

# Discovering Our Energy Future

**New Zealand Oil & Gas Limited**

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## **The Oil & Gas Landscape**

**Waikato Energy Forum**

**June 2008**



# Contents

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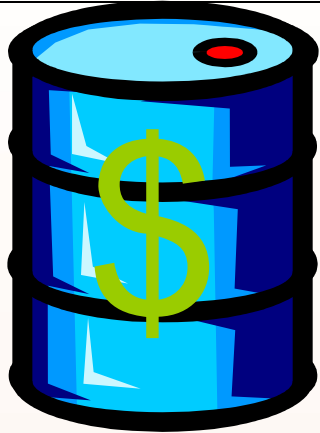
- General factors driving the oil price
- Demand side assessment
- Supply side assessment
- Implications for New Zealand
- Oil's place in a 'greener' energy future

Key Information Sources:

International Energy Agency: World Energy Outlook, Oil Market Reports

National Petroleum Council (USA): Facing the Hard Truths about Energy

# Factors Influencing Oil Prices



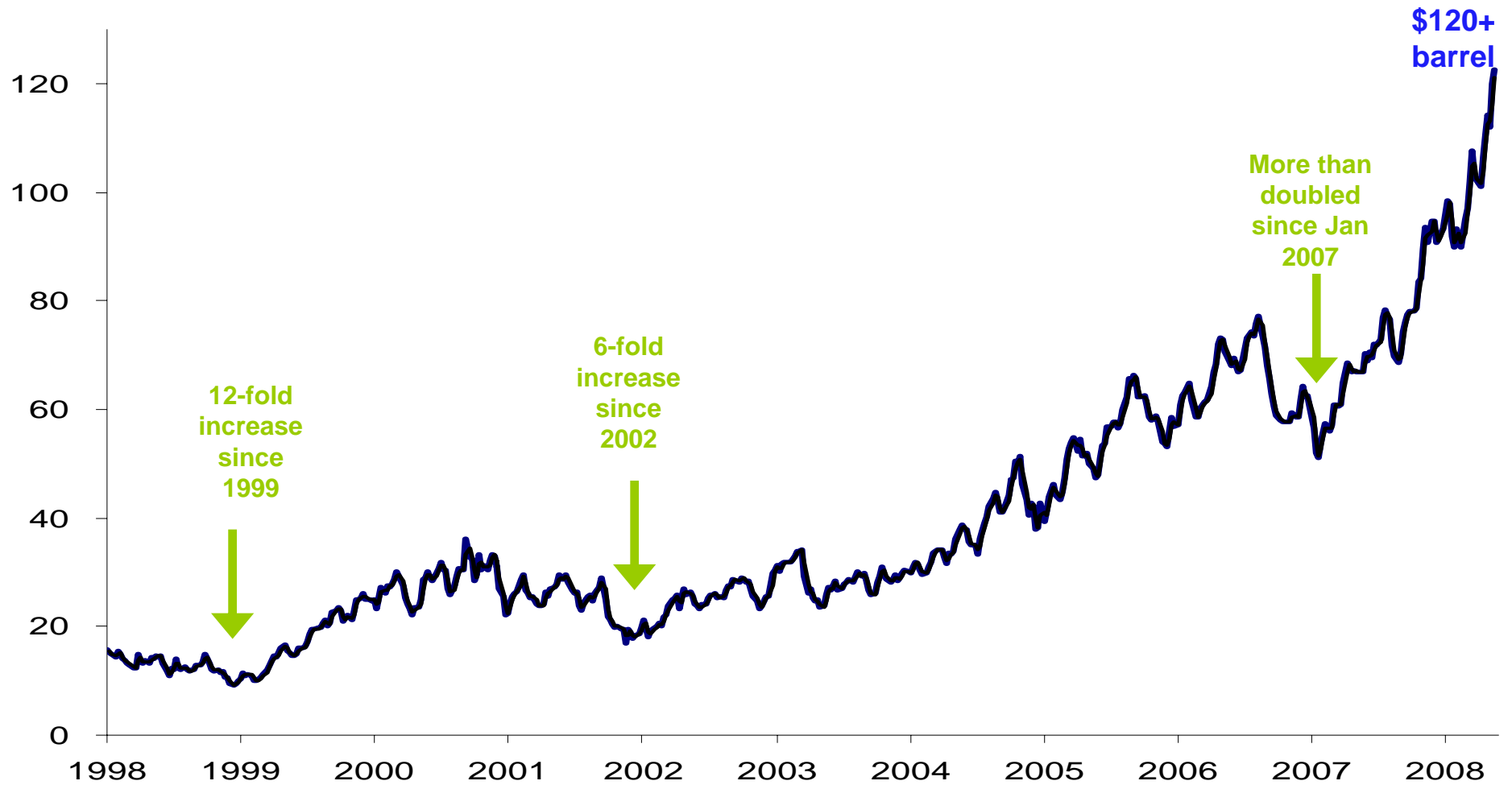
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marginal production cost +  
product tightness +  
weather +  
geopolitics +  
refinery capacity +  
speculation + ...

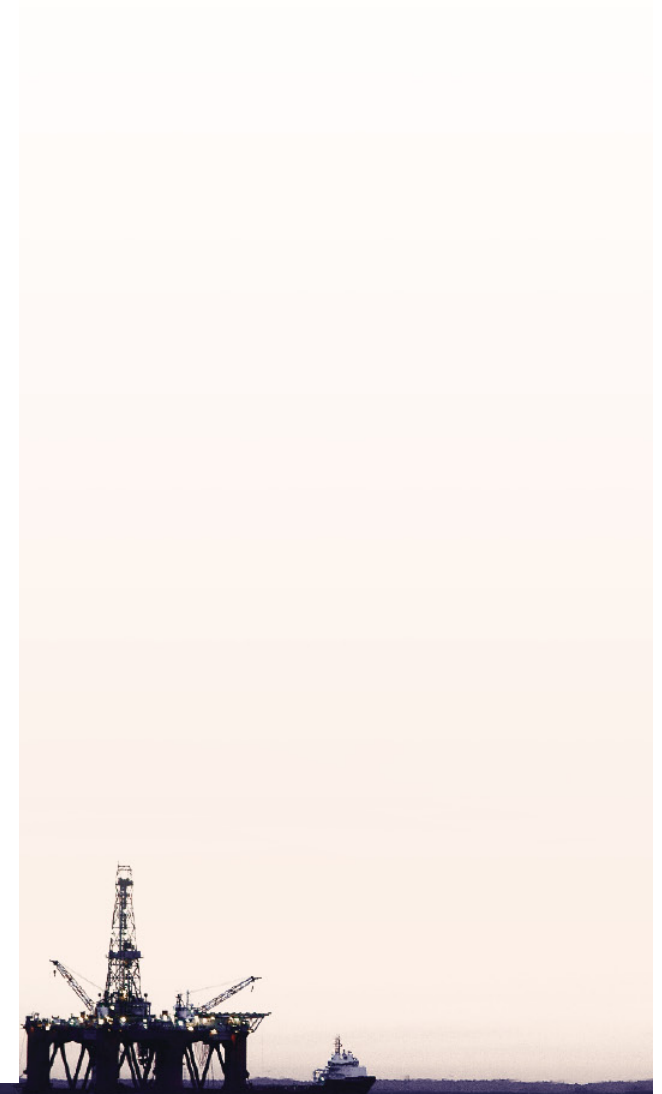
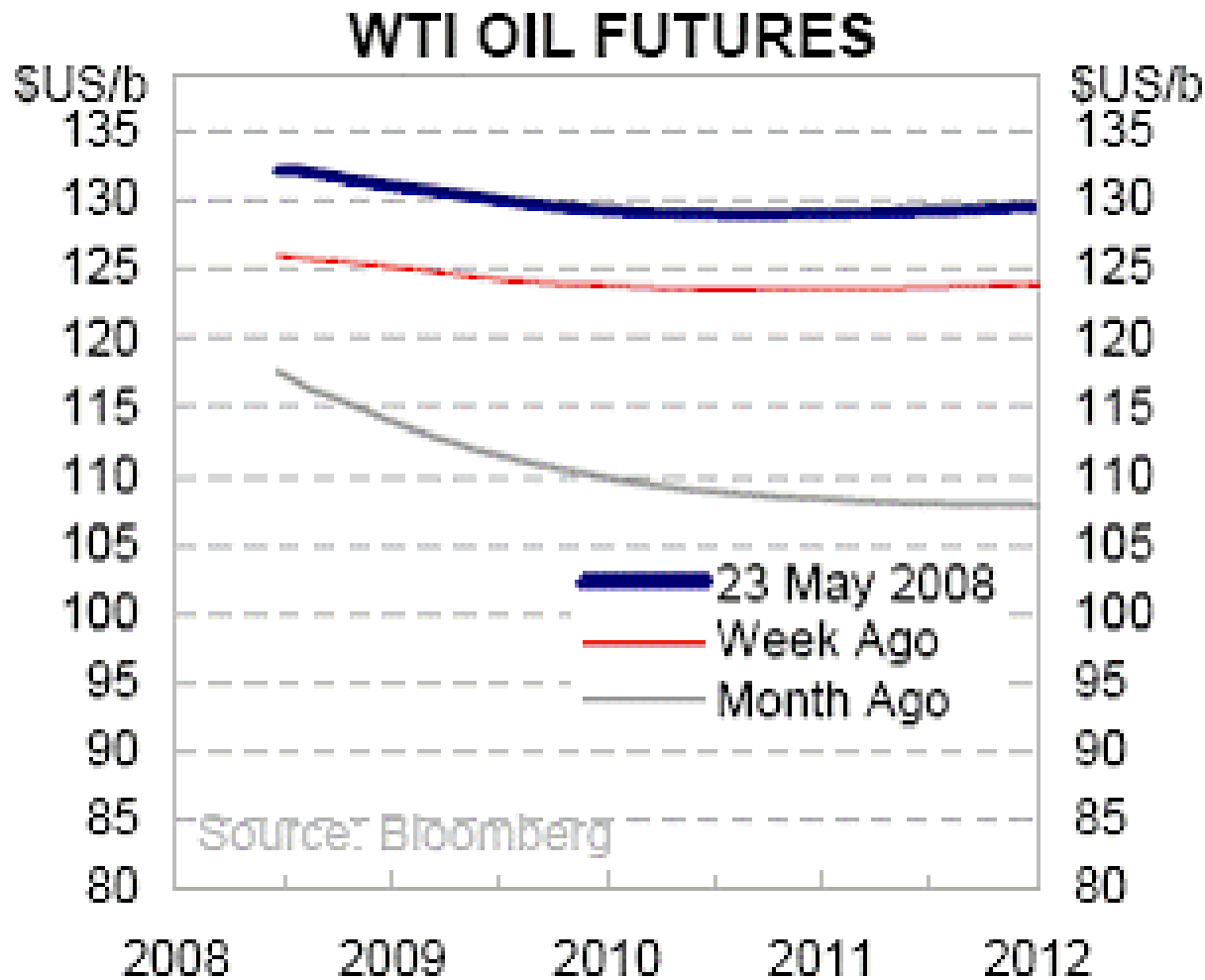
But no one can break the analysis down  
into its component parts....

# International Oil Price

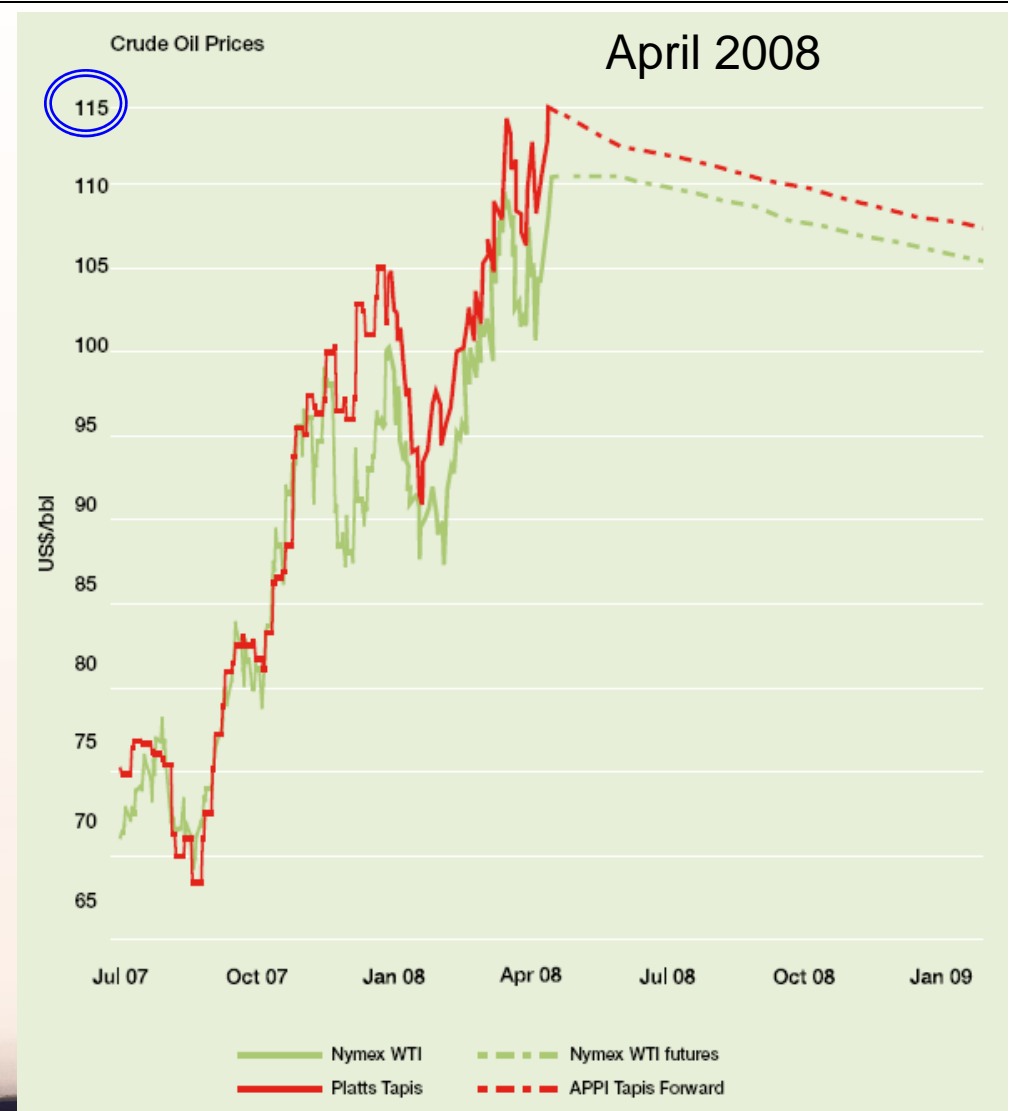
## Brent Spot Price (USD/bbl)



# Oil Price Predictions – A Very Imprecise Science



# Oil Price Predictions – A Very Imprecise Science



# Demand Side Assessment

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- Increasing demand as economies and populations expand
- Energy is essential to the economic activity that sustains and improves the quality of life
- By 2030 over 80% of the world's population will live in the developing world
  - Developing countries now consume only 40% of the world's energy
  - Many reaching the point where individual wealth and consumption accelerates
- Demand driven by industry, transport, heating/cooking, commercial use – by improved standards of living



# Demand Examples

- China is motoring
  - Chinese vehicle fleet expected to increase 7-fold to 270 million by 2030
- Argentinan economic growth
  - Oil demand growing at over 10%pa
- India's Nano car – US\$2,500
  - Millions switching from bicycle to motor vehicle
  - Nano sales target – 500,000 a year



# Demand Examples



old

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# Demand – Short Term

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- China's oil demand expected to grow 5.9% in 2008 (up 8% so far this year)
  - China expected to overtake USA as world's largest energy consumer soon after 2010
- India's oil demand expected to grow 3.9% in 2008
- World oil demand expected to grow 2.3% in 2008

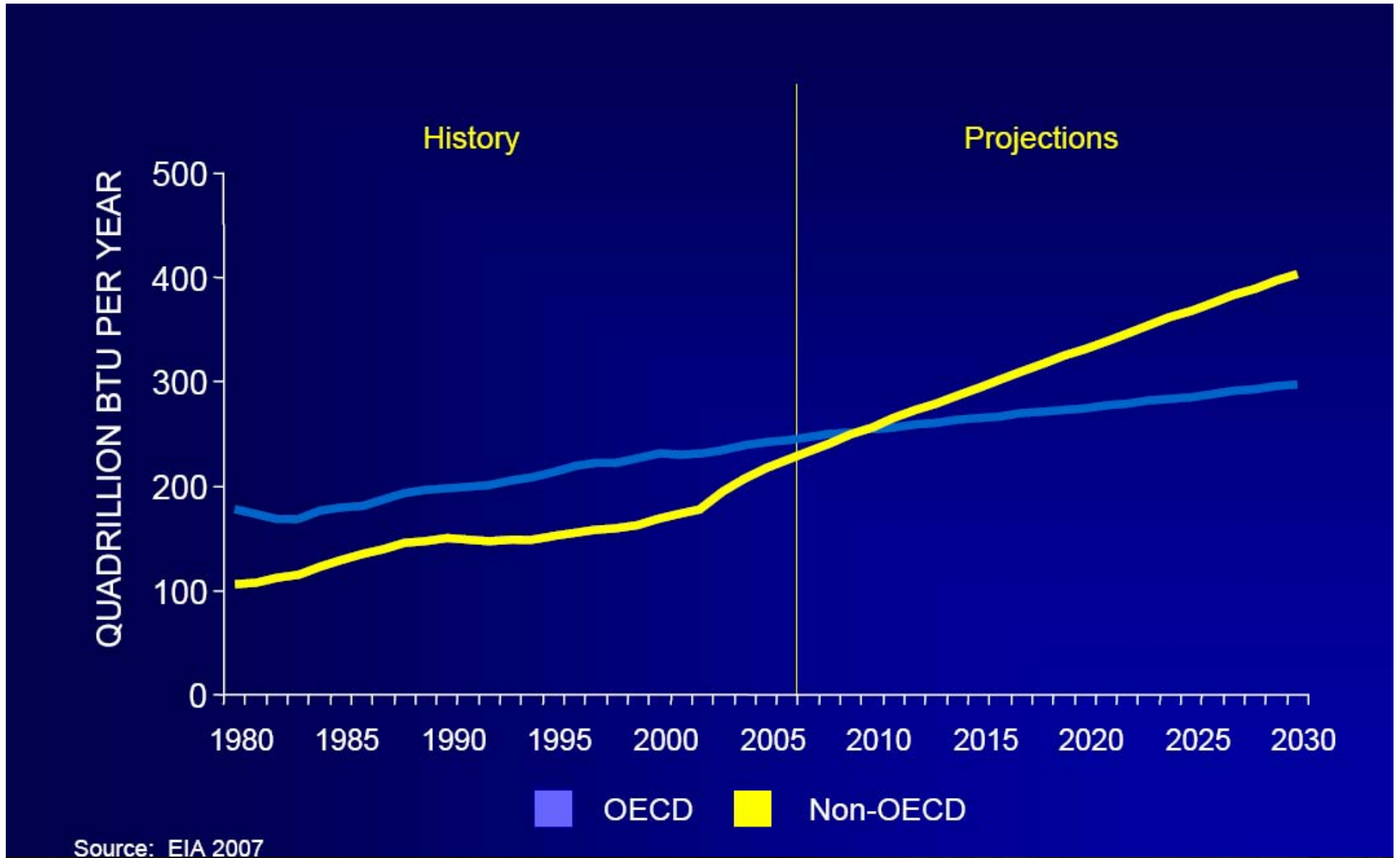
# Demand – Long Term

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- Global oil demand predicted to increase by between 40% and 70% by 2030
  - From 86 mmbbls/day to between 120 and 138 mmbbls/day
  - A faster growth rate than over the last 25 years
  - Natural gas demand to increase by even more
- IEA's Alternative Policy Scenario– all government climate change policies are implemented:
  - Global oil demand still 23% higher by 2030: 106 mmbbls/day
- Developing countries driving the growth



# Demand – Long Term



# Supply Side Assessment

- The world is well-endowed with hydrocarbons
  - Natural endowment assessments indicate very large in-place volumes and resource potential: several times current reserve estimates
  - Key issue at present is not ‘endowment’ but ‘producibility’
- Growing set of global uncertainties
  - Production limitations
  - Environmental constraints
  - Infrastructure requirements
  - Geopolitical alignments
- The resource is there – can we use it?



# Supply Side Assessment

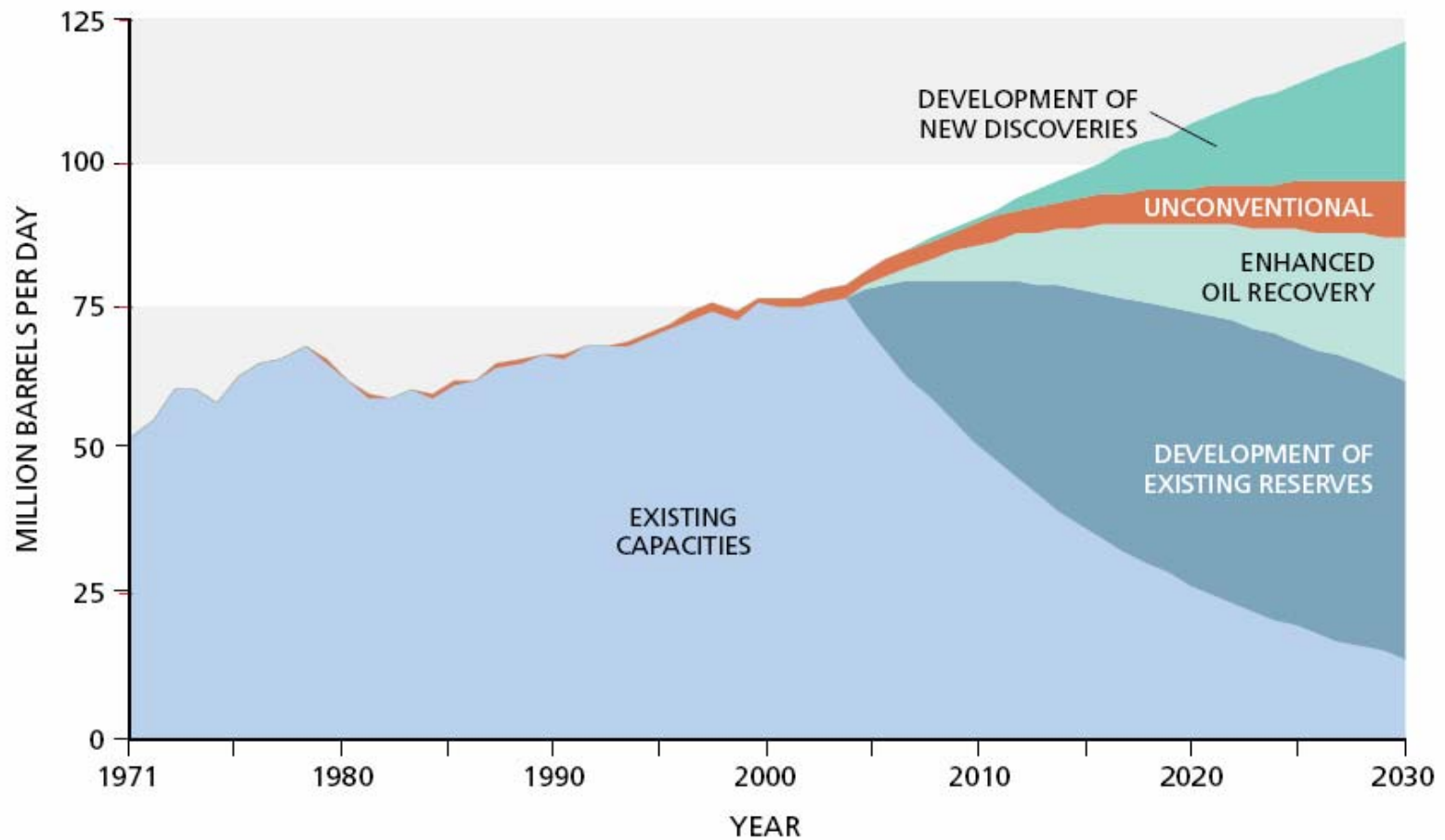
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- Fossil fuels will remain largest source of energy
  - Expected growth in Biomass and other renewables
  - But in 2030 fossil fuels will continue to provide over 80% of global energy supply
- Conventional oil sources will dominate
  - Unconventional oil will provide under 10% of supply



# Supply Side Assessment

## Total Liquids Supply



Source: IEA, *World Energy Outlook 2004*.

# Supply Side Assessment

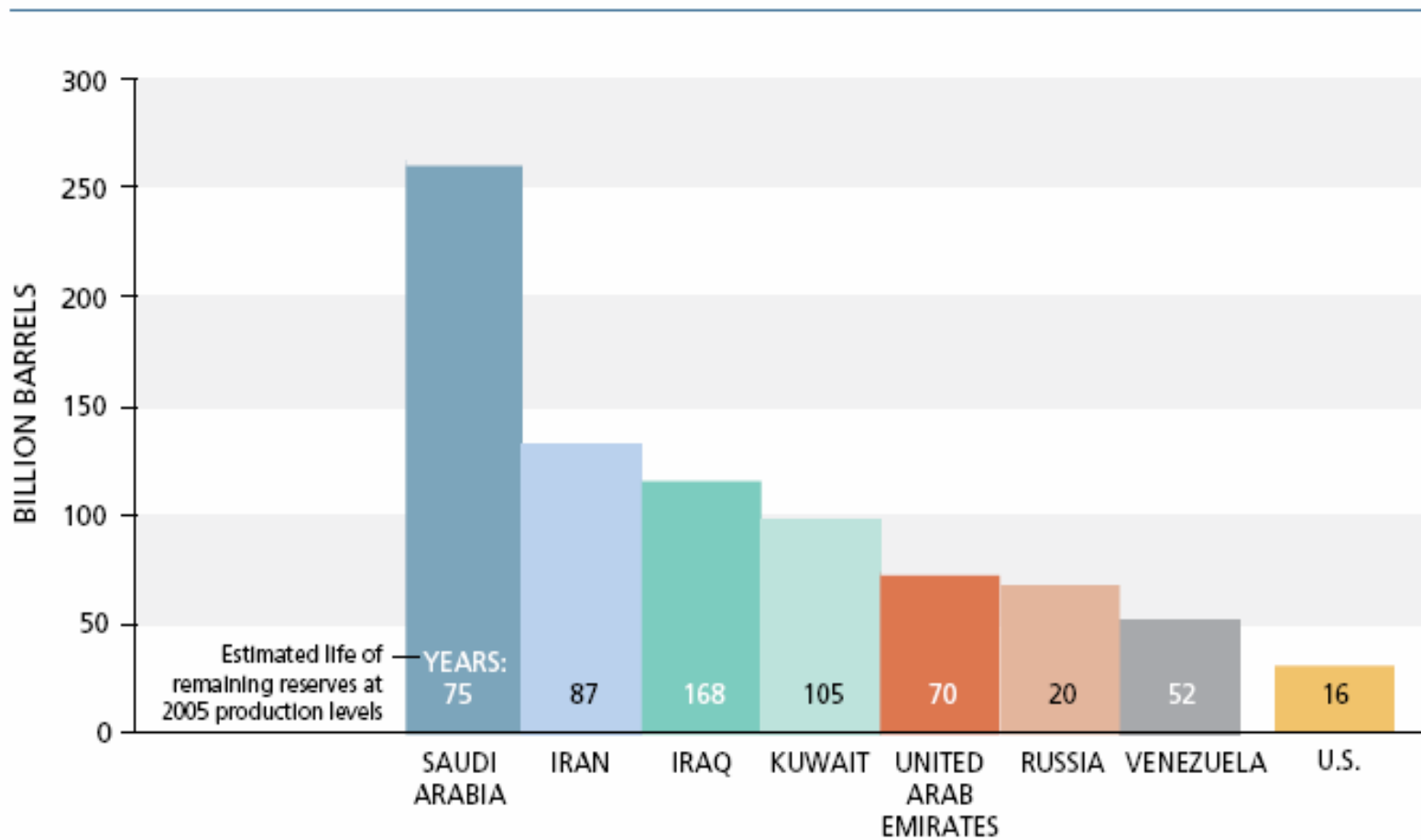
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- Increasing concentration of resources in a few countries
  - OPEC's share of world supply will increase from 42% now, to 52% in 2030
  - Growing power of National Oil Companies



# Supply Side Assessment

## Discovered Remaining Oil Reserves



# Supply Side Assessment

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- Capacity of E&P industry to sustain growing production rates is uncertain
  - Investment of US\$4.3 trillion needed by 2030
  - Much of the world's existing oil production will need to be replaced by 2030
- Increasing international oil trade
  - Developing countries will become major oil importers
  - Trade security a major issue



# Supply - Vulnerable Supply Points



# Supply Side Assessment

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- The risks to supply are accumulating:
  - Nationalism or protectionism may remove resources from the market
  - Increasing concentration of existing reserves in a few hands
  - New oil & gas sources more difficult to access
  - Technology requirements increasingly complex
  - Massive investment needed
  - Human resources stretched
  - Environmental constraints evolving and indeterminate



# What does this mean for oil prices?

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- Economically disruptive supply shortfalls likely to occur
- Increased demand will amplify effects of short-term events
- World is moving from demand-driven to supply-constrained system

*Unless the world economy collapses, there will be strong upward pressure on oil prices*

# Implications for New Zealand

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- New Zealand relatively under-explored
  - Too far away
  - Small to medium resource potential in producing basin
  - Bigger potential in frontier basins but high risk/high costs
- Circumstances changing rapidly
  - Marginal production costs have risen
  - No 'easy hits' left
  - Technology advances open up new opportunities
  - NZ offers a safe, secure location
- Excellent prospects for NZ exploration



# Conclusion – Oil’s Role in our “Greener” Future

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- The world will use more oil, not less, driven principally by economic growth in developing countries
- Oil & gas (and coal) will continue to be the dominant energy sources
- Increasing supply risks and uncertainties
- New Zealand will be increasingly attractive as an exploration location

