

CII-IIMB Business Leaders Program

13 August 2007

Business Risk Assessment



Presentation Outline

Analysing the Risk Landscape

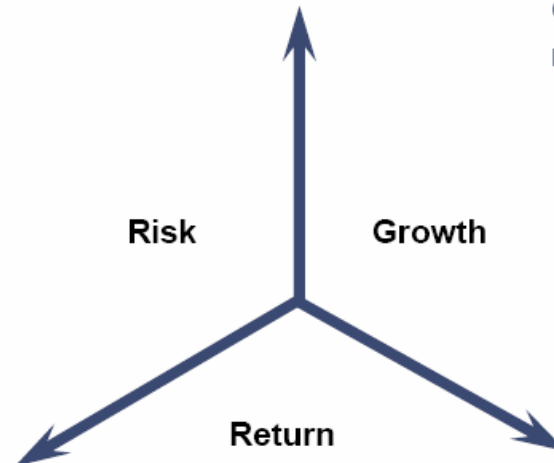
- How are risks perceived by business
- What tools are used to identify risks
- Landscape continuously evolving, requires integrated, local to global approach

Framework for Assessing Business Risk and Analysing its Impact: Case of Climate Change

Bringing it all Together : Business Risk Analysis

The Strategic Drivers of Stakeholder Value

Virtually all organisations, strive to survive. Commercial enterprises strive to create value for shareholders and other stakeholders, and have mechanisms that allow them to respond both to their existing environment and to anticipate changes that they may face. As part of this response, many enterprises specifically work to reduce risk, i.e. they attempt to reduce the likelihood of adverse events or the impact on the enterprise if the risk materialises.



Three strategic drivers of stakeholder value :
Growth, Return, and Risk, which are inter-related :

- **Growth** - Expansion in compliance with company policy, laws and regulations
- **Return** - Inform stakeholders through integrity of external reports
- **Risk** - Ensures safeguarding of assets and effective business processes

Most companies utilise performance measures to gauge internal Growth and Return; however, few pay as much attention to the **impact of Risk on delivering stakeholder value and inhibiting future growth.**

Business Risks

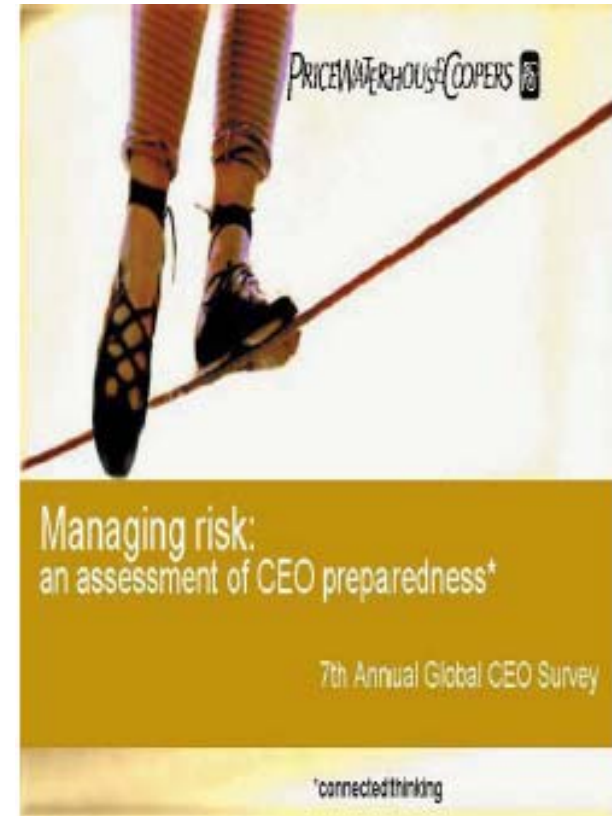
Risks are events or circumstances that are beyond any particular party's capacity to control that may adversely impact multiple parties across geographic borders, industries, and/or sectors.

Business Risks transcend the boundary between business & society, complicating management efforts & exacerbating potential impact



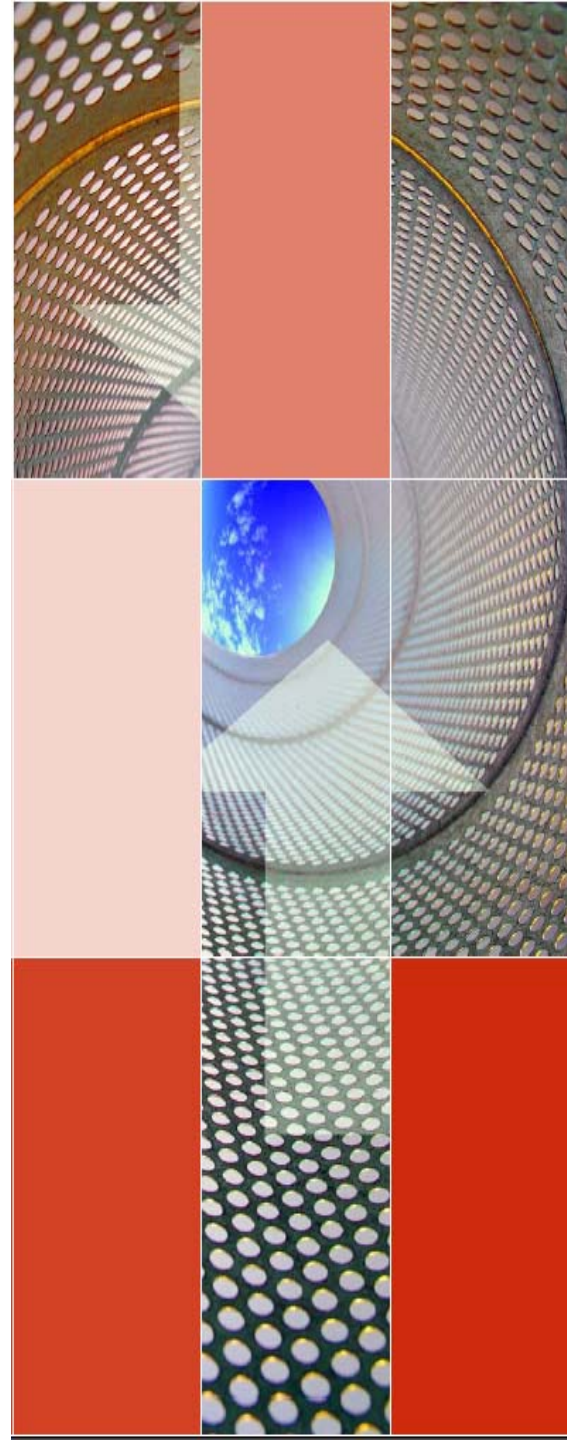
PwC CEO Survey Overview (2004)

- Globally, 38% of CEOs consider that they already have effective and efficient enterprise risk management (ERM) in place
- CEOs in the US are least likely to consider that they already have effective and efficient ERM (29%)



Tools for Assessing Business Risks

- PESTLE Analysis
- **Scenarios**
- **Enterprise Wide Risk Management**
- Prediction Markets



Scenarios



Scenarios look deeper

Scenarios are stories about the future. They can help us to:

- Question our assumptions
- Test our strategies
- Create space for dialogue
- Adapt to potential change
- Detect risks and opportunities
- Make better decisions

What's happening on the surface

Trends and patterns

Drivers of change

Culture

Technology

Power

Regulation

Institutions

Population

Ecosystems

Values

Politics

ERM Process : Identifying, Assessing & Managing Risks

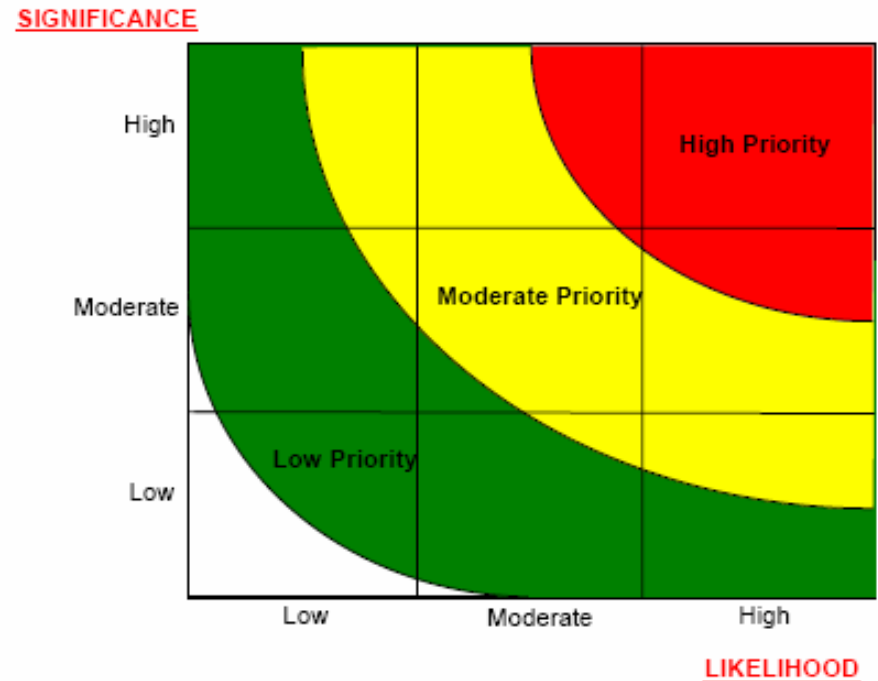


The PwC Approach to ERM puts measurable indices at each stage, that enables organizations to measure, monitor and report the effectiveness of the risk assessment and management programs.

Enterprise Risk Management

Enterprise Risk Management is a process that includes:

- Identification of potential events that may impact objectives
- Risk assessment and response
- Consideration of risks in formulation of strategy
- Application across the entity
- Managing risk is to be within the entity's risk appetite
- A portfolio view of risks at the entity-level is taken
- Monitoring the performance of ERM



An effective ERM program begins with an inventory of an entity's strategies, goals and objectives.....

Company

Goal: Grow the business at a steady rate

- Maximize shareholder wealth
- Expand profitable investments
- Develop a family of diversified businesses

Goal : Reduced earnings volatility

- Improve decision making process
- Strong risk culture

People

Goal: Motivated, productive employees

- Encourage and reward performance that supports the group's strategy and vision

Customer

Goal: Be the preferred supplier

- Improve quality of service and variety of product offerings

Social

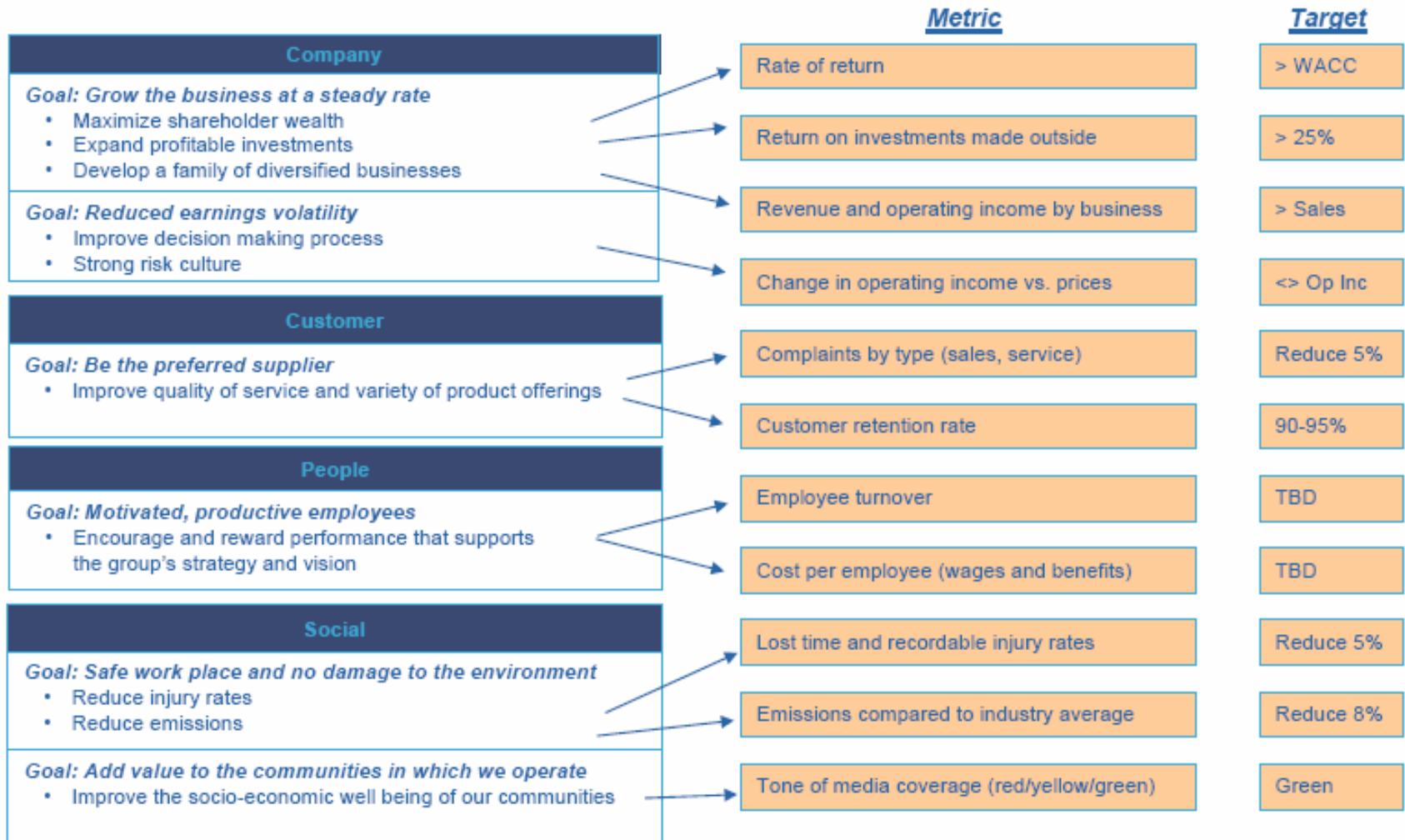
Goal: Safe workplace and no damage to the environment

- Reduce injury rates
- Reduce emissions

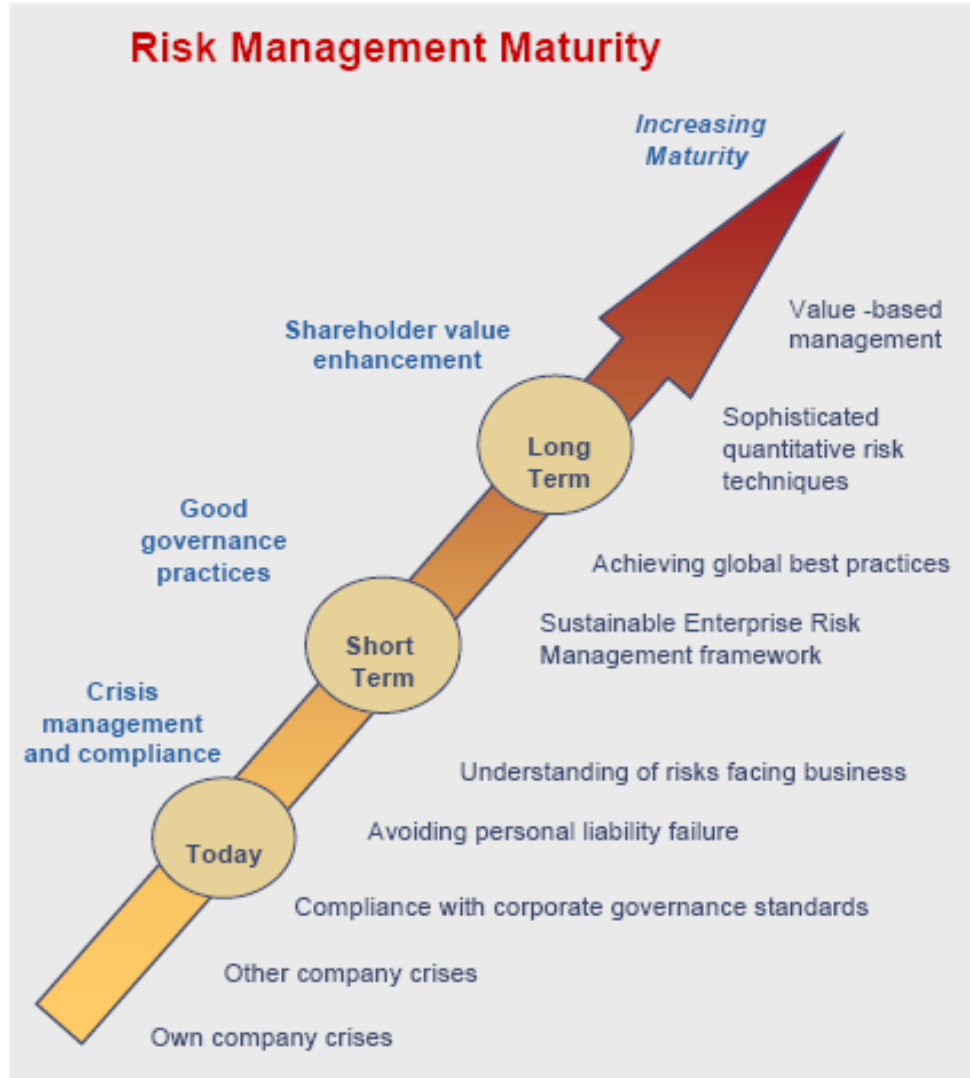
Goal : Add value to the communities in which we operate

- Improve the socio-economic well being of our communities

Linking Goals, Metrics and Tolerance Levels



Risk Management Maturity Profile



Are All Risks Covered?



Breakdown of CII
Climate change
Crime and corruption
War
Disease
Fall in \$
Nanotechnology
Asset price collapse
Natural catastrophe
Oil price shock
Pandemic
Terrorism

There are approximately 80 heuristic biases that distort our ability to assess risk

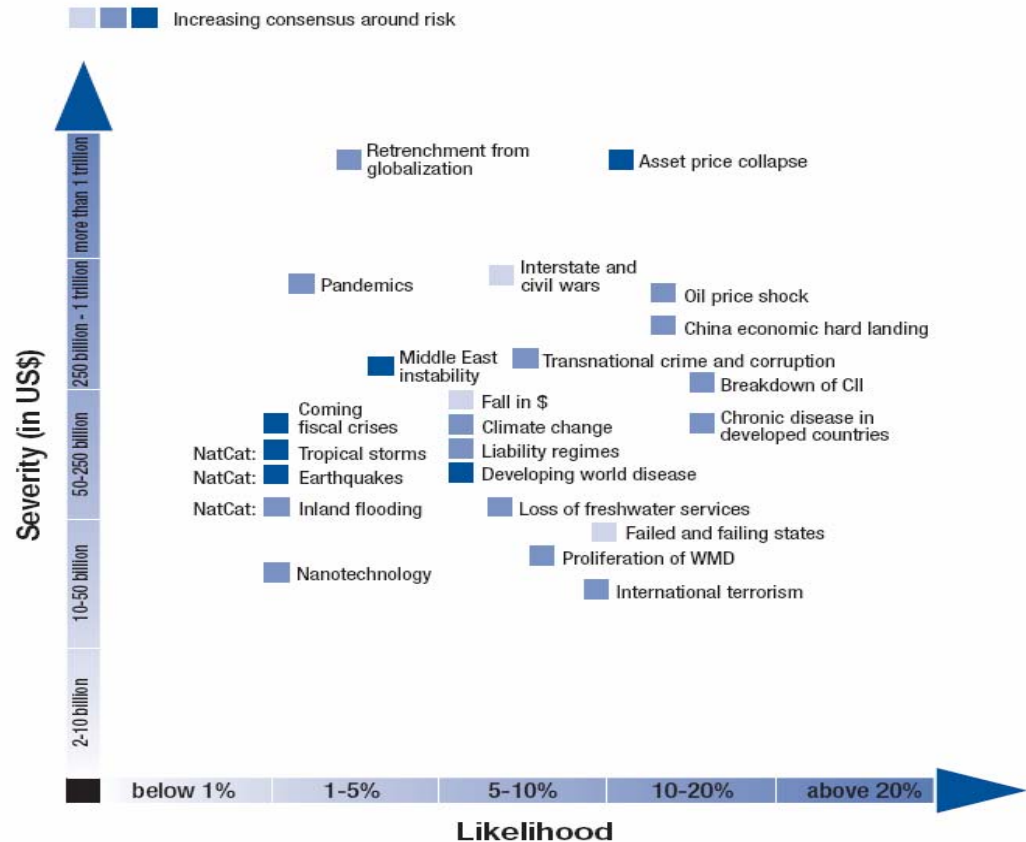
Business Risks: Global Risks

The connectivity of global markets, volatility of political, social, and environmental landscapes, and the accelerating rate of change produce greater complexity and uncertainty about risk. These forces offset increasing levels of sophistication that companies employ in linking risk management efforts to business strategy.



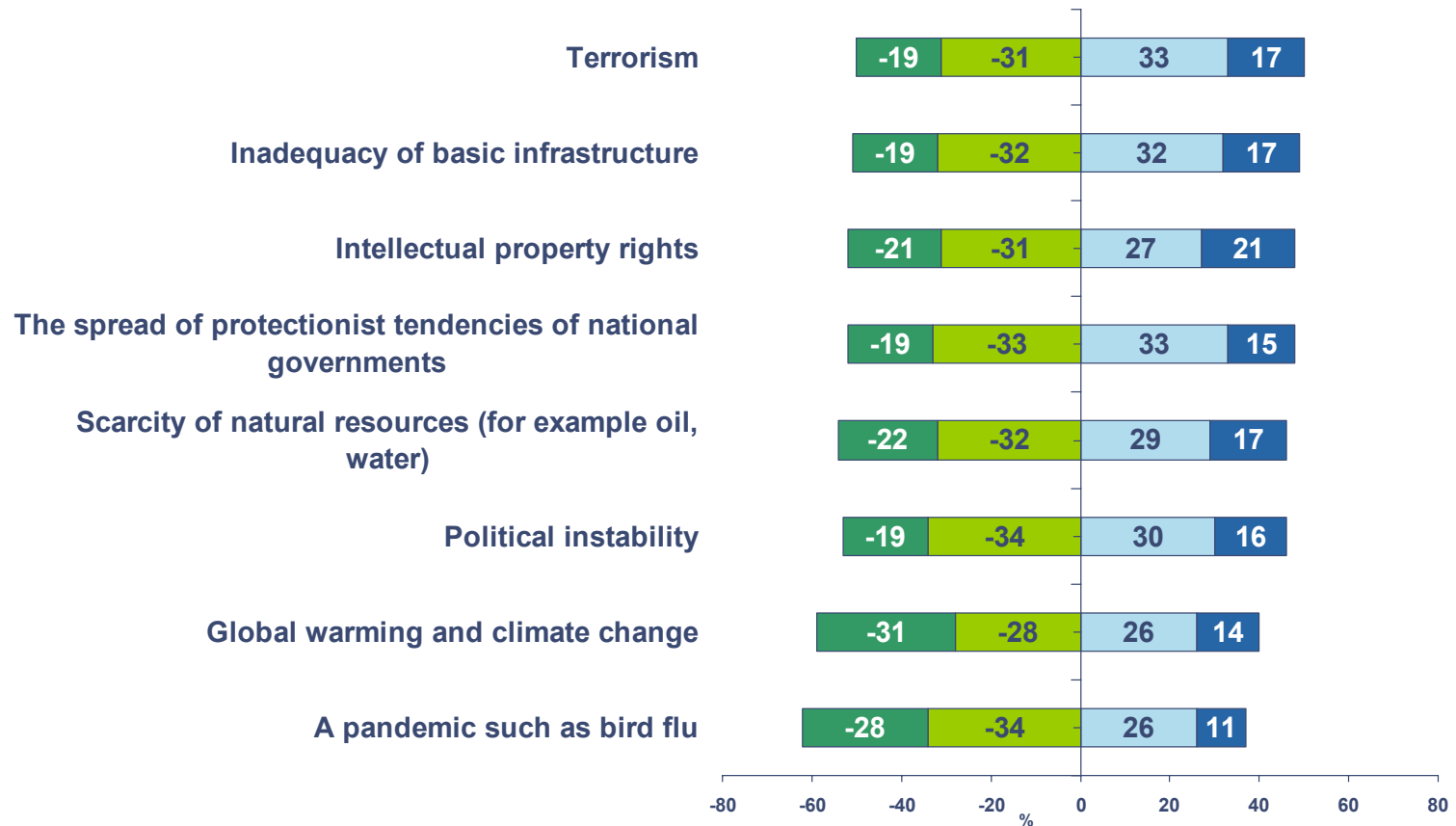
While global risks increase, there is a “fundamental disconnect between risk and mitigation” (World Economic Forum, 2007)

“Expert opinion suggests that levels of risk are rising in almost all of the 23 risks on which the Global Risk Network has been focused over the last year – but mechanisms in place to manage and mitigate risk at the level of businesses, governments and global governance are inadequate.”



Global Risks: Likelihood vs. Economic Damage

PwC's 10th Annual Global CEO Survey provides further insights :
Perhaps the reason for the disconnect is the relatively lower risk perception of CEOs wrt to global risks



Global Risk - India

Within the framework of 23 global risks identified by the Global Risk Network, six issues have been identified by the WEF and CII WEF as being critical to the future of India, in terms of the likelihood of their occurrence and/or in terms of the severity of their impact.

1. Loss of freshwater (quantity and quality) – Is India running out of freshwater services?
2. Oil peaks – How vulnerable is India to an oil price shock? What oil price level would risk derailing India's growth?
3. Economic impact of demographics – India is facing a demographic dividend. Might it turn into a demographic liability?
4. Globalization versus protectionism – What happens if there is backlash or retrenchment from globalization?
5. Climate change, the environment and challenges to India growth – Can India balance the complex trade-offs between the environment and growth?
6. HIV/AIDS and TB – What will it take to combat the spread of HIV and TB? What if India fails?

Analysing the Risk Landscape

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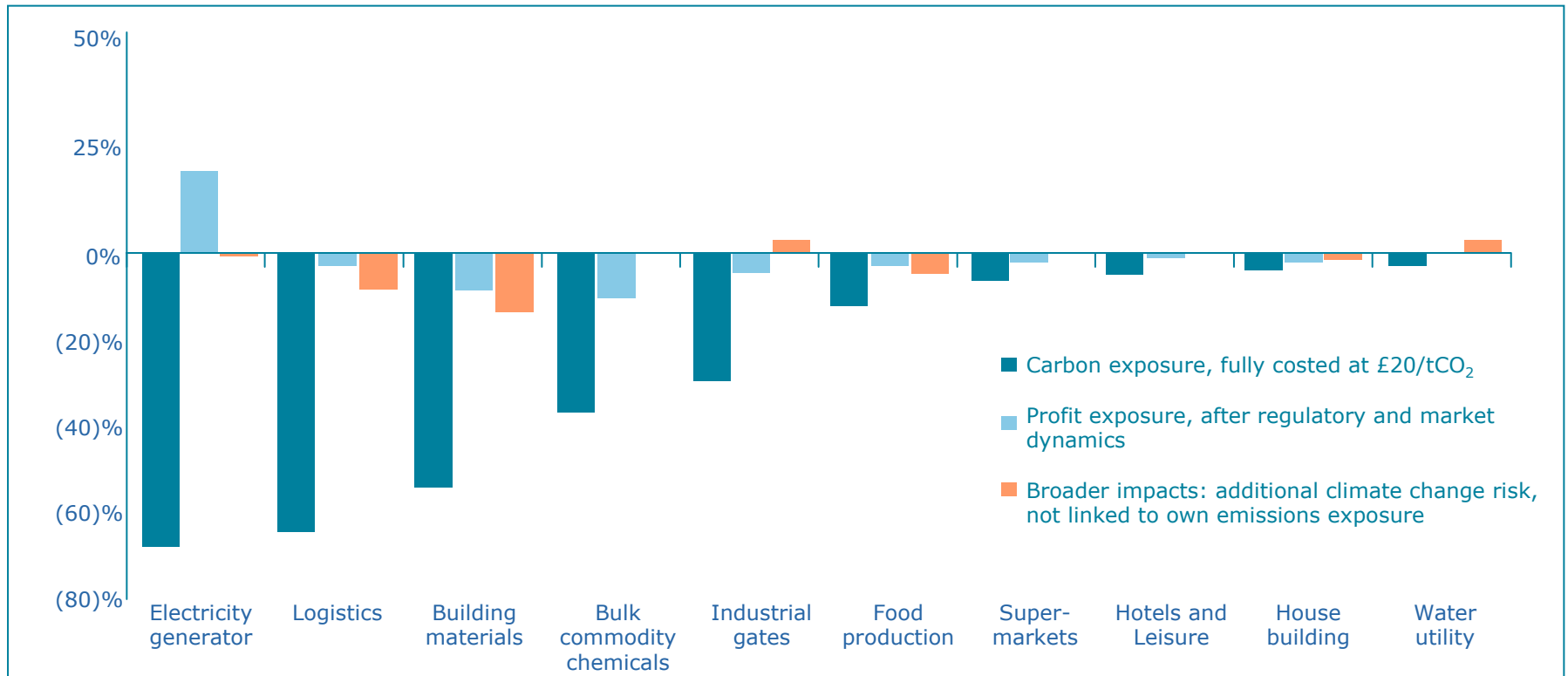
Bringing it all Together : Business Risk Analysis

Business Risk Assessment and Impacts Analysis : Focus Climate Change

Quantification of value at risk

The Carbon Trust has analysed value at risk in 10 large UK sectors

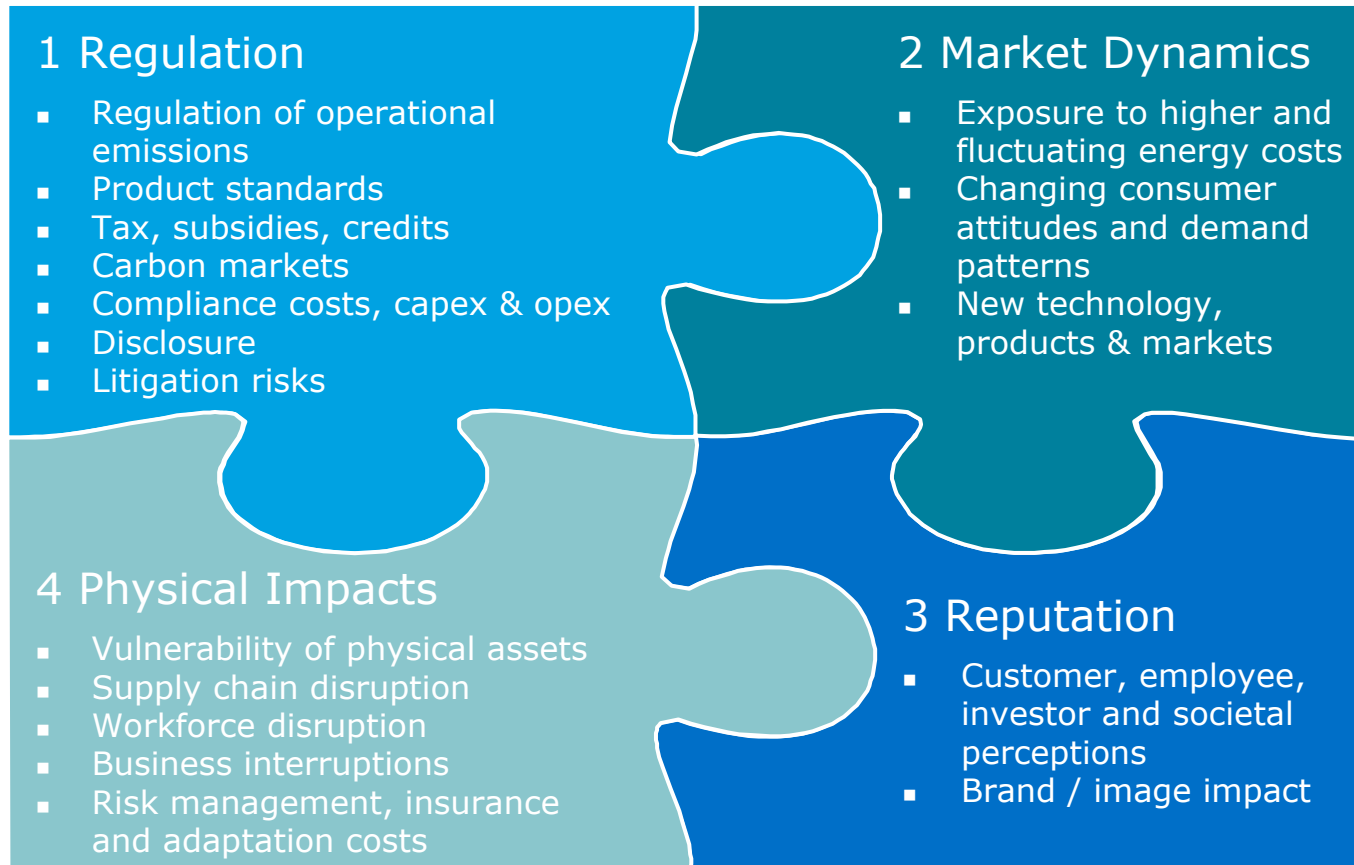
Potential impact in 2013 as % of EBIT, based on 2004 operating statistics



Source: The Carbon Trust, 'Climate Change and Shareholder Value' (March 2006), in conjunction with Cairneagle Associates.

Framework for analysis: key risks and opportunities

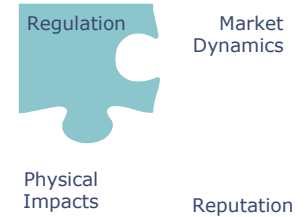
- Risks and opportunities for business can be grouped into four interlinked categories



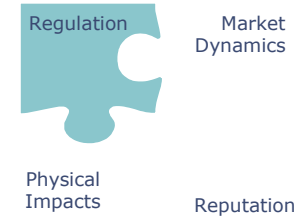
1 Regulation

- Regulation of operational emissions
- Product standards
- Tax, subsidies, credits
- Carbon markets
- Compliance costs, capex & opex
- Disclosure
- Litigation risks

How does climate change regulation impact on business sectors?

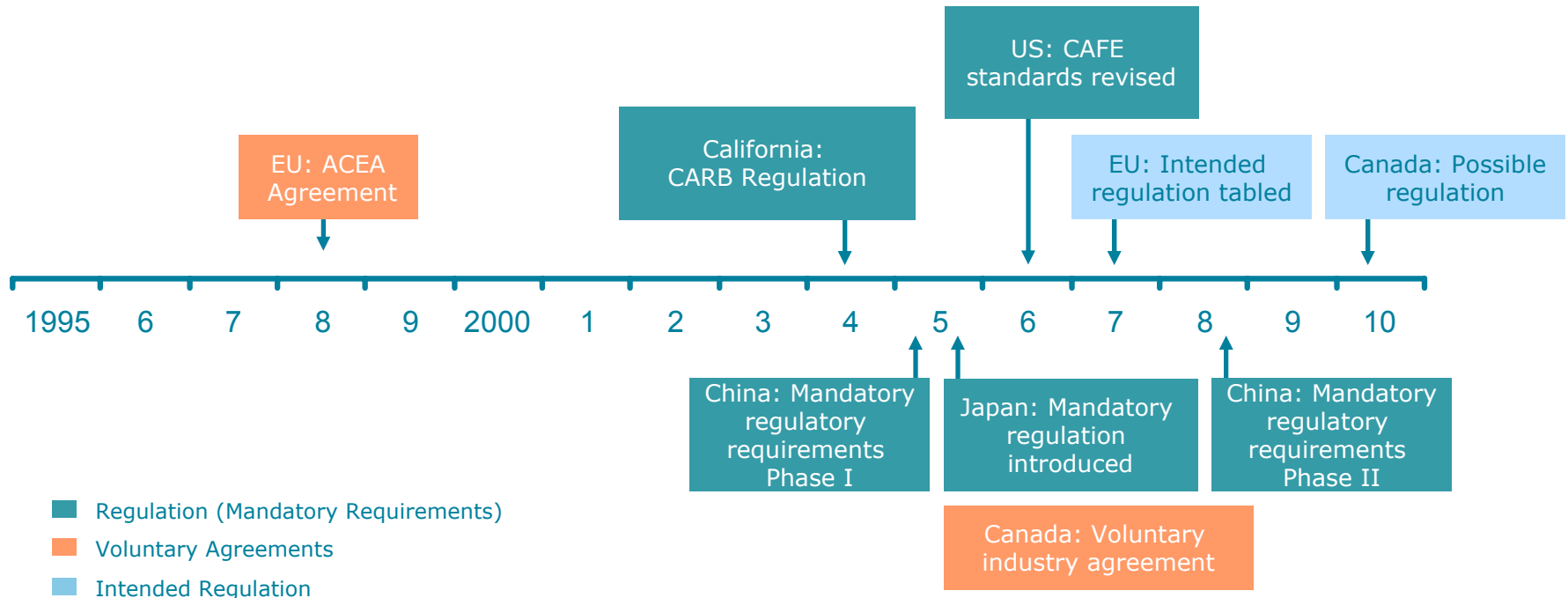


- Factors determining impact of regulation on shareholder value include inter alia
 - Emissions intensity of earnings (operational and product emissions)
 - Exposure to international competition (level playing field)
 - Sector regulation – now and prospective
 - Cost and availability of abatement opportunities
 - Capital intensity and investment timeframes
 - Capacity to innovate, leverage technology
 - Impact on demand, margins etc of these factors

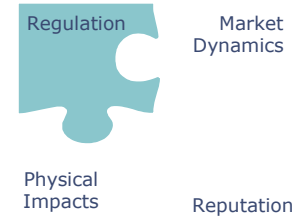


The automotive sector – regulatory pressure is mounting outside of US

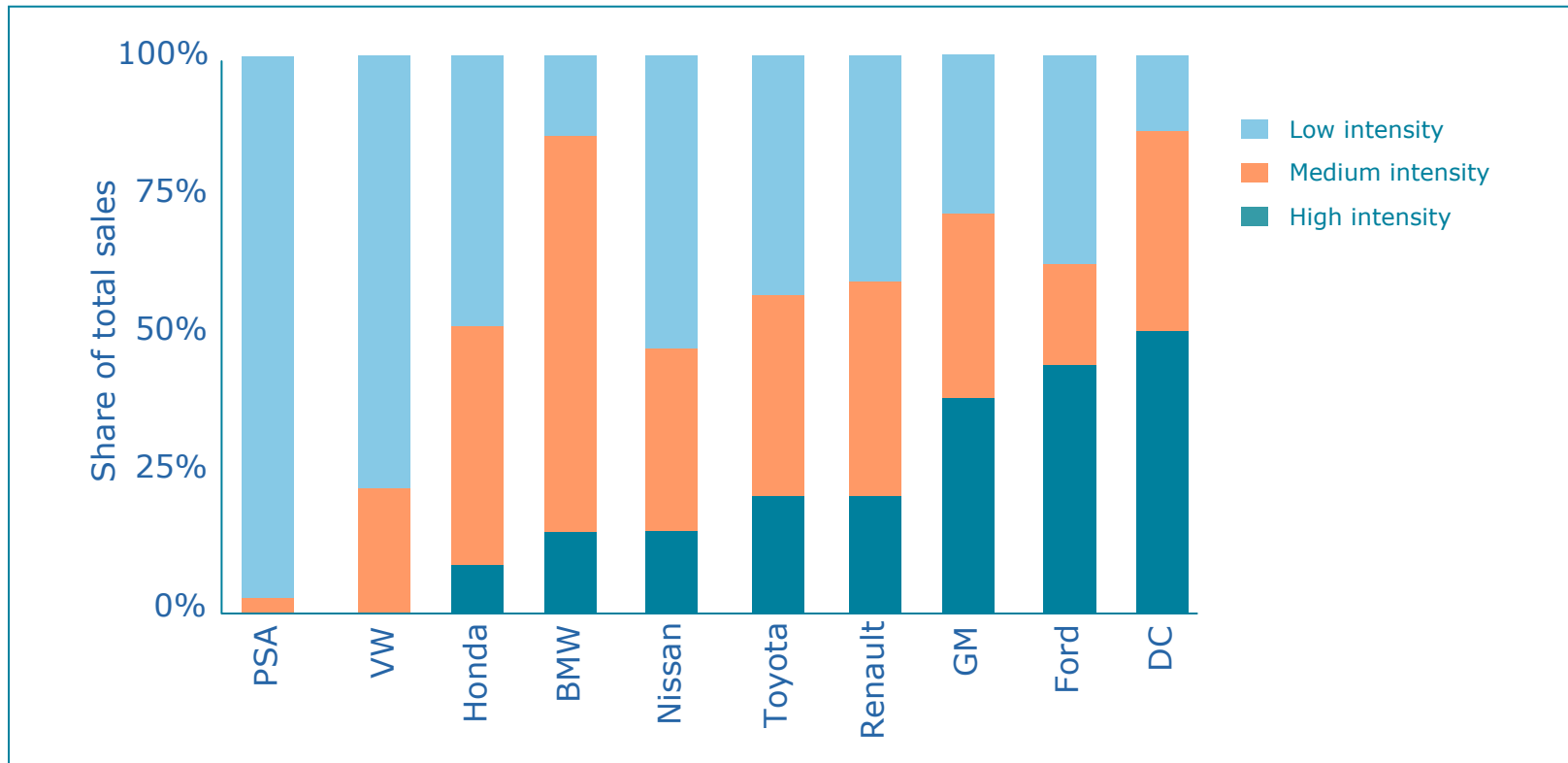
- The auto industry is facing increasingly stringent constraints on oil consumption and CO₂ emissions as a result of growing awareness of climate change, compounded by energy security concerns
- Feb 7: European Commission proposes to force carmakers to make an 18% cut in CO₂ emissions from new cars by 2012. Industry has improved fuel efficiency, but power, size and weight have risen. CO₂ has only fallen 23g/km from 1995 level



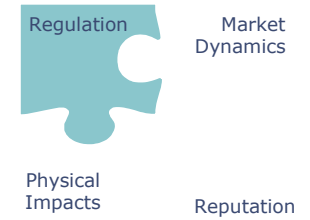
US car makers start with higher carbon intensity of sales



Carbon intensity of sales: leading car companies

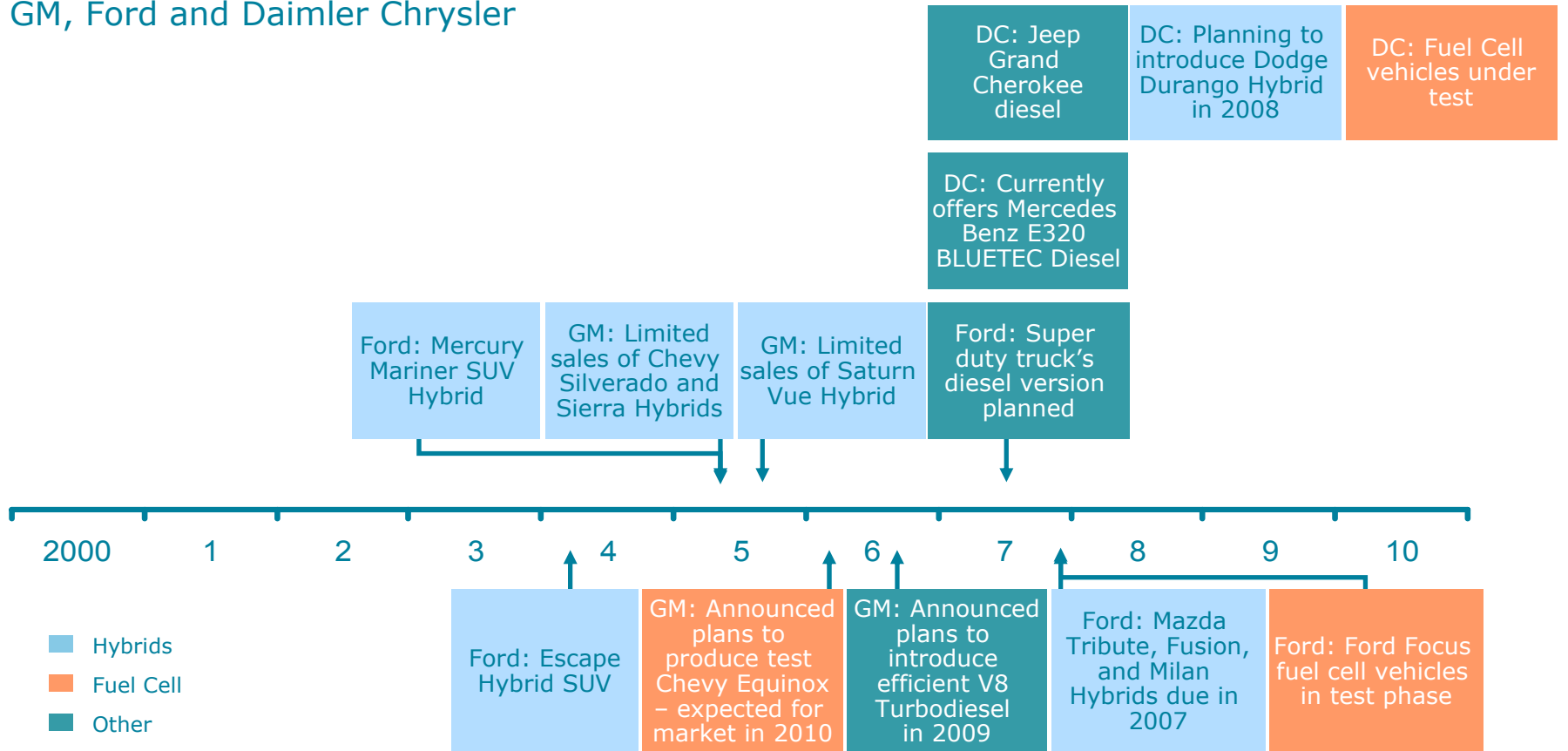


Source: Car Companies and Climate Change: measuring the carbon intensity of sales and profits. WRI 2003



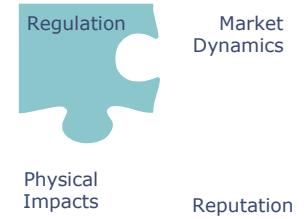
Lack of regulatory attention meant little innovation by US auto sector before 2004

GM, Ford and Daimler Chrysler

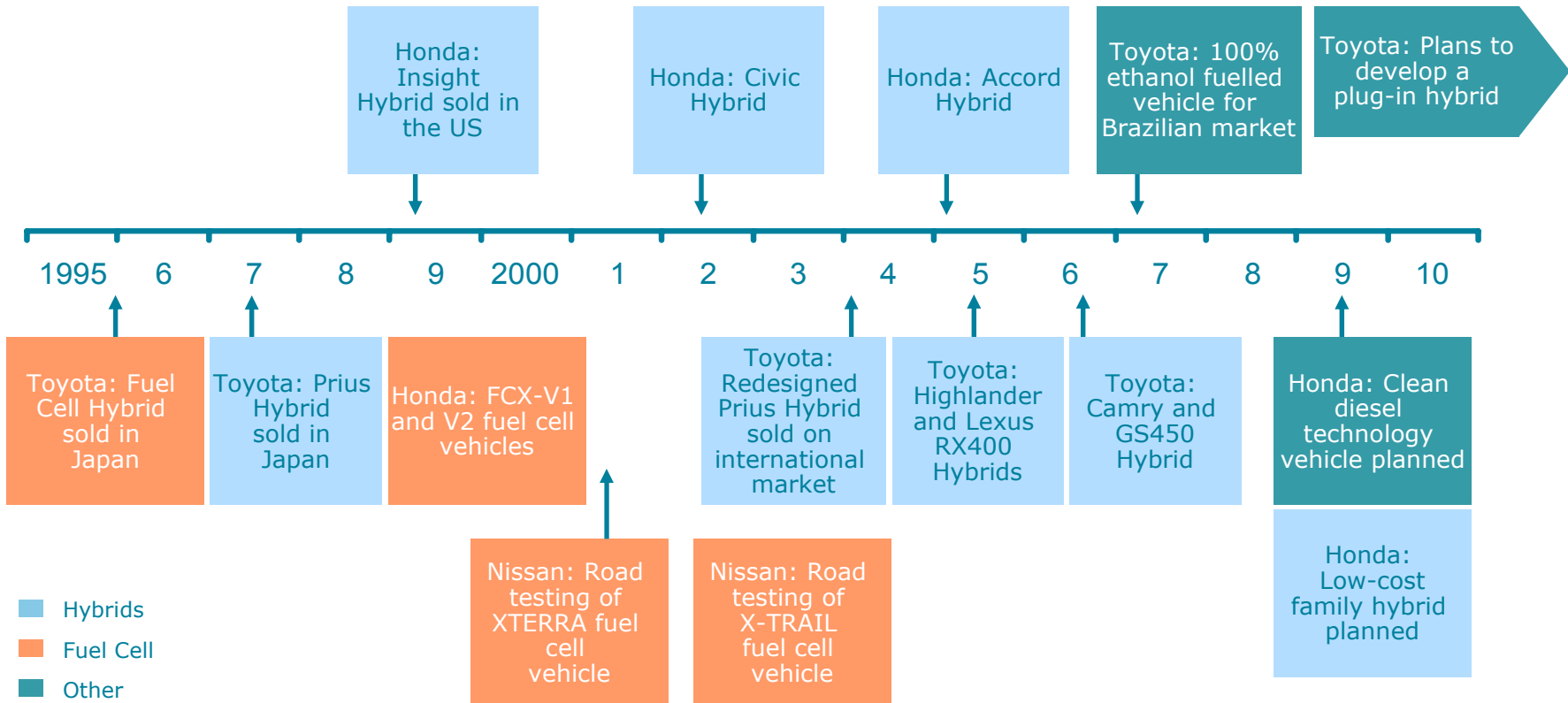


Business impacts analysis - regulation

Japanese car makers moved early and continue to develop for international market



Toyota, Honda & Nissan



Business impacts analysis - regulation

Questions you need to ask

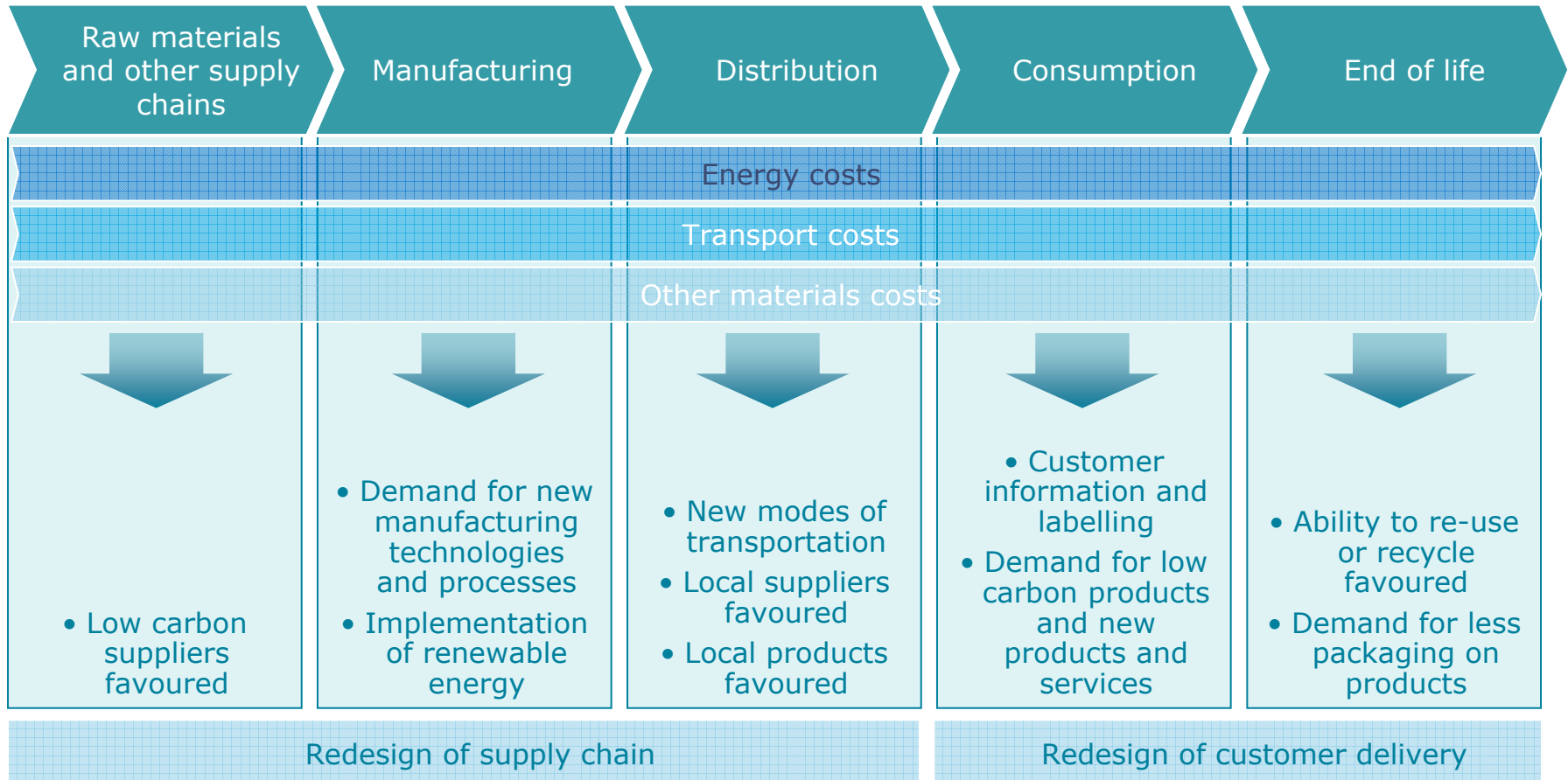
- 1 What is the current and expected climate change regulation affecting your industry?
- 2 What is your exposure to regulation versus your competition (if international)?
- 3 What is the net impact of regulation on earnings?*
- 4 How will demand for products and services change as a function of changes in product standards?
- 5 How are carbon emissions and energy costs expected to develop? What are you doing to manage these (energy efficiency, alternative energy sources, hedging)?
- 6 Are you participating in any carbon emissions trading scheme? What is the net impact of this?
- 7 What is your exposure to legal risk arising from climate change?

*downside = energy costs, taxes, transport costs, abatement costs, decrease in asset value; upside = carbon trading surplus, grants, ECAs, subsidies, low carbon innovation

2 Market Dynamics

- Exposure to higher and fluctuating energy costs
- Changing consumer attitudes and demand patterns
- New technology, products & markets

Climate change impacts across the value chain



Companies are starting to build new businesses in response to customer demand

ecomagination

- GE's commitment to build innovative solutions that benefit customers and society
- GE has pledged to:
 - Double investment in clean from \$700 million in 2005 to \$1.5 billion in 2010
 - Increase revenues from ecomagination products to \$20 billion by 2010
 - By May 2006, revenues for ecomagination products surpassed \$12 billion



ecomagination™
a GE commitment.

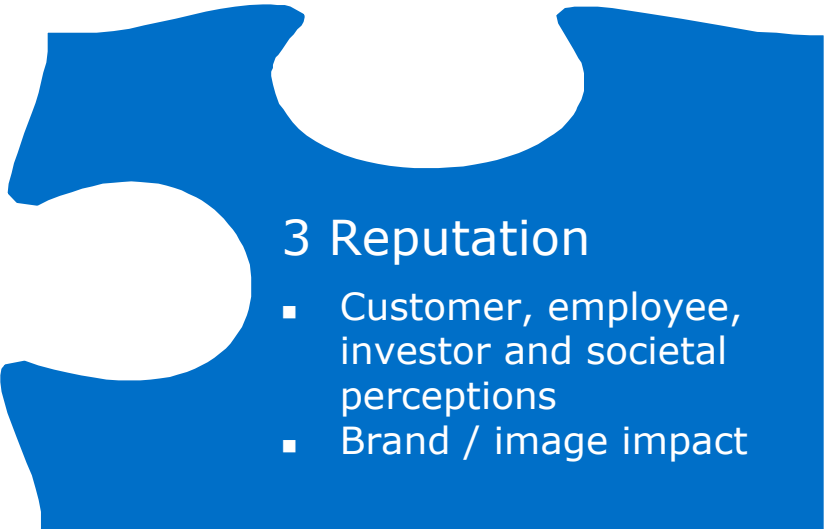
Desalination technology
from GE.
Turning saltwater
into freshwater.
See how

 imagination at work

Business impacts analysis – market dynamics

Questions you need to ask

- 1 What impacts will climate change have on the market dynamics (costs, demand and innovation) across your value chain?
- 2 How are you anticipating and proactively managing these impacts?
- 3 What is the carbon intensity of your product portfolio? How do you expect this to change in response to market dynamics?
- 4 What technologies, processes, products and services are you developing in response to climate change? What are your competitors doing?
- 5 What is the expected impact on costs, revenues and profit margins?
- 6 How much are you investing to implement your climate change strategy and what are the anticipated returns, including timeframe (financial and CO₂ savings)?



3 Reputation

- Customer, employee, investor and societal perceptions
- Brand / image impact

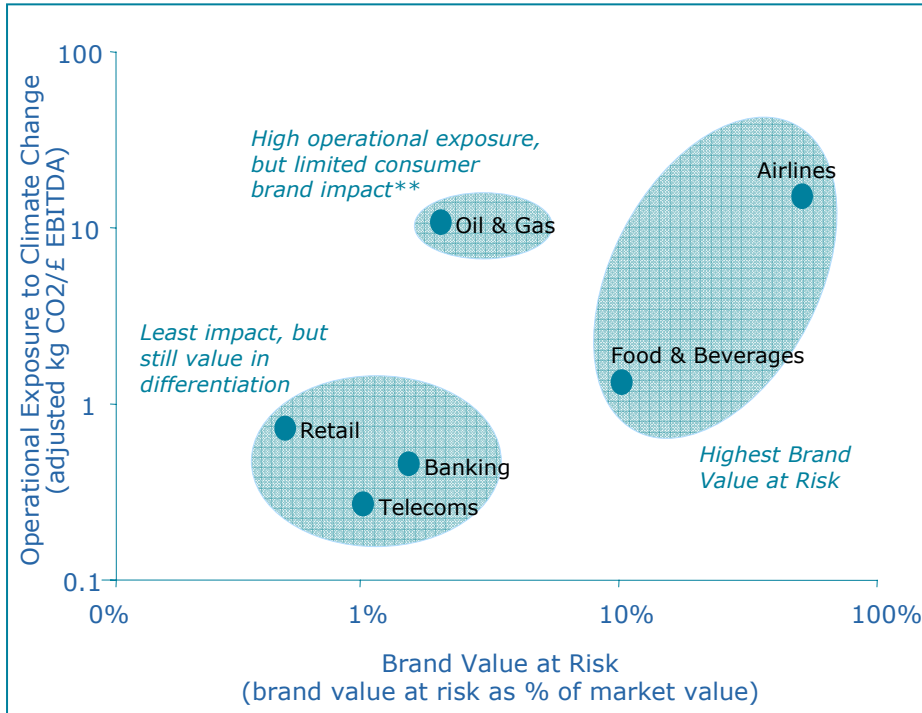
Business impacts analysis - reputation

Brand value at risk from climate change equates to £ billions

Regulation

Market Dynamics

Physical Impacts



£ billion, based on FTSE All Share - Monthly Review September 2004

| Sector | Total Market Value | % at risk | £ billion at risk |
|--------------------|--------------------|-----------|-------------------|
| Airlines | 3.1 | 50% | 1.5 |
| Oil & Gas | 172.9 | 2% | 3.5 (third) |
| Food & Beverages | 66.5 | 10% | 6.6 (high) |
| Retail | 82.2 | <1% | <0.8 |
| Telecommunications | 116.0 | 1% | 1.1 |
| Banking | 380.8 | 1-2% | 5.7 (sec) |

Source: The Carbon Trust, 'Brand Value at Risk' (November 2005), in conjunction with Mercer Lippincott.

Business impacts analysis – reputation

Questions you need to ask

- 1 Are there opportunities for differentiation related to a proactive, public climate change strategy?
- 2 Is there any evidence in your industry of positive reputational impacts associated with a progressive climate change strategy?
- 3 How much of your climate change strategy have you disclosed to date (targets, action plans)? What is your approach to scope of carbon emissions reporting (upstream, downstream, own company emissions only)?
- 4 If carbon neutral, what actions have you taken to reduce your direct emissions and switch to low energy sources? What types of offsets are you purchasing and what is the cost? Are the offsets accredited?

A large teal puzzle piece graphic is positioned on the left side of the slide. It has a complex shape with several notches and protrusions, resembling a jigsaw piece. The text is contained within the lower-left portion of this piece.

4 Physical Impacts

- Vulnerability of physical assets
- Supply chain disruption
- Workforce disruption
- Business interruptions
- Risk management, insurance and adaptation costs

Business is increasingly concerned about the fundamental impacts of the changing climate



- Impacts caused by changes in climate
 - Vulnerability of physical assets
 - Disruption to supply chain
 - Business interruptions
 - Workforce disruption
 - Changes in core market conditions

Subsidence

Extreme
weather

Drought

Flooding

Health impacts
on workforce

Forest fires

Changing consumer
demand



Business impacts analysis – physical impacts

Sector exposure to physical impacts

- Some sectors may benefit from changing demand conditions arising from warmer, wetter and more variable climate
- Physical impacts of climate change will primarily affect sectors, although particular companies may be at risk depending on location of physical assets and supply chain (e.g. geographic spread of operations)
- Most heavily impacted sectors include:
 - Insurance: changing risks , new product opportunities
 - Real estate: damage to assets, decrease in value due to location, need for major upgrades to cooling/ventilation
 - Construction: weather related delays, need for new types of building
 - Pharmaceuticals and healthcare: demand growth in particular therapeutical areas
 - Transport & distribution: disruption to services
 - Hospitality and leisure: change in demand for holiday locations, obsolete assets
 - Agriculture and food manufacturing: losses and disruption due to extreme weather

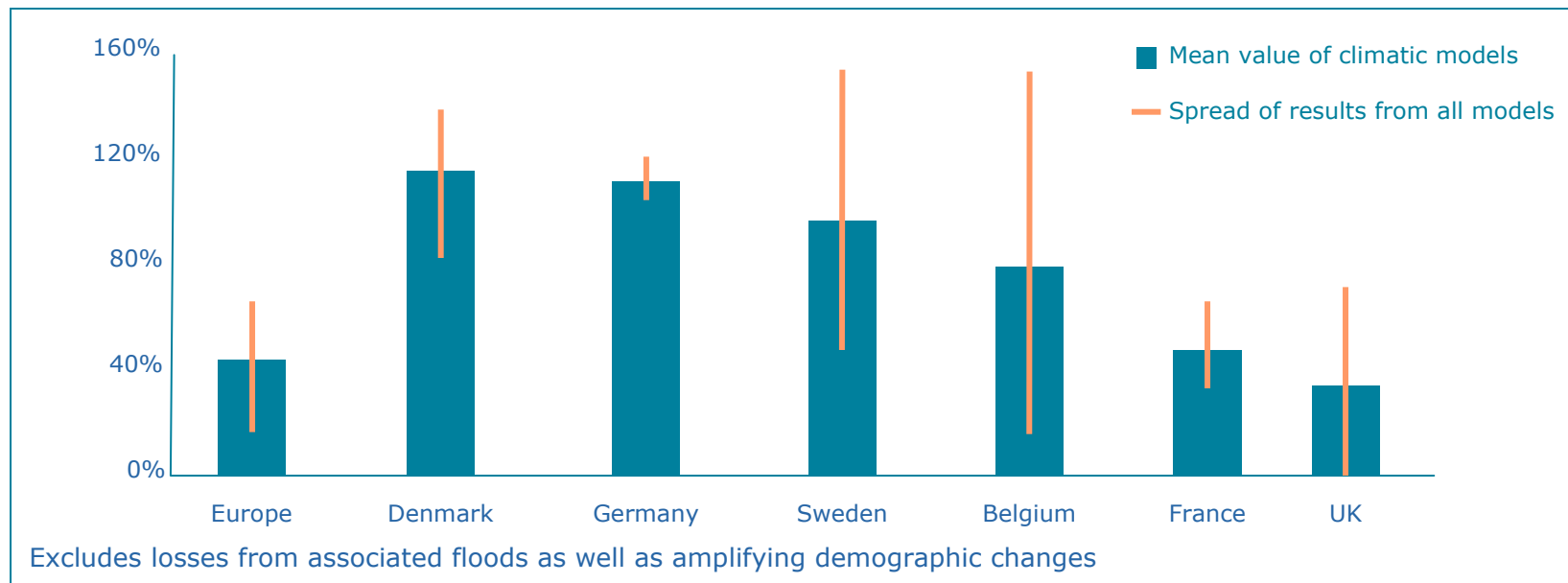
Business impacts analysis – physical impacts

Pricing the risks in the insurance industry



- Extreme weather events are increasing in frequency and intensity - Insured losses are rising
- Lloyd's "Adapt or Bust" (2006) – “recent events have shown capital and pricing models to be wanting. We must regularly update and recalibrate our models to keep pace with reality”

Expected increase in annual winter storm losses in Europe due to climate change: 1975-2085



Source: SwissRe 2006 "The Effects of Climate Change"

Business impacts analysis – physical impacts

Pharmaceutical & healthcare sector

Regulation

Market
Dynamics



Opportunities

- Climate change contributes to rises in respiratory diseases (such as Asthma) and water-borne and vector-borne pathogens (such as Malaria) globally
- Increased demand for vaccinations

Risks

- Governments are big buyers of healthcare and any negative impact on their GDP and public finances could depress spending, lead to drug price cuts

Asthma

- Scientists maintain that rises in pollen quantity due to warming are contributing to the global rise in asthma prevalence and increased severity of episodes
- 300 million asthma sufferers today: 400 million expected by 2025
- 33% market increase for pharmaceutical & healthcare companies with medicines and products for asthmatics.

Malaria

- Global warming is predicted to alter the distribution of important vector species and increase the spread of disease to new areas
- The most disabling vector-borne disease globally with 40% of the world's population currently at risk: expected to rise to 60% by 2050
- 20% market increase for pharmaceutical & healthcare companies with medicines and products for malaria

Source: Climate Change Futures: Health, Ecological and Economic Dimensions, A project of Harvard Medical School, sponsored by Swiss Re

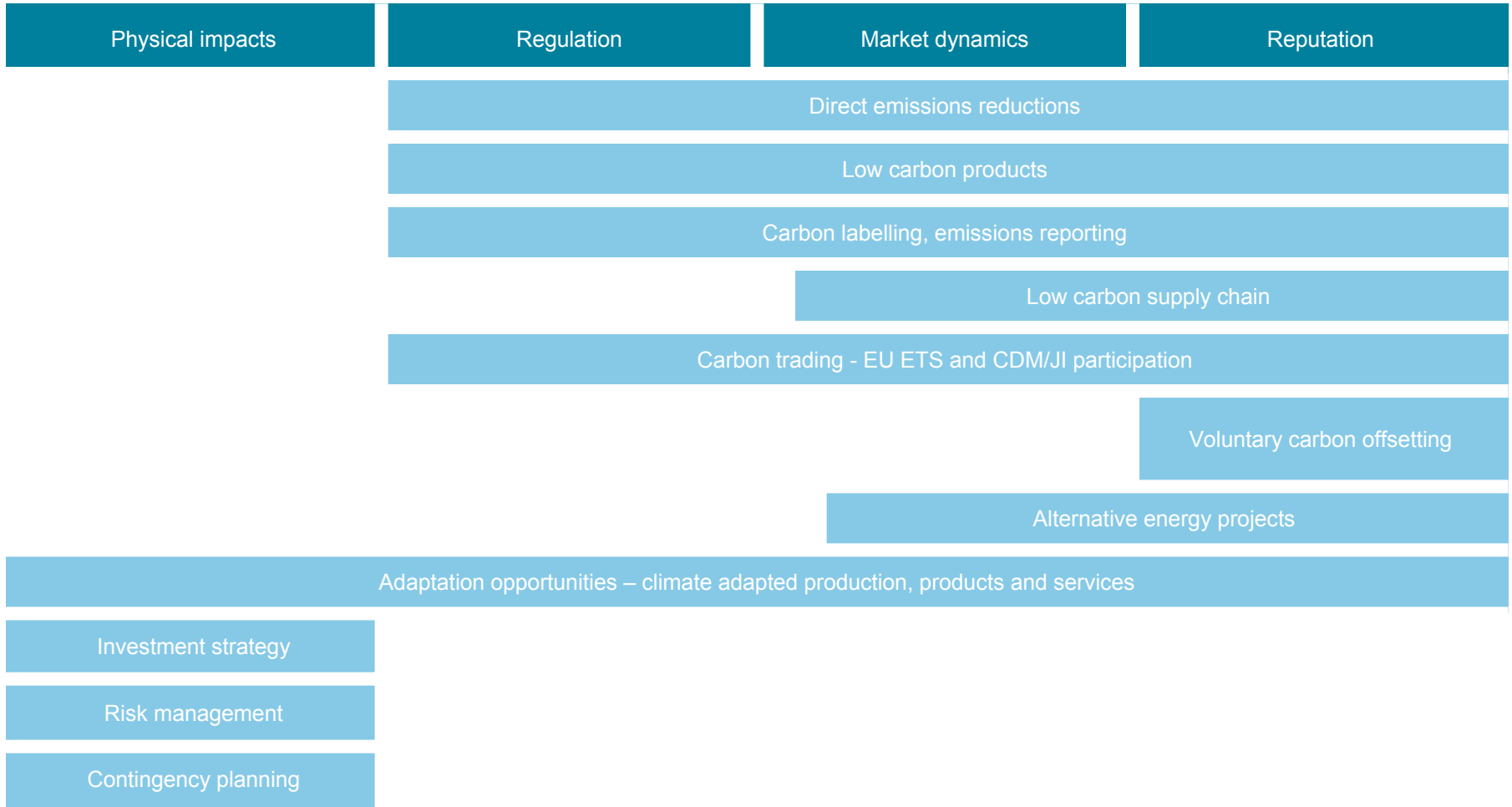
Business impacts analysis – physical impacts

Questions you need to ask

- 1 How will extreme weather and related drought/flooding impact assets, operations, supply chain and product/service demand?
- 2 How are you managing these risks and opportunities? What are the associated financial implications?
- 3 Have you forecasted costs of new investments, asset / product obsolescence, increased costs of raw materials and insurance associated with physical impacts?
- 4 What is your adaptation strategy? How will you minimise the costs of adaptation?

Business impacts analysis - summary

Corporate responses



Approaching climate risk analysis

Impact on the P/L

| P/L | Impact area | Nature of Impact |
|-------------------------|-----------------|---|
| Revenue | | |
| Gross Sales | Market dynamics | Changing demand: new products/services and markets, changing price points, product obsolescence |
| | Physical | Business interruptions, workforce disruptions, new products/services, product obsolescence |
| | Regulation | Changing product standards: new products/services and markets, product obsolescence, revenue gains from cost pass through to customers |
| | Reputation | Brand/image/product differentiation: market share gain/loss, changing price points |
| Variable Costs | | |
| Materials | Market dynamics | Cost of raw materials due to supply issues, Cost pass through (energy, carbon allowances), technical/supply chain innovation: cost decrease |
| | Physical | Supply chain disruption: availability and cost of raw materials |
| Logistics | Regulation | Road use charges, VED, RTFO |
| | Market dynamics | Fuel costs |
| | Physical | Weather damage |
| Maintenance and repairs | Regulation | Compliance costs (operational expenditure) |
| R&D | Market dynamics | Product and process innovation |
| IT | Regulation | Implementation of reporting systems |
| Marketing | Reputation | Promotion of low carbon strategies |
| Professional fees | Regulation | Legal costs, audit fees |

Approaching climate risk analysis

Impact on the P/L

| P/L | Impact area | Nature of Impact |
|----------------------|-----------------|--|
| Depreciation | Regulation | Compliance costs (capital expenditure) |
| | Physical | Asset impairment, capital expenditure from upgrading facilities and equipment |
| Fines | Regulation | Penalties for non-compliance EUETS |
| Other | Reputation | Cost of carbon offsets |
| Fixed costs | | |
| Staff costs | Physical | Cost of relocation, redundancies, training |
| | Regulation | Manpower to manage new requirements |
| Permits and licences | Regulation | Cost of permits |
| Utilities | Regulation | Energy taxes, carbon allowance pass-through |
| Insurance | Market dynamics | Increased premiums |
| Other Income | Regulation | Carbon allowance sales, carbon trading gains, grants |
| Tax | | |
| | Regulation | Subsidies and grants for low carbon investment (e.g. Enhanced capital allowances, First Year Allowances) |

Approaching climate risk analysis

Impact on the Balance Sheet

| Balance Sheet | Impact area | Nature of Impact |
|-------------------------------|-----------------|--|
| Non-current assets | | |
| Property, plant and equipment | Physical | Damage to PPE, relocation leading to impairment and/or increased costs of purchase, upgrades required to respond to changing environment |
| | Regulation | Obsolescence (e.g. vehicles), compliance costs (increased capital expenditure) |
| | Market dynamics | Impairment due to changing consumer demand |
| Intangible assets | Regulation | Carbon allowances granted/ purchased |
| | Market dynamics | Impairment due to reduced cash flows |
| | Reputation | Impairment through reduced sales due to brand damage |
| Investments | Market dynamics | Loss of value of equity investments |
| Long term assets | Physical | Compensation from suppliers due to business interruption |
| Current assets | | |
| Stocks | Physical | Damage to stocks |
| | Market dynamics | Reduced value/write-off through changing demand patterns |
| | Regulation | Obsolescence through changing regulatory requirements |
| Trade and other receivables | Physical | Increased costs passed on |
| | Regulation | Debtors from sale of carbon allowances |

Approaching climate risk analysis

Impact on the Balance Sheet

| Balance Sheet | Impact area | Nature of Impact |
|---------------------------------------|-------------|---|
| Current liabilities | | |
| Trade and other payables | Physical | Increased trade creditors due to pass through costs |
| Carbon allowances/ carbon tax payable | Regulation | Carbon allowances and carbon taxes/levies due |
| Provisions | Regulation | Litigation costs, fines and penalties for non-compliance, settlement of claims |
| Long term liabilities | | |
| Provisions | Regulation | Litigation costs, fines and penalties for non-compliance, settlement of claims, higher tax provisions through carbon taxation costs |
| | Physical | Relocation expenses and payments to workforce, compensation to customers due to business interruptions |

Analysing the Risk Landscape

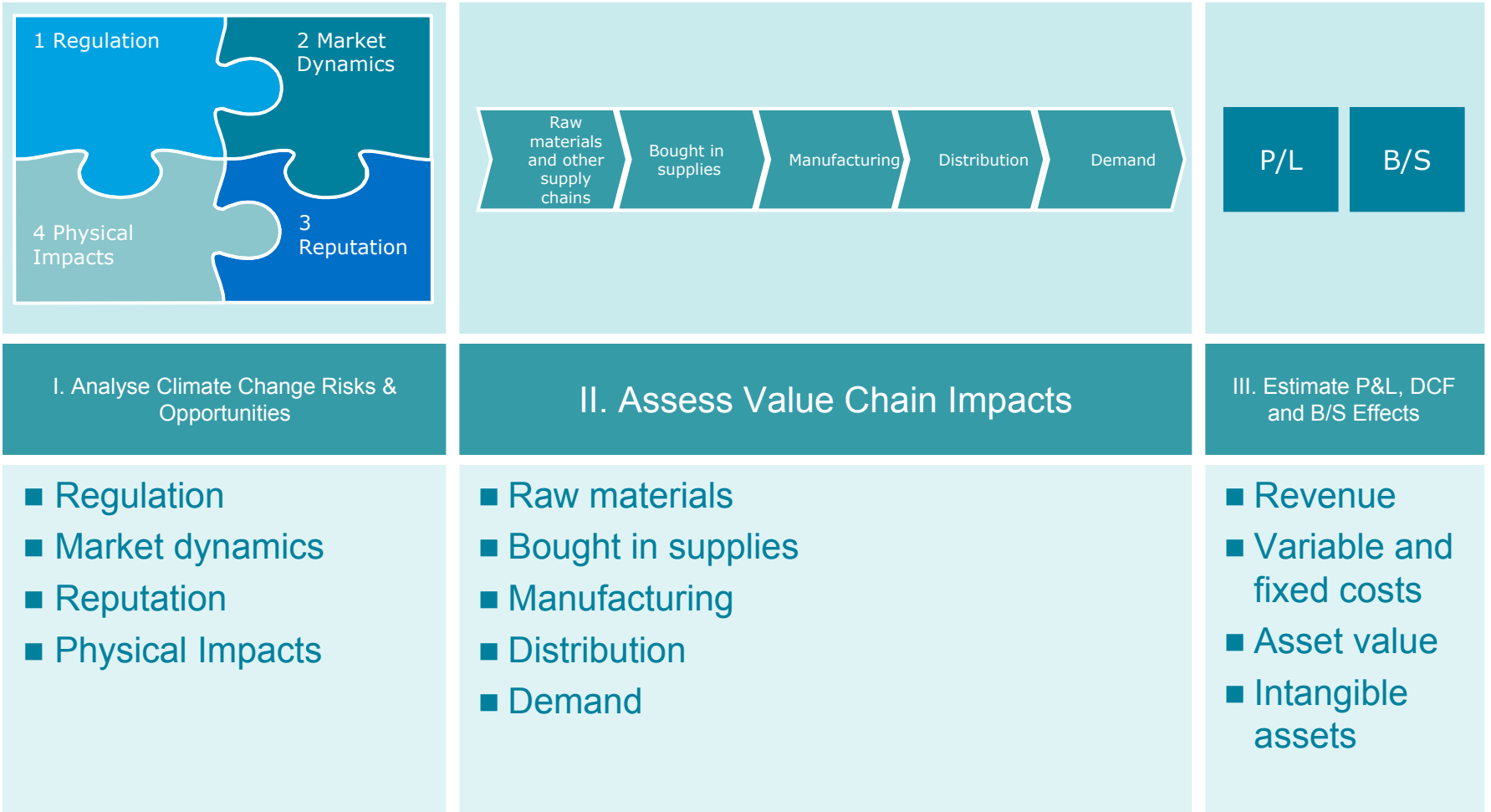
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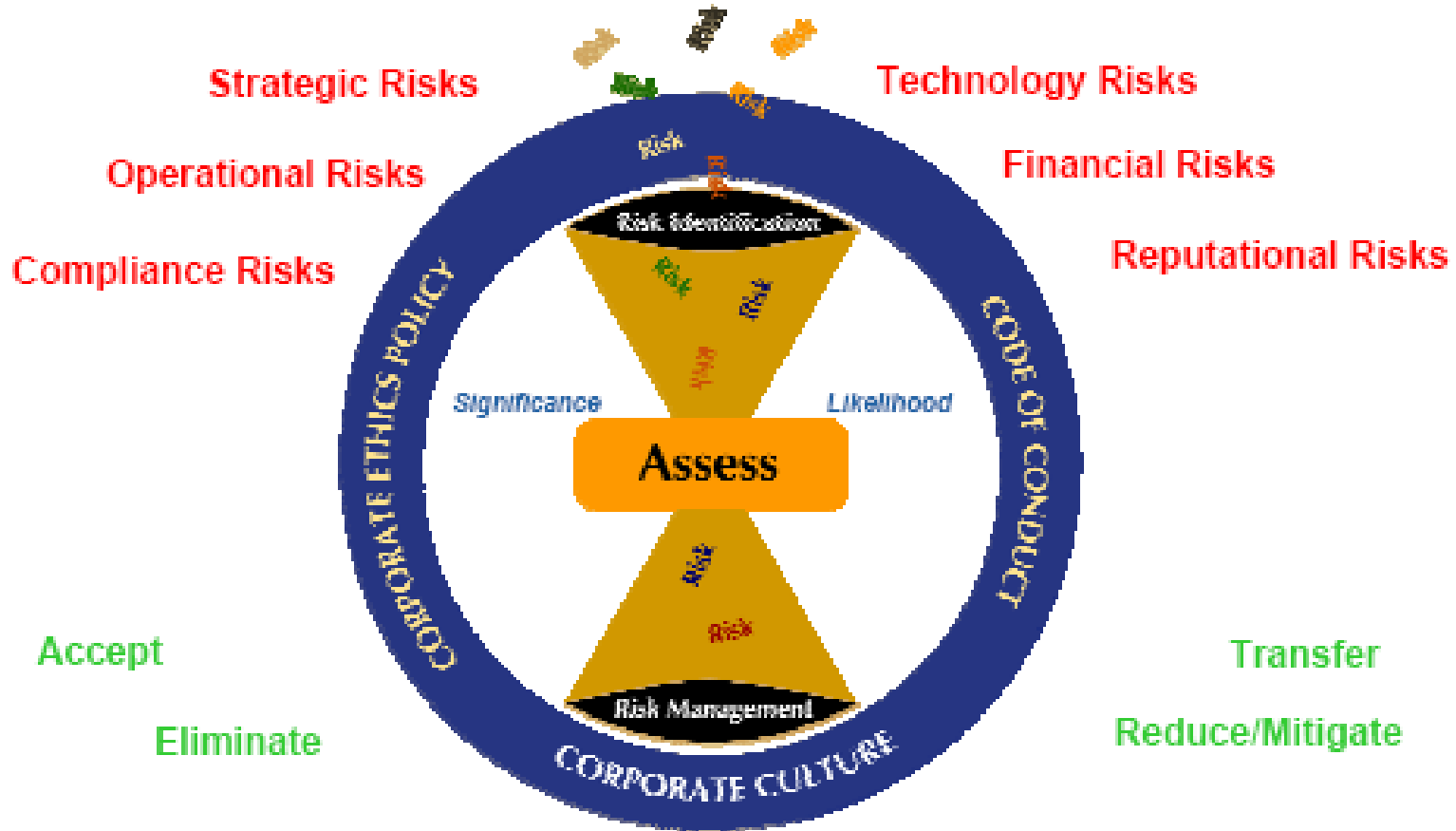
Bringing it all Together : Business Risk Analysis

Approaching business risk analysis

Bringing it all together



ERM Process : Identifying, Assessing & Managing Risks



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Thank you.

