Is the World Becoming a Riskier Place?

Focus On Energy Insurance Markets

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Presentation Outline

- Review of Recent Events
  - What in the World is Going On?
  - A Review of Recent Trends in Uncertainty, Risk and Fear
  - Energy and Insurance Market Issues
- Economic Uncertainty and Volatility
  - Global Overview & Outlook
  - Advanced, Emerging and European Perspectives
- The Unfortunate Nexus: Opportunity, Risk & Instability
  - Growth
  - Political Risk
  - Arab Spring & Energy Markets
- Catastrophe Loss Developments & Trends
  - Global, Europe, US
- Global Energy Market Overview
  - Supply (Production), Demand (Consumption) and Rate Considerations
  - The Post-Deepwater Horizon World
- Summary
- Q&A
What in the World Is Going On?

Is the World Becoming a Riskier Place?

What Are the Implications for Insurance and Risk Management?
Uncertainty, Risk and Fear Abound

**ECONOMIC & POLITICAL CONCERNS**
- Global Economic Slowdown
- Echoes of the Financial Crisis
- European Sovereign Debt, Bank & Currency Crises
- Collapse of Major Financial Institutions
- US Debt and Budget Crisis, S&P Downgrade & Austerity
- Housing Crisis
- Persistently High Unemployment
- Inflation/Deflation
- Runaway Energy & Commodity Prices
- Political Upheaval in the Middle East
- Regulation
- China—Now the #2 Economy in the World

**CATASTROPHIC LOSS**
- Japan, New Zealand, Turkey, Haiti, Chile Earthquakes
- Nuclear Fears
- US: Tornadoes, Flooding, Wildfires, Hurricanes, Winter Storms
- Manmade Disasters (e.g., Deepwater Horizon)
- Cyber Attacks
- Resurgent Terrorism Risk (e.g., Bin Laden, Gadhafi Killings)

Are “Black Swans” everywhere or does it just seem that way?
What is Going On in the US and Global Financial Markets?

1. Need for a Binding, Comprehensive Solution to Europe’s Debt Problems
   - Greek Tragedy: Debt Agreement→Referendum→No Referendum→PM Resigns
   - Attention Quickly Turned to Italy→Budget Reforms Pass, Berlusconi Resigns
   - Financial “Firewall” around Italy, Spain, Ireland, Portugal may be too small
   - Difficulties in managing multinational institutions and economic policies
   - ECB and individual member EU countries not all on same page
   - Solution: Unified approach on banks, bailout fund; Monetary easing
   - **OUTCOME**: Eurozone countries will eventually stumble into a resolution

2. Economic Slowdown in Europe and Emerging Markets
   - China, other economies less able to stimulate global economy than in 2008
   - **OUTCOME**: Mild Recession in Eurozone in 2012

3. Realization that US Economic Growth Will Remain Lackluster
   - Q1 GDP just 0.4%; Q2 only 1.3%; Q3 still a subpar 2.5%; Acceleration unlikely
   - Job growth has been anemic for months and unemployment remains high at 9.0%
   - Markets remain extremely volatile and jittery; Housing/Debt hangover
   - **OUTCOME**: Tepid growth in the 2% - 2.5% range in 2012; Unemployment 8.5% - 9%

4. View that Washington is Dysfunctional and “Rudderless”
   - Lack of coherent, consistent medium and long term plan to deal with basic structural issues in the US economy (debt, taxes, employment, regulation, etc.)
   - No confidence that 2012 political cycle will resolve these problems
Déjà Vu? Lehman II? Is This 2008 All Over Again?

Why Today is Not 2008 All Over Again

- The Situation Today is Very, Very Different from 2008
- Credit Markets in US Are Not Seizing; Some Contraction in Europe
- Bank Balance Sheets Are in Much Stronger Shape
  - Capital up, charge offs falling
- We Will Not Experience the Mega-Collapses/Near Collapses Like in 2008
  - No repeat of Lehman, AIG, Washington Mutual, Wachovia…
  - MF Global is not a “Systemically Important Financial Institution”
  - Series of European bank failures likely: Dexia, Proton…; Big Bank Writedowns
- Some Additional Regulatory Controls Are Now Place

What Would Be Helpful Now?

- Solution to European Bank/Sovereign Debt Problem (Part Way There?)
- Long-Term Fiscal and Monetary Policy Direction US
- Fed on Aug. 9 stated rates would remain low “at least through mid-2013”
- On Nov. 4, ECB’s Lower Its Key Rate to 1.25% (1st meeting w/ Mario Draghi)
- Both Europe and US Need to Address Excessive Spending and Entitlement Timebombs
Global Economic Growth Outlook: Volatility Remains

Growth is Much Greater in Developing World as Is Growth in Energy Demand; These Areas Are Riskier to Operate In
IMF says growth in emerging and developing economies will outpace advanced ones in 2011/12.

Outlook uncertain: The world economy continues to recover from the global economics, but at a weakening pace and at different speeds in different parts of the world, according to the IMF. A clear set of “winners” has emerged with direct implications for all industries and their insurers.

Sources: IMF, World Economic Outlook, Sept. 2011; Insurance Information Institute.
Growth projections for 2011 and 2012 have been revised downward as austerity measures take effect and concerns related to sovereign debt worsen.

Sources: Blue Chip Economic Indicators (10/2011 issue); Insurance Information Institute.
Real GDP Growth Forecasts for Advanced Economies: 2011 - 2012

Growth projections for 2011 and 2012 have been revised downward as austerity measures take effect and concerns related to sovereign debt worsen.

Sources: The Economist, November 5, 2011; Insurance Information Institute.
Growth projections for 2011 have been revised downward as austerity measures take effect and concerns related to sovereign debt worsen.
Real GDP Growth Forecasts for Key Developing Economies: 2011 - 2012

Growth in China and India remain high, though China is “tapping on the breaks” to slow inflation. These markets are promising but foreign firms must contend with many barriers to entry.

Growth in emerging and developing economies will greatly outpace advanced country growth in 2011/12. This will accelerate the growth of insurance exposures in emerging markets relative to the U.S., W. Europe and Japan.

Sources: Blue Chip Economic Indicators (10/2011 issue); Insurance Information Institute.
Real GDP Growth Forecasts for Other Key Trading Economies: 2011 - 2012

Asia/Pacific trading nations should show strong growth in 2011/12 compared to Europe and the US

Growth in industrialized Asian economies will greatly outpace much of the rest of the world in 2011/12. This will accelerate the growth of energy demand and insurance exposures in emerging markets relative to the U.S., W. Europe and Japan.

Sources: Blue Chip Economic Indicators (10/2011 issue); Insurance Information Institute.
Emerging economies (led by China) are expected to grow by 6.4% in 2011 and 6.1% in 2012. World output is forecast to grow by 4.0% in 2011 and 4.0% in 2011, following growth of 3.0% in 2010 and a 0.6% drop in 2009. Advanced economies are expected to grow at a sluggish pace of 1.6% in both 2011 and 1.9% in 2012.

The gap is closing quickly. China became the world’s second largest economy in 2010 and before long the developing world’s share of GDP will exceed that of advanced economies.

Developing Economies: 47.1%
Advanced Economies: 52.9%

Current Real GDP Growth vs. Pre-Crisis Average (2000-2007 vs. 2011F-2012F*)

Latin and South American markets are in general growing more strongly than prior to the crisis. The US, Europe and Eurasia have seen significant slowdowns.

*Percentage point difference between compound annual rates of change 2000-2007 vs. forecasts for 2011-2012.

Source: IMF, World Economic Outlook, September 2011; Insurance Information Institute.
Current Real GDP Growth vs. Pre-Crisis Average (2000-2007 vs. 2011F-2012F*)

Growth in much of Europe today is about 2 pts. Lower than pre-crisis

*Percentage point difference between compound annual rates of change 2000-2007 vs. forecasts for 2011-2012.

Source: IMF, World Economic Outlook, September 2011; Insurance Information Institute.
The Unfortunate Nexus: Opportunity, Risk & Instability

Most of the Global Economy’s Future Gains Will be Fraught with Much Greater Risk and Uncertainty than in the Past
Global Real (Inflation Adjusted) Nonlife Premium Growth: 1980-2010

Average: 1980-2010
Industrialized Countries: 3.8%
Emerging Markets: 9.2%
Overall Total: 4.2%

Nonlife premium growth in emerging markets has exceeded that of industrialized countries in 27 of the past 31 years, including the entirety of the global financial crisis.

Real nonlife premium growth is very erratic in part to inflation volatility in emerging markets as well as a lack of consistent cyclicality.

Source: Swiss Re, sigma, No. 2/2010.
Nonlife Real Premium Growth Rates by Region: 2000-2009 and 2010

Real Premium Growth Rates

- World
- Industrialised countries
  - North America
  - Western Europe
  - Continental Europe
- Japan and newly industrialised Asian economies
- Oceania
- Emerging markets
  - South and East Asia
  - Latin America and the Caribbean
  - Central and Eastern Europe
- Africa
- Middle East and Central Asia

Every emerging market region except Central and Eastern Europe experienced growth during the financial crisis and into 2010.

Many emerging market economies continued to grow during the global financial crisis and continued to benefit from foreign direct investment.

Source: Swiss Re, sigma, No. 2/2011.

Premium Growth Facts

- Although premium growth throughout the industrialized world was negative in 2009, its share of global nonlife premiums remained very high at nearly 86%—accounting for nearly $1.5 trillion in premiums.

- The financial crisis and sluggish recovery in the major insurance markets will accelerate the expansion of the emerging market sector.

Sources: NAIC; Insurance Information Institute research.

2009, $Billions

Industrialized Economies
$1, 485.8

Emerging Markets
$248.8

Developing markets now account for 47% of global GDP but just 14% of nonlife premiums.
Nonlife Real Premium Growth in 2010

Latin and South American markets performed relatively well during and after the global financial crisis in terms of growth. There was also growth in the Middle East, East and South Asia as well as Australia and New Zealand.

Source: Swiss Re, sigma, No. 2/2011.
Political Risk in 2010: Greatest Business Opportunities Are Often in Risky Nations

The fastest growing markets are generally also among the politically riskiest.

Heightened risk has insurance implications.

Source: Maplecroft
The “Arab Spring” Has Exacerbated Uncertainty in an Already Volatile Part of the World

Energy-rich nations have been among the most unstable in 2011

Longer-run, significant investment and insurance opportunities exist throughout the region

Catastrophe Loss Developments and Trends

2011 and 2010 Are Rewriting Catastrophe Loss and Insurance History
Global Catastrophe Loss Summary: First Half 2011

- 2011 Is Already (as of June 30) the *Highest* Loss Year on Record Globally
  - Extraordinary accumulation of severe natural catastrophe: Earthquakes, tsunami, floods and tornadoes are the primary causes of loss

- $260 Billion in *Economic* Losses Globally
  - New record for the first six months, exceeding the previous record of $220B in 2005
  - Economy is more resilient than most pundits presume

- $55 Billion in *Insured* Losses Globally
  - More than double the first half 2010 amount
  - Over 4 times the 10-year average

- $27 Billion in *Economic* Losses in the US
  - Represents a 129% increase over the $11.8 billion amount through the first half of 2010

- $17.3 Billion in *Insured* Losses in the US Arising from 100 CAT Events
  - Represents a 162% increase over the $6.6 billion amount through the first half of 2010
Natural Loss Events, January – September 2011

World Map

Number of events: 550

- Natural catastrophes
- Geophysical events (earthquake, tsunami, volcanic activity)
- Hydrological events (flood, mass movement)
- Selection of significant loss events (see table)
- Meteorological events (storm)
- Climatological events (extreme temperature, drought, wildfire)

Source: MR NatCatSERVICE
## Worldwide Natural Disasters 2011

### Significant Natural Disasters (January – September only)

<table>
<thead>
<tr>
<th>Period</th>
<th>Loss event</th>
<th>Affected area</th>
<th>Overall losses*</th>
<th>Insured losses*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 2010–Jan 2011</td>
<td>Floods, flash floods</td>
<td>Australia (Queensland)</td>
<td>7,300</td>
<td>2,550</td>
</tr>
<tr>
<td>12/16 Jan.</td>
<td>Landslides, flash floods</td>
<td>Brazil (State of Rio de Janeiro)</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>3 Feb.</td>
<td>Cyclone Yasi</td>
<td>Australia (Queensland)</td>
<td>2,000</td>
<td>1,000</td>
</tr>
<tr>
<td>22 Feb.</td>
<td>Earthquake</td>
<td>New Zealand (Christchurch)</td>
<td>25,000</td>
<td>13,000</td>
</tr>
<tr>
<td>11 March</td>
<td>Earthquake, tsunami</td>
<td>Japan (esp. northeastern Honshu)</td>
<td>210,000</td>
<td>~30,000</td>
</tr>
<tr>
<td>22–28 April</td>
<td>Severe storms, tornadoes</td>
<td>USA (esp. AL, Tuscaloosa)</td>
<td>12,000</td>
<td>7,300</td>
</tr>
<tr>
<td>April–May</td>
<td>Floods</td>
<td>USA (esp. Ohio River, Mississippi River, Missouri River)</td>
<td>2,600</td>
<td>**</td>
</tr>
<tr>
<td>April/Sept.</td>
<td>Wildfires</td>
<td>USA (TX)</td>
<td>1,500</td>
<td>680</td>
</tr>
<tr>
<td>14–22 May</td>
<td>Wildfires</td>
<td>Canada (Alberta, Slave Lake)</td>
<td>&gt;1,500</td>
<td>720</td>
</tr>
<tr>
<td>20–27 May</td>
<td>Severe storms, tornadoes</td>
<td>USA (esp. MO, Joplin)</td>
<td>9,000</td>
<td>5,900</td>
</tr>
<tr>
<td>13 June</td>
<td>Earthquake</td>
<td>New Zealand (Christchurch)</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Aug.–Sept.</td>
<td>Floods, landslides</td>
<td>Thailand, Cambodia, Vietnam</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Aug.–Sept.</td>
<td>Floods</td>
<td>Pakistan</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>22 Aug.–2 Sept.</td>
<td>Hurricane Irene</td>
<td>USA, Caribbean</td>
<td>15,000</td>
<td>7,000</td>
</tr>
</tbody>
</table>

*As at October 2011
**Loss assessment still in progress

Source: MR NatCatSERVICE
Worldwide Natural Disasters 2011
% Distribution of Insured Losses Per Continent (January – June only)

Insured losses 2011 (January – June only): US$ 60bn

<table>
<thead>
<tr>
<th>Continent</th>
<th>Insured losses [US$ m] in 2011 Jan - June</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>minor</td>
</tr>
<tr>
<td>America</td>
<td>17,800</td>
</tr>
<tr>
<td>Asia</td>
<td>30,080</td>
</tr>
<tr>
<td>Australia/Oceania</td>
<td>12,900</td>
</tr>
<tr>
<td>Europe</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: MR NatCatSERVICE
Worldwide Natural Disasters, 1980-2011

% Distribution of Insured Losses Per Continent (January – June only)


<table>
<thead>
<tr>
<th>Continent</th>
<th>Insured losses [US$ m] Jan – June only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>1,000</td>
</tr>
<tr>
<td>America</td>
<td>237,200</td>
</tr>
<tr>
<td>Asia</td>
<td>45,100</td>
</tr>
<tr>
<td>Australia/Oceania</td>
<td>25,100</td>
</tr>
<tr>
<td>Europe</td>
<td>80,900</td>
</tr>
</tbody>
</table>

Source: MR NatCatSERVICE

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Recent Major Non-US Catastrophe Losses

(Insured Losses, $US Billions)

The March 2011 earthquake in Japan will become among the most expensive in world history in terms of insured losses (current leader is the 1994 Northridge earthquake with $22.5B in insured losses in 2010 dollars).

Insured Losses from Recent Major Catastrophe Events Approach $70 Billion, an Estimated $53 Billion of that from Earthquakes

Sources: Insurance Council of Australia, Munich Re, AIR Worldwide; Insurance Information Institute research.
# Deadliest/Costliest Earthquakes: 1900 – June 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Affected Area</th>
<th>Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>China</td>
<td>273,400</td>
</tr>
<tr>
<td>1976</td>
<td>China</td>
<td>242,800</td>
</tr>
<tr>
<td>2010</td>
<td>Haiti</td>
<td>222,570</td>
</tr>
<tr>
<td>2004</td>
<td>Indonesia</td>
<td>220,000</td>
</tr>
<tr>
<td>1923</td>
<td>Japan</td>
<td>142,800</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Affected Area</th>
<th>Overall losses (US$m, original values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Japan</td>
<td>210,000</td>
</tr>
<tr>
<td>1995</td>
<td>Japan</td>
<td>100,000</td>
</tr>
<tr>
<td>2008</td>
<td>China</td>
<td>85,000</td>
</tr>
<tr>
<td>1994</td>
<td>USA</td>
<td>44,000</td>
</tr>
<tr>
<td>2010</td>
<td>Chile</td>
<td>30,000</td>
</tr>
</tbody>
</table>

Source: MR NatCatSERVICE
Top 17 Most Costly World Insurance Losses, 1970-2011*

(Insured Losses, 2010 Dollars, $ Billions)

Taken as a single event, the Spring 2011 tornado and thunderstorm season would likely become the 7th costliest event in global insurance history.

5 of the top 15 most expensive catastrophes in world history have occurred in the past 21 months.

*Through November 7, 2011. 2011 disaster figures are estimates; Figures include federally insured flood losses, where applicable.
Sources: Swiss Re sigma 1/2011; AIR Worldwide, RMS, Eqecat; Insurance Information Institute.
Worldwide Natural Disasters, 1980 – 2011*

There were 355 events through the first 6 months of 2011

*2011 figure is through June 30.
Source: MR NatCatSERVICE
First Half 2011
Overall Losses: $265 Bill
Insured Losses: $60 Bill

*2011 figure is through June 30.
Source: MR NatCatSERVICE

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US CATASTROPHE INSURED LOSS UPDATE

First Half 2011 CAT Losses Already Exceed All of 2010 and Could Become One of the Most Expensive Years on Record
US Insured Catastrophe Losses

2000s: A Decade of Disaster
2000s: $193B (up 117%)
1990s: $89B

2011 Will Likely Become the 5th or 6th Most Expensive Year for Insured Catastrophe Losses in the US, After Adjusting for Inflation

*Estimate through Nov. 1, 2011.
Note: 2001 figure includes $20.3B for 9/11 losses reported through 12/31/01. Includes only business and personal property claims, business interruption and auto claims. Non-prop/BI losses = $12.2B.
Sources: Property Claims Service/ISO; Insurance Information Institute.
Natural Disasters in the United States, 1980 – 2011*

Number of Events (Annual Totals 1980 – 2010 and First Half 2011)

*Through June 30.
Source: MR NatCatSERVICE

There were 98 natural disaster events in the first half of 2011
The number of federal disaster declarations set a new record in 2011, with 86 declarations through Sept. 30. It is no wonder that FEMA is broke!

There have been 2,036 federal disaster declarations since 1953. The average number of declarations per year is 34 from 1953-2010, though that few haven’t been recorded since 1995.

The Number of Federal Disaster Declarations Is Rising and Set a New Record in 2011

*Through September 30, 2011.

Insurance Information Institute.
Inflation Adjusted U.S. Catastrophe Losses by Cause of Loss, 1990–2011:H1

- **Wind/Hail/Flood (3)**, $12.7 billion (42.7%)
- **Terrorism**, $24.9 billion (8.0%)
- **Geological Events**, $18.5 billion (6.6%)
- **Winter Storms**, $30.0 billion (8.0%)
- **Tornadoes (2)**, $119.5 billion (31.8%)
- **Fires (4)**, $9.0 billion (2.4%)
- **Other (5)**, $0.6 billion (0.2%)

Catastrophes are defined as events causing direct insured losses to property of $25 million or more in 2009 dollars.

1. Excludes snow.
2. Does not include NFIP flood losses.
3. Includes wildland fires.
4. Includes civil disorders, water damage, utility disruptions and non-property losses such as those covered by workers compensation.

Source: ISO’s Property Claim Services Unit.
Record Global Catastrophes Activity is Pressuring Pricing
Significant Market Losses, 1985-2011*

Reinsurers’ share of major market losses was exceptionally high in 2010 and early 2011.

- Property/CAT reinsurance prices are up substantially in Asia/Pacific markets.
- US pricing is up 10-15%, but ex-Florida closer to flat.

Source: Holborn; RAA.

* 2011 events are as of March 31 and are preliminary and may change as loss estimates are refined further.
Reinsurers are bearing a very high share of recent catastrophe losses. Losses are putting pressure on property cat reinsurance prices in affected regions. The impact for US property catastrophe pricing is uncertain.

Source: Holborn, RAA. *2011 events as of March 31 are preliminary and may change as loss estimates are refined further.
A modest increase in global property catastrophe reinsurance pricing was evident in June 1 renewals in the wake of record global catastrophe losses. Larger increase could occur for the Jan.1, 2012 renewals.
Change in US Commercial Rate Renewals, by Account Size: 1999:Q4 to 2011:Q3

Percentage Change (%)

Peak = 2001:Q4
+28.5%

Pricing turned positive (+0.9%) in Q3:2011, the first increase in nearly 7 years (Q4:2003)

Pricing Turned Negative in Early 2004 and Has Been Negative Ever Since

Trough = 2007:Q3
-13.6%

KRW Effect: No Lasting Impact

Source: Council of Insurance Agents and Brokers; Insurance Information Institute.
Surplus as of 6/30/11 was a near-record $559.1 billion, down 1% from the record $564.7 billion as of 3/31/11, but up 27.9% ($122 billion) from the crisis trough of $437.1 billion as of 3/31/09. Prior peak was $521.8 billion as of 9/30/07. Surplus as of 6/30/11 was 7.1% above the 2007 peak.

“Surplus” is a measure of underwriting capacity. It is analogous to “Owners Equity” or “Net Worth” in non-insurance organizations.

The Premium-to-Surplus Ratio Stood at $0.78:$1 as of 6/30/11, a near record low (at least in recent history)**

* As of 6/30/11.
Much Uncertainty Exists in the World, But Energy Demand Grows Under All Scenarios

Energy is One of the Few Major Markets/Industries With Clear Growth Long-Term Trends
Between 2006 and 2030, energy consumption is projected to increase annually by 1.5% worldwide but only 0.5% in the US.

Global energy consumption is expected to increase by 33.4% between 2010 and 2030 but by only 12% in the US.

Avg. Annual Change in Total Energy Consumption by Country/Region: 2006-2030

Average Annual Change in Consumption (Quadrillion BTUs)

- China: 3.2%
- Brazil: 2.6%
- India: 2.5%
- Canada: 1.5%
- S. Korea: 1.4%
- Mexico: 1.2%
- Aust/NZ: 1.1%
- Russia: 0.9%
- US: 0.5%
- Europe (OECD): 0.5%

US/Europe have the slowest growth rates for energy consumption through 2030, growing at less than 1/6 the rate in China and 1/5 that of India.

Global Oil Demand and Production, by Region

Percentage Change (%)

Oil Demand in Advanced Economies is Weak but Production Gains Continue to Satisfy Demand in Emerging Countries

US Natural Gas Production and Non-Hydro Renewable Electricity Generation, 1990-2035

Shale gas production is expected to grow rapidly in the US.

Wind is expected to account for the majority of renewable electricity generation.

Global electric power generation was dampened about 3% by the global financial crisis, but will still grow at 2.9% per year through 2030 compared to 1.9% for total energy consumption.

Source: Energy Information Administration, 2009 International Energy Outlook, Insurance Information
Average Annual Change in Generating Capacity (Gigawatts)

- China: 4.6%
- India: 3.3%
- Brazil: 3.0%
- Africa: 2.1%
- Middle East: 2.1%
- Mexico: 1.9%
- S. Korea: 1.9%
- Europe (OECD): 1.5%
- Canada: 1.4%
- Russia: 1.3%
- Aust/NZ: 1.3%
- US: 0.9%

Electrical generation capacity in Europe is expected to grow faster than in the US. Post-Japan quake, it may grow faster still.

Massive Investments in Global Energy Infrastructure Are Needed

Upgrading an Antiquated Energy Infrastructure is Also Critical for Future Energy Security
Projected energy infrastructure investment through 2035 total $38 trillion; Implies substantial incurrence of risk.

- Coal, $1.1, 3%
- Biofuels, $0.3, 1%
- Natural Gas, $9.5, 25%
- Power, $16.9, 44%
- Oil, $10.1, 27%

Electricity Supply Infrastructure: Despite Crisis, Huge Investments Needed Along With Insurance: 2001-2030 (Est.)

<table>
<thead>
<tr>
<th>Region</th>
<th>Investment (Billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>$1,351</td>
</tr>
<tr>
<td>North America</td>
<td>$1,876</td>
</tr>
<tr>
<td>Pacific</td>
<td>$809</td>
</tr>
<tr>
<td>Russia</td>
<td>$377</td>
</tr>
<tr>
<td>China</td>
<td>$1,913</td>
</tr>
<tr>
<td>E. Asia</td>
<td>$799</td>
</tr>
<tr>
<td>S. Asia</td>
<td>$783</td>
</tr>
<tr>
<td>Latin America</td>
<td>$744</td>
</tr>
<tr>
<td>Middle East</td>
<td>$258</td>
</tr>
<tr>
<td>Africa</td>
<td>$609</td>
</tr>
</tbody>
</table>

Investments in electricity supply infrastructure globally are expected to total $9.841 trillion between 2001 and 2030.

Oil Demand Will Rise, Oil Prices Will Rise Still Faster

Long-Run Demand and Price Dynamics Remain Strong for Oil and Associated Insurance Markets
Commodity Price Changes in 2010-2011*

Index (Jan 3, 2006 = 100)

Raw materials prices doubled over the course of 2010. Some other commodity prices dropped during the year but ended 20-30% higher. The upward trend has continued into 2011.

High Demand is Driving Up Prices And Fueling Trade

*data are through June 14, 2011
Global Oil Consumption and Price, 2008 – 2035F

The nominal price of oil is expected to rise by 2.8% per year on average through 2035.

Global oil consumption is expected to rise by 1.1% per year on average through 2035.

Oil Will Become Relatively More Expensive Over Time, With Price Increases Outstripping Income Growth in Many Parts of the World

Source: US Energy Information Administration; Insurance Information Institute
Efforts to Reduce Global Carbon Emissions Have Weakened Since 2008

Global Financial Crisis, Japan Nuclear Experience, Politics, Economics Have All Taken Their Toll
CO2 emissions in Europe are expected to just 0.1% per year through 2030, among the slowest in the world and about 1/30th the rate in China.
Between 2006 and 2030, CO2 emissions are projected to increase by 1.4% worldwide, just 0.1% in Europe and 0.3% annually in the US.
Between 2006 and 2030, nuclear energy consumption is projected to increase by 1.5% annually worldwide. Global nuclear energy consumption is expected to increase by 39.2% between 2010 and 2030 but could be lower if Europe reduces use of nuclear power.

Avg. Annual Change in Nuclear Energy Consumption by Country/Region: 2006-2030P

Europe will see small a decrease in nuclear energy consumption through 2030

Billions of Kilowatthours

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Avg. Annual Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>9.9%</td>
</tr>
<tr>
<td>China</td>
<td>8.9%</td>
</tr>
<tr>
<td>Russia</td>
<td>3.5%</td>
</tr>
<tr>
<td>Africa</td>
<td>3.2%</td>
</tr>
<tr>
<td>S. Korea</td>
<td>2.3%</td>
</tr>
<tr>
<td>Brazil</td>
<td>2.0%</td>
</tr>
<tr>
<td>Canada</td>
<td>1.5%</td>
</tr>
<tr>
<td>Japan</td>
<td>1.2%</td>
</tr>
<tr>
<td>Mexico</td>
<td>1.1%</td>
</tr>
<tr>
<td>Canada</td>
<td>0.8%</td>
</tr>
<tr>
<td>Russia</td>
<td>0.6%</td>
</tr>
<tr>
<td>US</td>
<td>0.6%</td>
</tr>
<tr>
<td>Europe*</td>
<td>-0.1%</td>
</tr>
</tbody>
</table>

*OECD Countries.
As Energy Demand Rises, Exploration and Distribution Risks Abound

Deepwater Horizon (Macondo) Will Not Be the Last Major Energy Market Catastrophe
“Deepwater energy exploration and production, particularly at the frontiers of experience, involves risks for which neither industry nor government has been adequately prepared, but for which they can and must be prepared in the future.”

- National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, January 2011.
## 10 Most Expensive Operators Expense (OEE) Losses in History

<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Location, Country</th>
<th>OEE Indexed US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Rig (Deepwater)</td>
<td>Gulf of Mexico, USA</td>
<td>$2,000,000,000</td>
</tr>
<tr>
<td>2005</td>
<td>Platform</td>
<td>Gulf of Mexico, USA</td>
<td>636,047,269</td>
</tr>
<tr>
<td>1989</td>
<td>Well</td>
<td>North Sea, Norway</td>
<td>396,419,527</td>
</tr>
<tr>
<td>2008</td>
<td>Platform</td>
<td>Gulf of Mexico, USA</td>
<td>384,080,640</td>
</tr>
<tr>
<td>2005</td>
<td>Platform</td>
<td>Gulf of Mexico, USA</td>
<td>341,560,173</td>
</tr>
<tr>
<td>1984</td>
<td>Well</td>
<td>Nova Scotia, Canada</td>
<td>320,593,818</td>
</tr>
<tr>
<td>1988</td>
<td>Platform</td>
<td>North Sea, UK</td>
<td>308,109,489</td>
</tr>
<tr>
<td>1987</td>
<td>Platform</td>
<td>Gulf of Mexico, USA</td>
<td>264,476,529</td>
</tr>
<tr>
<td>1975</td>
<td>Well</td>
<td>Dubai, UAE</td>
<td>246,250,219</td>
</tr>
<tr>
<td>2004</td>
<td>Rig</td>
<td>Mediterranean, Egypt</td>
<td>230,104,683</td>
</tr>
</tbody>
</table>

Deepwater Is By Far the Most Expensive OEE Loss in Global History, Even After Adjusting for Inflation

### Largest International Oil Well Blowouts by Volume

<table>
<thead>
<tr>
<th>Date</th>
<th>Well</th>
<th>Location</th>
<th>Bbl Spilled</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 20 2010-</td>
<td>Deepwater Horizon</td>
<td>Gulf of Mexico, USA</td>
<td>est. 4,900,000 thru July 15*</td>
</tr>
<tr>
<td>July 2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 1979-April</td>
<td>Ixtoc I</td>
<td>Bahia del Campeche, Mexico</td>
<td>3,300,000</td>
</tr>
<tr>
<td>1980</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 1986</td>
<td>Abkatun 91</td>
<td>Bahia del Campeche, Mexico</td>
<td>247,000</td>
</tr>
<tr>
<td>April 1977</td>
<td>Ekofisk Bravo</td>
<td>North Sea, Norway</td>
<td>202,381</td>
</tr>
<tr>
<td>January 1980</td>
<td>Funiwa 5</td>
<td>Forcados, Nigeria</td>
<td>200,000</td>
</tr>
<tr>
<td>October 1980</td>
<td>Hasbah 6</td>
<td>Gulf, Saudi Arabia</td>
<td>105,000</td>
</tr>
<tr>
<td>December 1971</td>
<td>Iran Marine International</td>
<td>Gulf, Iran</td>
<td>100,000</td>
</tr>
<tr>
<td>January 1969</td>
<td>Alpha Well 21 Platform A</td>
<td>Pacific, CA, USA</td>
<td>100,000</td>
</tr>
<tr>
<td>March 1970</td>
<td>Main Pass Block 41</td>
<td>Gulf of Mexico</td>
<td>65,000</td>
</tr>
<tr>
<td>Platform C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 1987</td>
<td>Yum II/Zapoteca</td>
<td>Bahia del Campeche, Mexico</td>
<td>58,643</td>
</tr>
<tr>
<td>December 1970</td>
<td>South Timbalier B-26</td>
<td>Gulf of Mexico, USA</td>
<td>53,095</td>
</tr>
</tbody>
</table>

*Based on official estimate by U.S. scientific teams of 53,000 barrels per day leaking from BP well immediately preceding it being capped on July 15. Includes offset for capture of approximately 800,000 barrels of oil prior to capping of well.

Global Offshore Blowouts, 1984 - 2009: Frequency

Frequency in recent years is generally below the 25-yr. average.

Global Offshore Blowouts, 1984 - 2009: Severity

Severity was rising even before Deepwater Horizon

Annual Average US Offshore Spillage per Unit Barrel, 1969-2007

Spillage rates pre-Deepwater were down substantially. Likely also true in most other parts of the world as well.

Capacity has nearly doubled since 2006


Capacity and rates were up in early 2011, flattening headed into 2012*

*Willis Marketplace Realities, October 2011

QUESTIONS?
Thank you for your time and your attention!

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