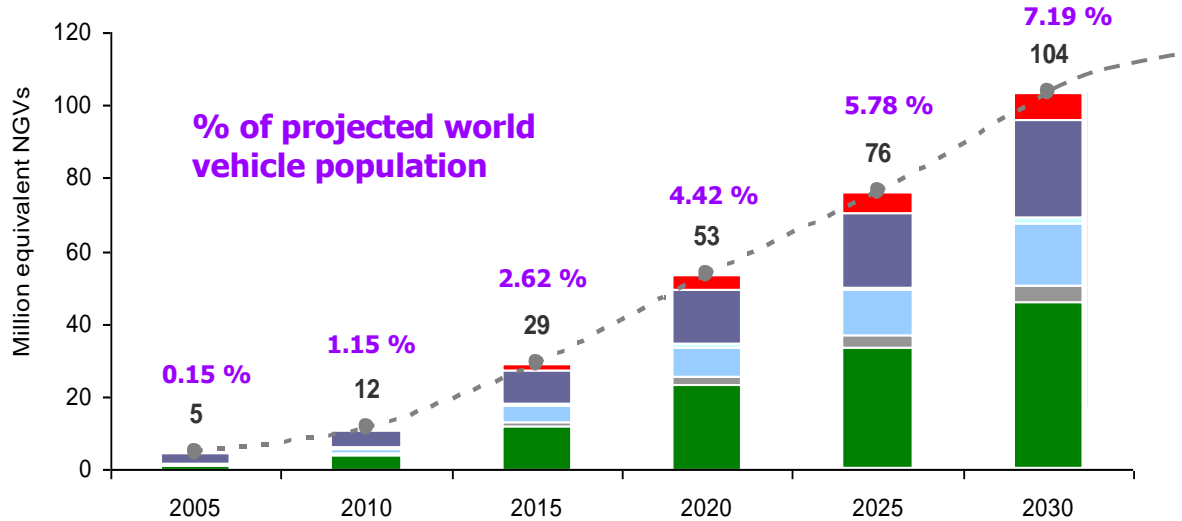


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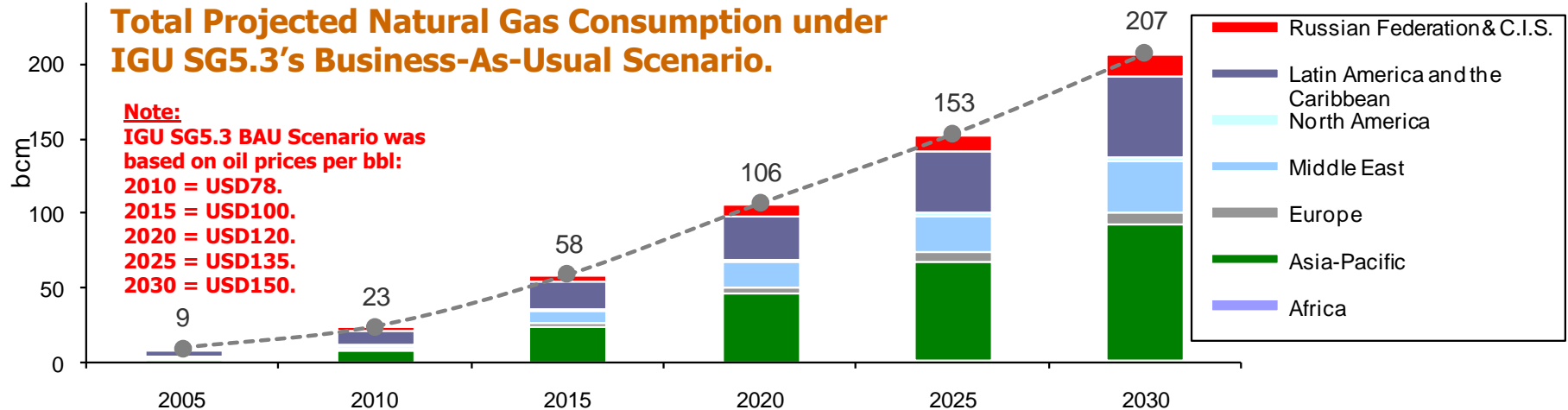
# Opportunity: NGVs and Natural Gas Demand Projected to Increase Significantly – IGU (Oct 2009)

**Total Projected Number of Natural Gas Vehicles under IGU SG5.3's Business-As-Usual Scenario.**



- **53 million NGVs, 106 BCM of natural gas by 2020.**
  - **104 million NGVs, 207 BCM of natural gas by 2030.**
  - **Asia Pacific major growth region.**
- ❖ **IEA GAS Scenario - 70 million NGVs by 2035 (June 2011)**

**Total Projected Natural Gas Consumption under IGU SG5.3's Business-As-Usual Scenario.**

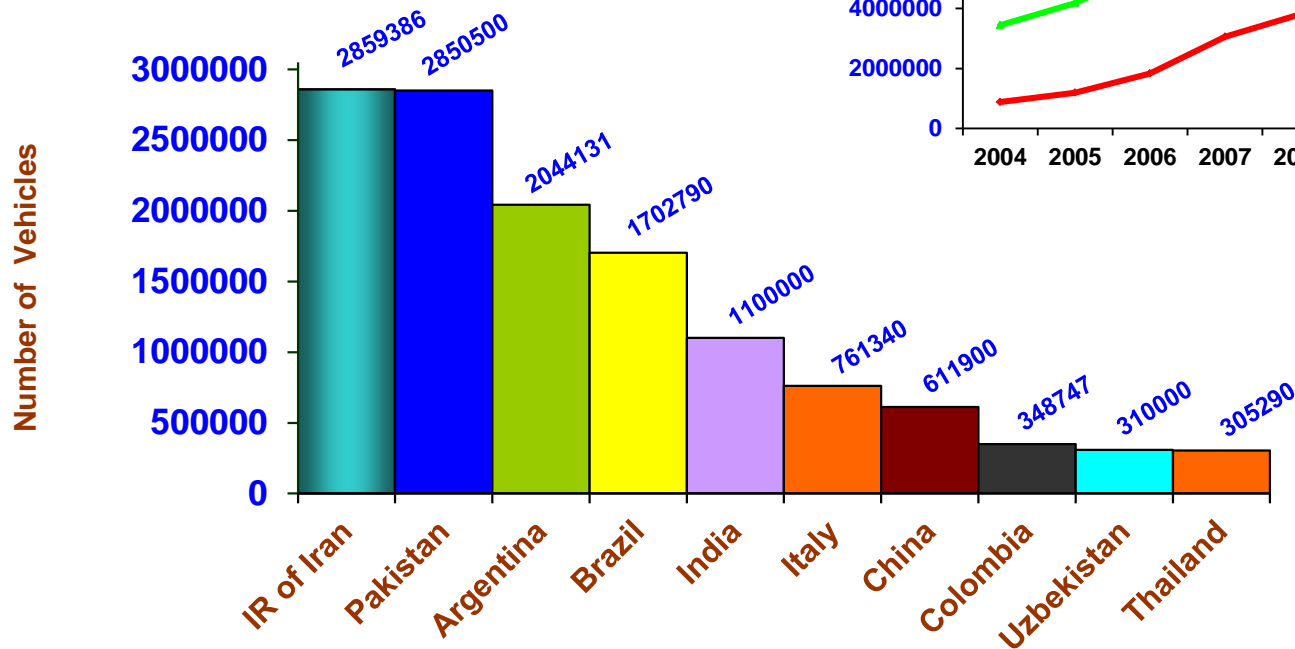
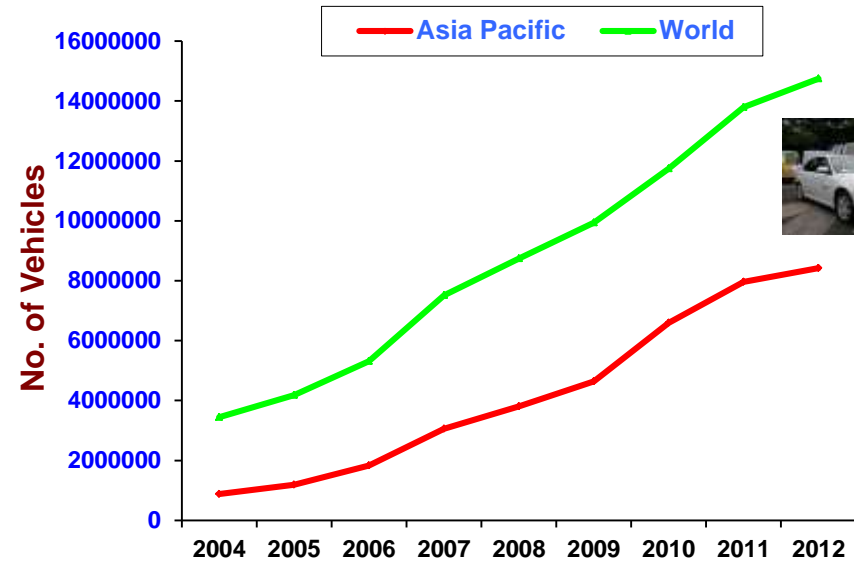


(Source: International Gas Union's Study Group 5.3 (Utilization of Natural Gas in Transport) Final Report, October 2009).

# About Half of the World NGV Vehicles and Stations are in Asia Pacific Region

(April 2012)

	Natural Gas Vehicles	NGV Stations
World	14.7 million	20,750
Asia Pacific	8.4 million	10,480



- Top 10 NGV countries worldwide, 5 from Asia Pacific.

# Various Sizes of NGV Vehicles and Stations Populations in 21 Countries in the Region

(April 2012)

	Country	Total Vehicles	No. of Stations	Remarks
1	IR of Iran	2859386	1800	Nov '11
2	Pakistan	2850500	3330	Jul '11
3	India	1100376	715	Nov '11
4	China	611900	2500	Dec '11
5	Uzbekistan	310000	175	Nov '11
6	Thailand	305290	474	Jan '12
7	Bangladesh	200000	600	Sept '11
8	Malaysia	53064	171	Apr '12
9	Japan	40823	333	Sept '11
10	Korea	32031	185	Jan '12
11	Myanmar	27472	51	Oct '11
12	Tajikistan	10600	53	Dec '07
13	Kyrgyzstan	6000	6	Dec '07
14	Singapore	5522	4	Dec '12
15	Indonesia	5520	14	Oct '11
16	Australia	3500	51	Oct '11
17	United Arab Emirates	1751	17	Sept '11
18	Vietnam	302	3	May '11
19	New Zealand	201	14	Dec '10
20	Philippines	71	3	Oct '11
21	Kazakhstan	200	10	Dec '11
		<b>8,424,509</b>	<b>10,482</b>	

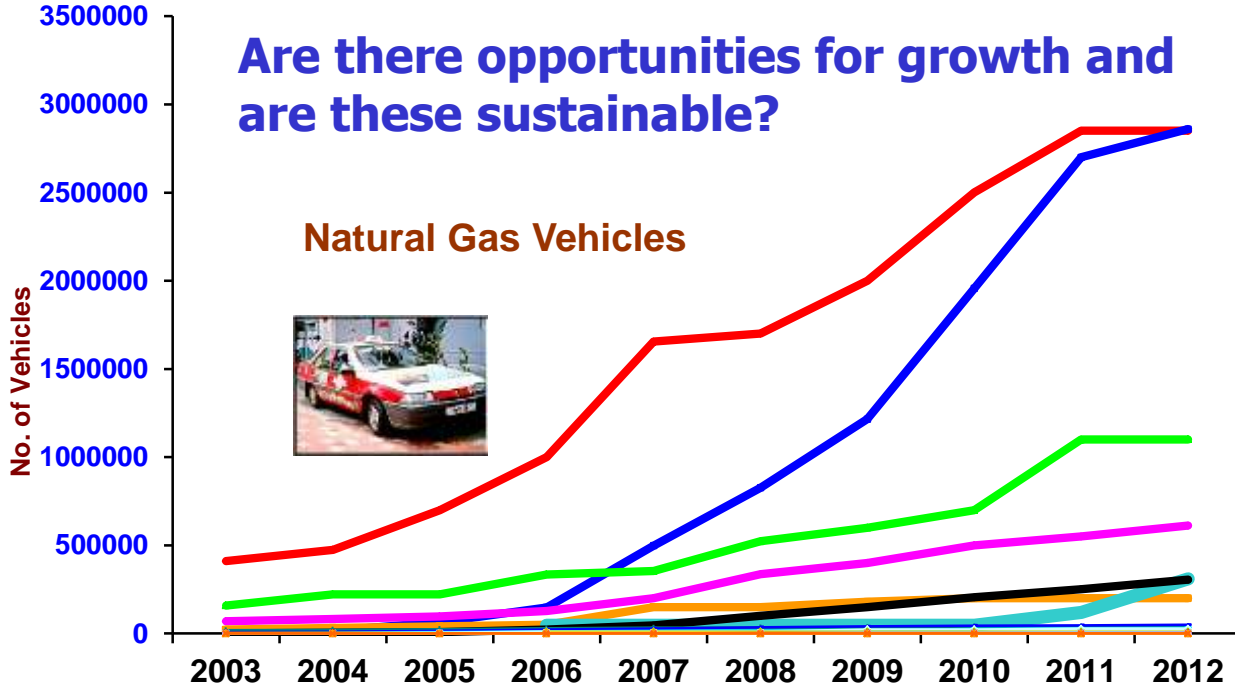
(Source: Asian NGV Communications magazines & Others)

# Various Stages of Market Development and Growth in 21 Countries in the Region

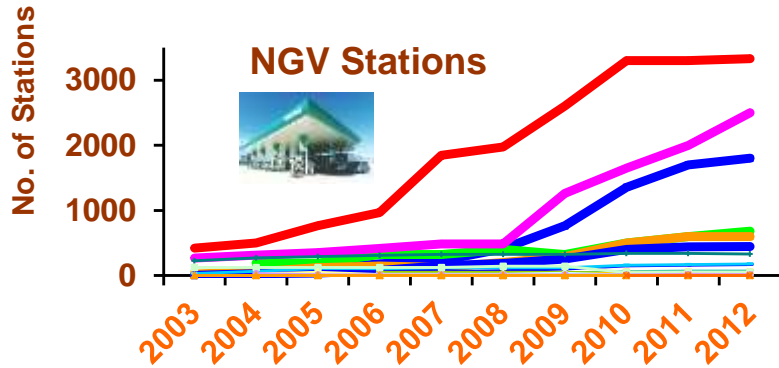
(April 2012)

**Are there opportunities for growth and are these sustainable?**

## Natural Gas Vehicles



## NGV Stations



- Pakistan
- Iran
- India
- China
- Bangladesh
- Uzbekistan
- Thailand
- Japan
- Malaysia
- Republic of Korea
- Myanmar
- Tajikistan
- Kyrgyzstan
- Australia
- Indonesia
- Singapore
- United Arab Emirates
- New Zealand
- Philippines
- #REF!
- Vietnam
- Kazakhstan

# Growth and Sustainability Depend on Adequately Managing and Addressing the Key Drivers, Key Success Factors and Key Challenges

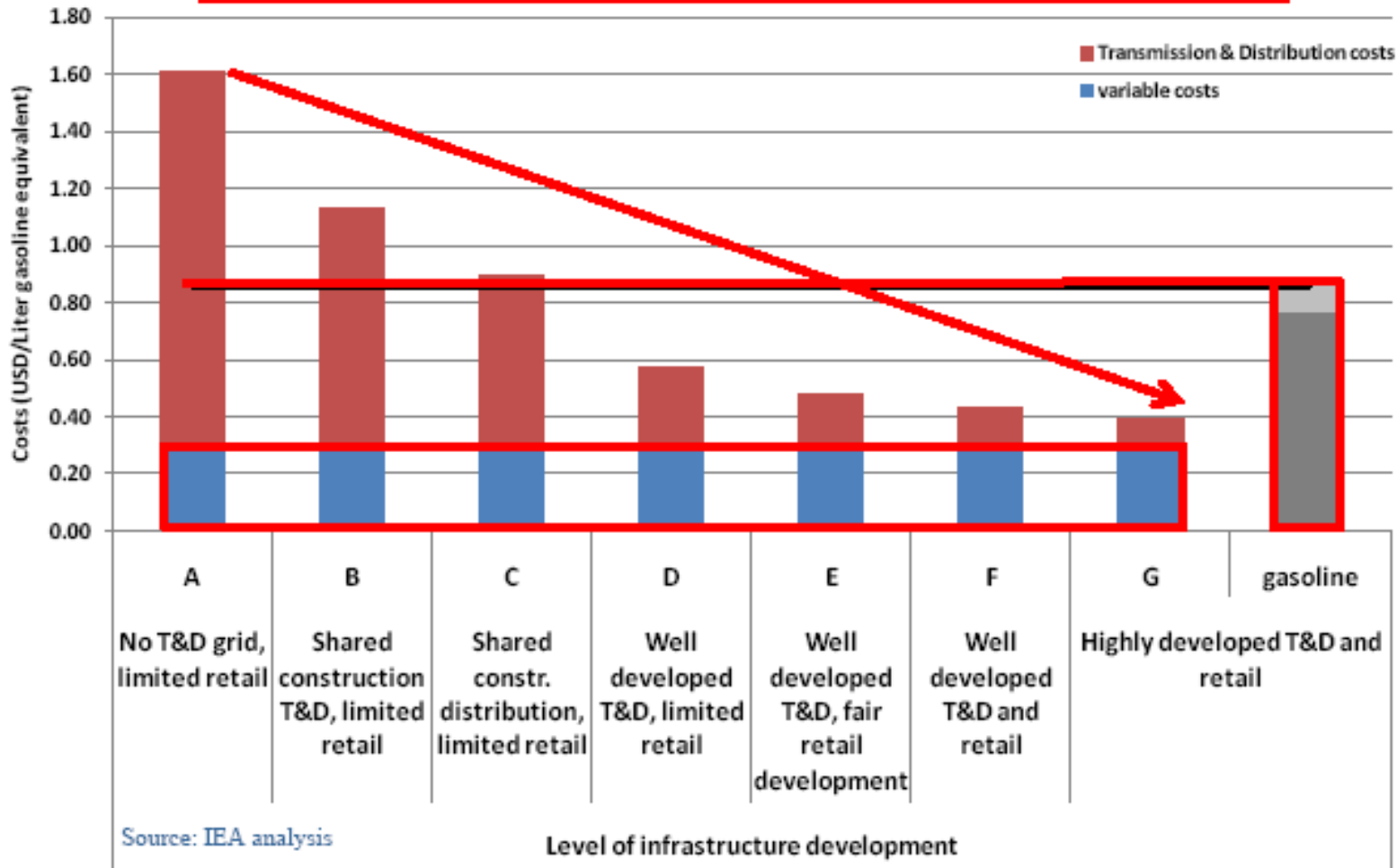


# Key Drivers, Key Success Factors & Key Challenges



# CNG Price: NGV can Compete with Gasoline where Natural Gas Transmission and Distribution Grids are Present – IEA (June 2010)

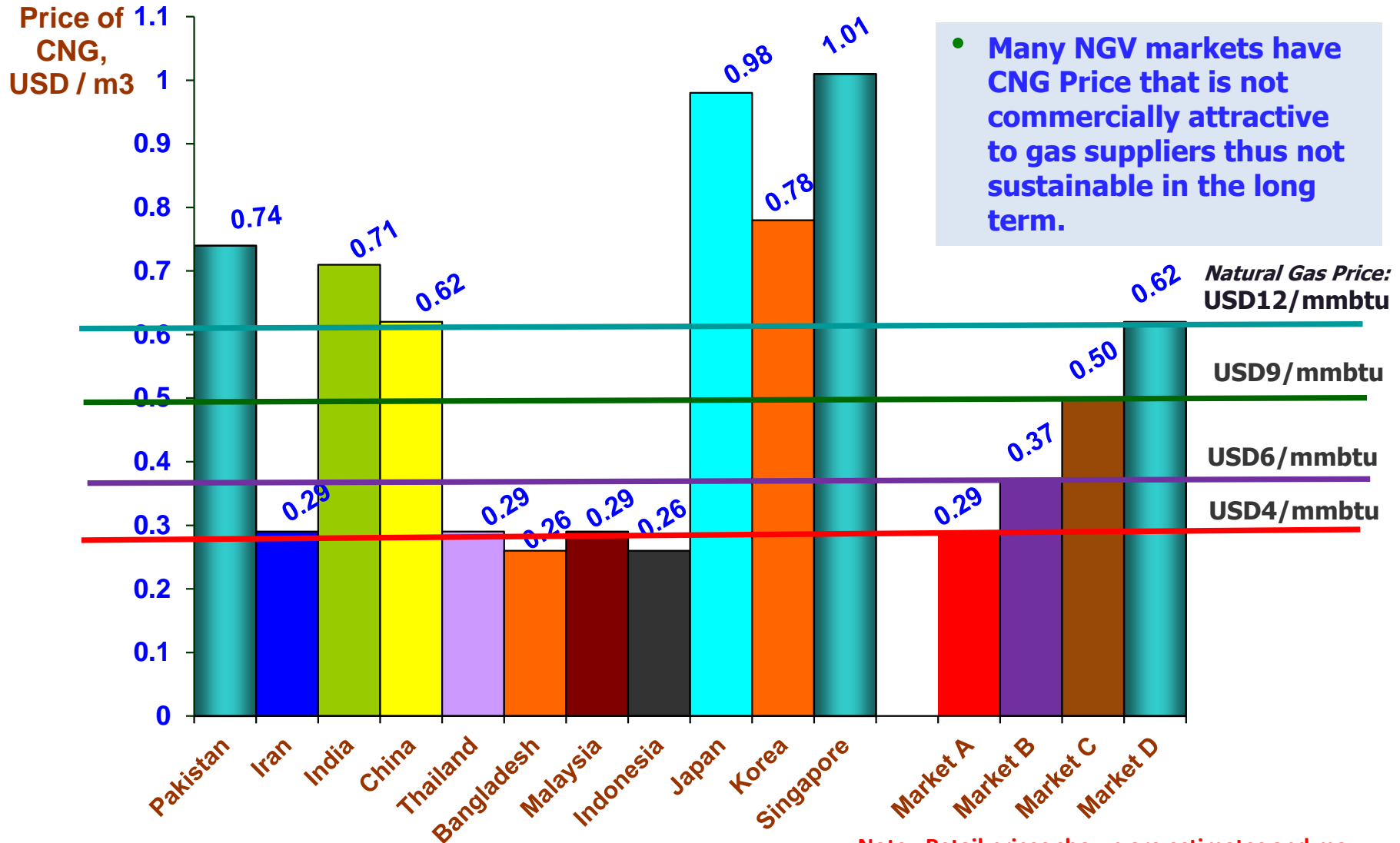
**Average fuel costs at USD 80/bbl oil, USD 9/MBtu gas**



Source: "How to Successfully Promote the Introduction and Growth of Natural Gas Vehicles for a Low-Carbon Future", Micheil Nijboer, IEA, France, Paper presented at the IANGV NGV 2010 Rome, 8 - 10<sup>th</sup> June 2010.



# CNG Retail Prices Challenge



(Source: Asian NGV Communications magazine & Others)

**Note:** Retail prices shown are estimates and may not reflect the current prices.

# Safety Challenge

**10<sup>th</sup> August 2010. Korea.**  
**Natural gas bus exploded,**  
**injuring 17, in Seoul.**



**13<sup>th</sup> August 2010. Singapore.**  
**Natural gas bus on fire.**



- **Safety incidents create negative perception about NGV safety**

**20<sup>th</sup> October 2011, Jakarta.**  
**TransJakarta CNG Bus Exploded**  
**While Refuelling.**



**From 7<sup>th</sup> to 24<sup>th</sup> Dec 2011, Pakistan**  
**Total of 45 people killed in seven CNG Passenger**  
**vans fire explosions due to natural gas leakages.**



# Conclusions

- **There are ample opportunities for the development and growth of NGV markets and supply of natural gas in the Asia Pacific region.**
- **To ensure growth and sustainability, the 3 key drivers, 2 key success factors and 7 key challenges must be properly managed and addressed.**
- **Two most critical key challenges currently facing the NGV markets in Asia Pacific are: CNG Price and Safety.**

# THANK YOU



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