### **Assessing and Mitigating the Supply Risks**

Presentation to ISM Hispanic Supply Management Summit

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- A Proposed Approach to Supply Risk Management
- Assessing the Exposure
- Managing the Risks

### **The Supply Risk Challenge**

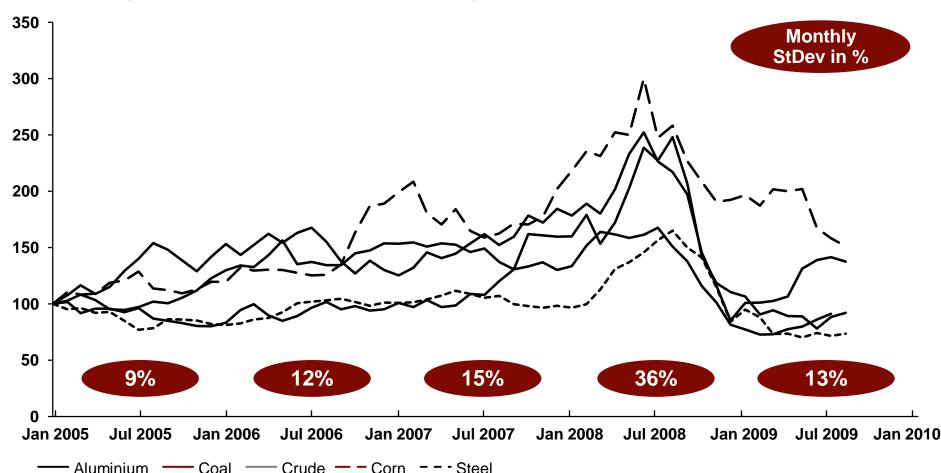
### New drivers and uncertainties will strongly impact future commodity markets underpinning the need for risk mgmt.

#### **Drivers and uncertainties**



### Price volatility has increased in the last years reaching in some periods very high specific levels

#### **Commodity price evolution since January 2005**



Note: Volatility defined as average Standard Deviation across the individual raw material prices included in graph, based on monthly figures Source: Bloomberg, A.T. Kearney analysis

### Supply risks can have a material impact on business results

#### Supply risk types

#### **Risks**

Supply continuity disruption

Quality or safety compromised

Reputation tarnished

Intellectual property revealed

Input price Volatility

#### **Description**

- Inability to obtain a key procured input for a significant period of time
- Procured input not meeting specified quality or safety standards
- Reputation changed due to association with supplier(s) whose behavior is inconsistent with corporate values
- Confidentiality of company's sensitive information is violated due to association with a certain supplier(s)
- Material and unexpected change in input pricing due to market fluctuations

#### Financial impact

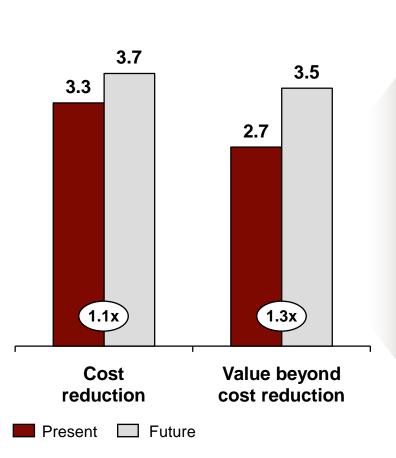


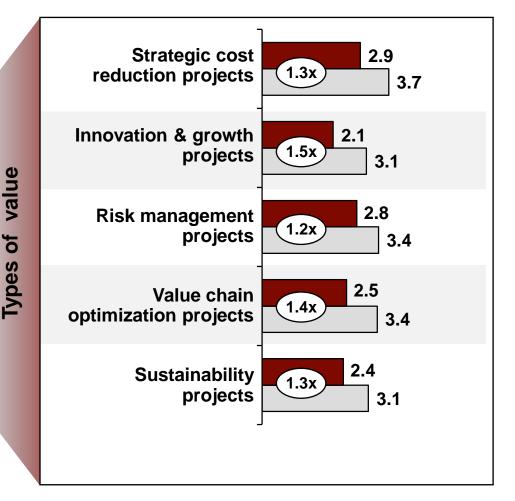
- Lost Revenue
- Increased Cost
- Asset Loss
- DecreasedMarket Value

## Chief Executive View—Procurement's importance is increasing, requiring continued improvement in costs and value beyond cost

**CEO** expectations of the procurement organization

(Response Average; 1 Low, 4 High)

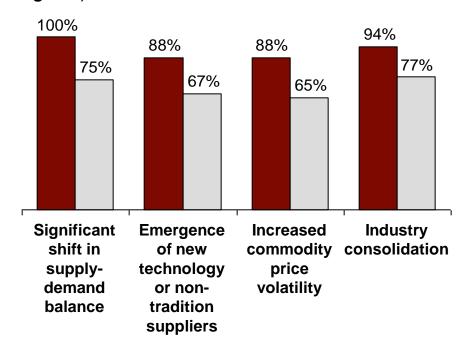




### Leaders are more proactive in scanning for market disruptions

#### **External market risks**

(% Companies selecting 'agree' & 'strongly agree')



■ Leaders □ Followers

#### Risk management strategies

(Leaders selecting 'systematically used')

Degree o	f
usage	

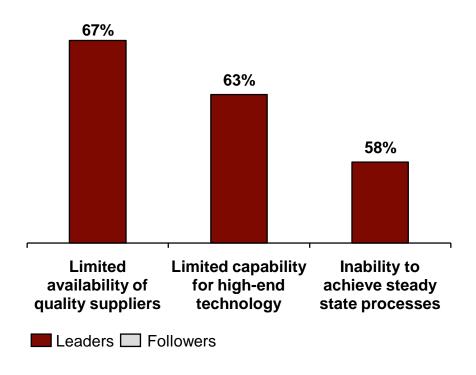
	usage
Supply guarantee	•
Hedging strategies	•
Disaster planning	•
Continuous risk monitoring	•
Mega-trend analysis	•

Low O High

### Leaders use several approaches to manage risks from emerging market suppliers

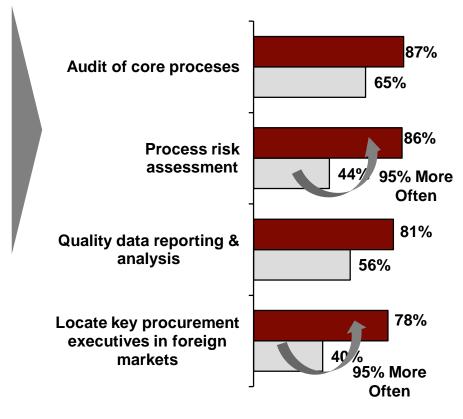
### Supplier capability risks limiting emerging market sourcing

(% Companies selecting 'some', 'major' or 'precludes')



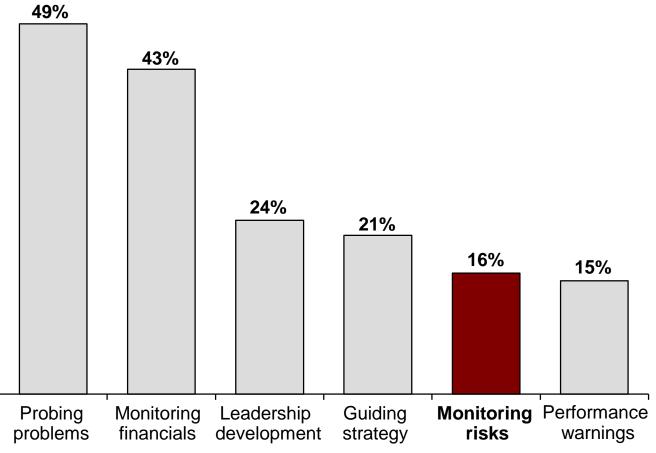
### Emerging market supplier management

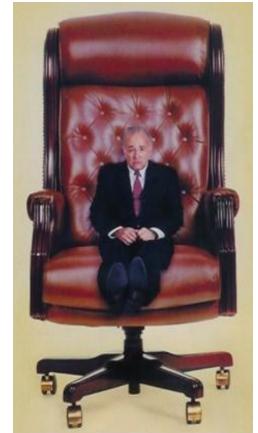
(% Companies selecting 'systematically used' and 'all suppliers')



### Corporations have reported difficulty in monitoring and managing risk

Percent of S&P 500 directors who rate their leadership as "very effective" at:



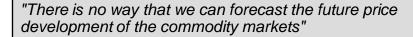


### A potential reason is that there are a lot of misbeliefs around commodities and risk management

Non-exhaustive

#### Common misbeliefs...

"You can't beat the market, so just index your prices in your contracts"



"We are hit equally as our competitors"

"Our company's policy is not to employ financial instruments as we don't want to speculate"

"Security of supply is our priority, therefore there is no place for contracting tactically"

#### ...and corresponding truths

 Substantial savings can be achieved through dynamic contracting by varying contract timing, duration and index according to market situation

 Often true; however the name of the game is to understand market drivers and trends and to take the right positions

 A company that understands and acts upon its supply risk exposure will gain competitive advantage, as it understands underlying costs, limits the price exposure etc.

 Each supply or sell-side contract has impact on the company's commodity and therefore risk position; the size of the open position determines the level of risk and speculation

• Security of supply is an integral part of Commodity Risk Management. A strategic view on commodities will enable companies to take the appropriate decisions

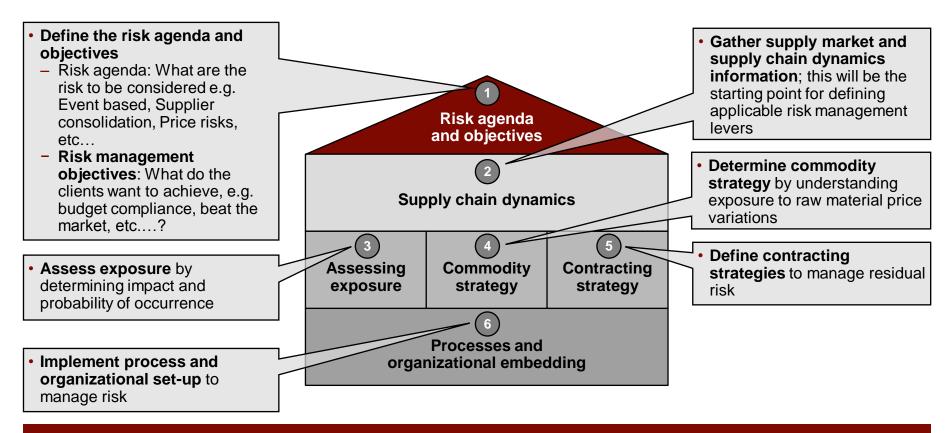




### A Proposed Approach to **Supply Risk Management**

### The A.T. Kearney Supply Risk Management approach involves six elements

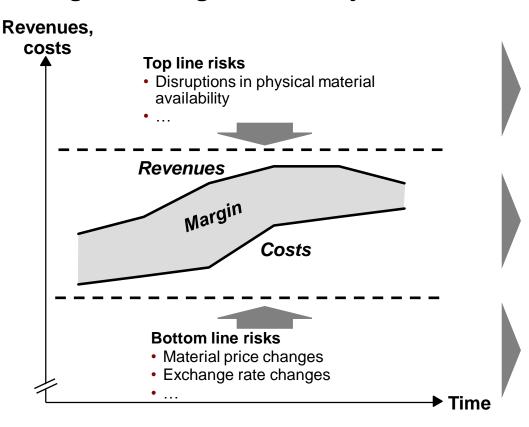
### Elements of the A.T. Kearney approach to supply risk management



All elements have been used successfully in various combinations in projects in the last 3 years

### Setting the risk agenda and objectives is the foundation for a company's future supply risk management

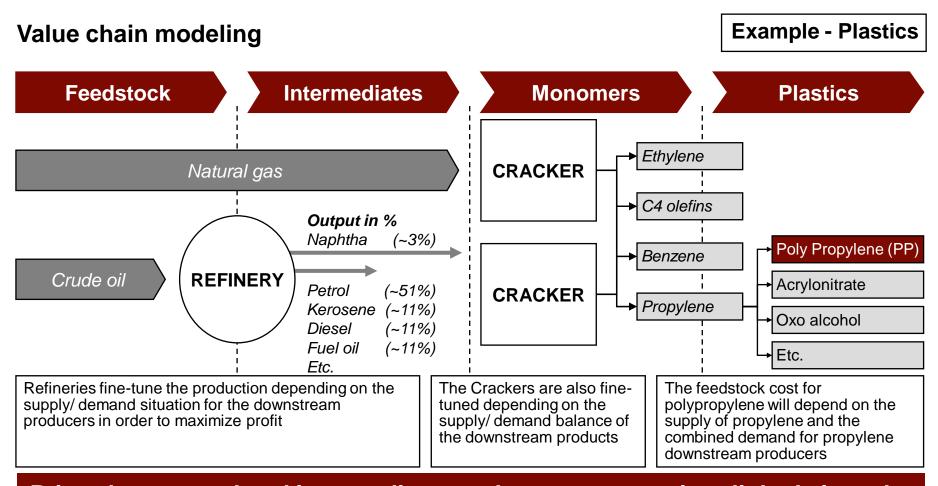
#### Setting the risk agenda and objectives



- Minimize top line risks secure supply (Disadvantage: Potentially high costs)
- Cover customer contracts (Disadvantage: No comparative advantage, lack of alignment with financial plan)
- Maximize the margin beat the market (Disadvantage: Potentially high residual risk if not hedged and not aligned with financial plan)
- Minimize bottom line risks ensure budget compliance (Disadvantage: No comparative advantage)

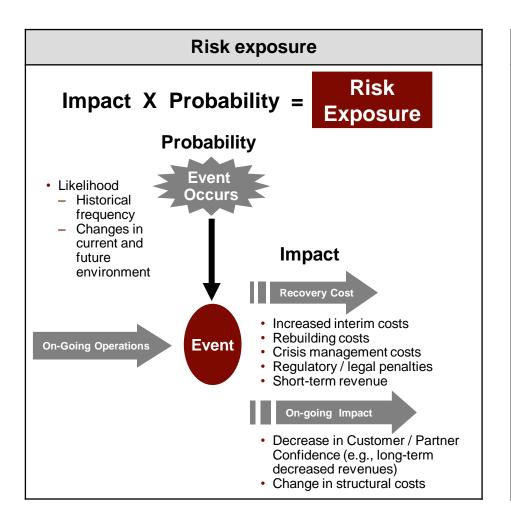
The risk agenda and objectives result from a company's risk appetite and risk bearing ability

### Understanding supply chain dynamics will be key for deriving the right risk and hence commodity strategy



Prices between related intermediates and monomers are interlinked since the players fine-tune their production in response to the supply/ demand shifts

### 3 Total impact and probability must be understood in order to assess the risk exposure



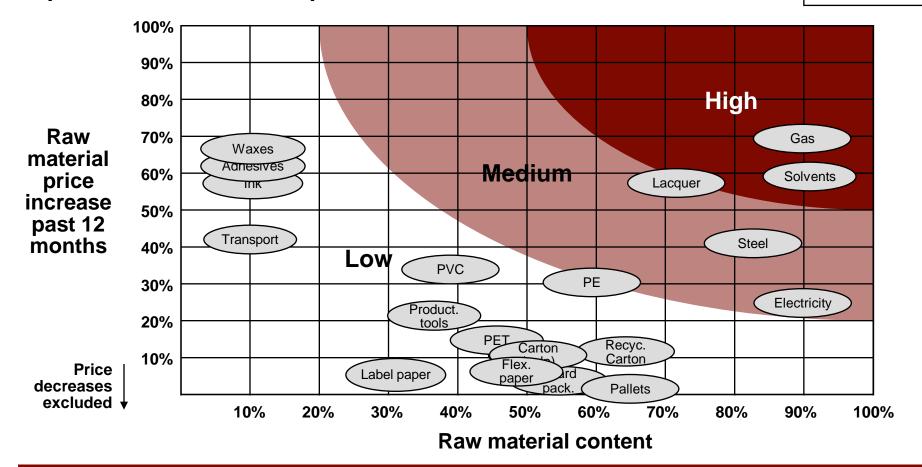
#### **Definitions**

- Risk exposure The quantified measure of risk for any single event. Risk exposure is calculated using impact x probability
- Risk impact The total financial impact to the business if an event occurs. Risk impact includes Recovery Costs and On-going Impact
  - Recovery costs Total costs incurred to resume ongoing operations. Recovery costs are resources that would not otherwise be consumed if the event did not occur
  - On-going impact The total financial implication to the ongoing business as a result of the event.
     Business impact can include opportunity costs (e.g., missed contribution margin).
- Risk probability Likelihood that an event will occur within a specific timeframe

### 4 "Critical", high impact commodities are identified by raw material content and recent price increases

Exposure to raw material price increases – critical commodities

Illustrative

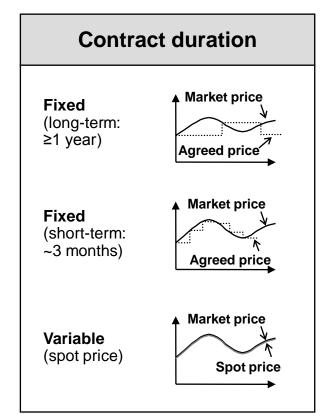


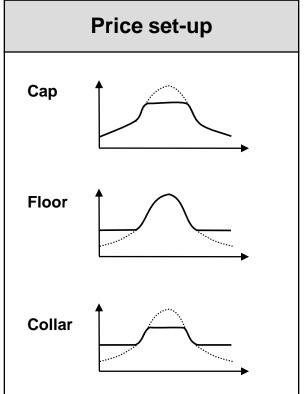
The raw material content of intermediate products needs to be included

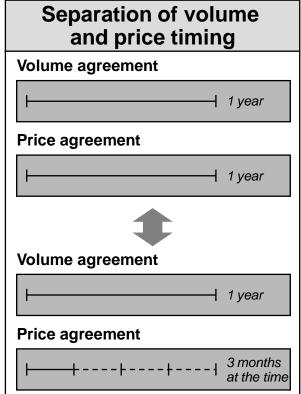
### 6 Residual risk is managed within the boundaries of the risk objectives/limits with a consistent hedging strategy

#### Management of residual risk - elements of contract set-up

Non-exhaustive



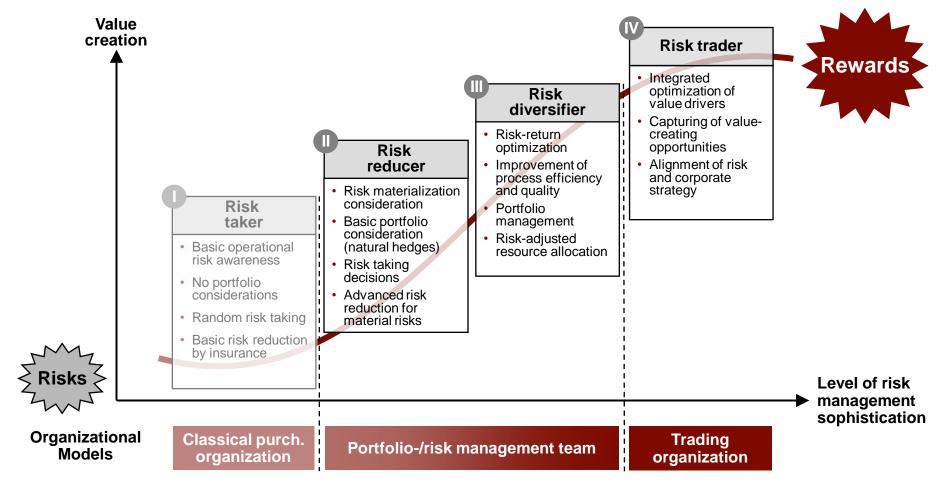




To neutralize commodity risks, sales contracts should get aligned with the set up of the purchasing agreements

### 6 The operating model and organization depends on the risk management sophistication to be achieved

#### Risk management sophistication and organizational models



### However harvesting the benefits of improved Supply Risk Management is challenging

#### Requirements and benefits of state-of-the art supply risk management

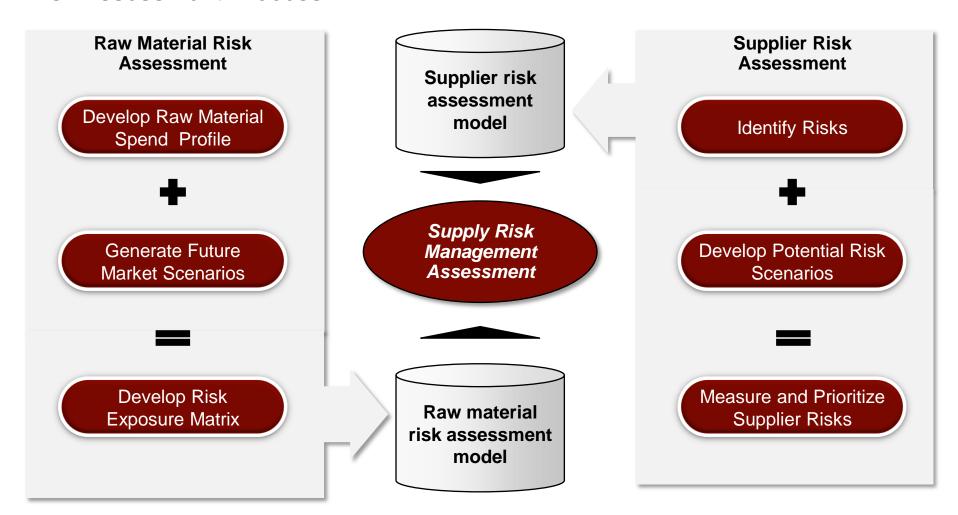
- Requires a different mind-set (Change management required)
- Requires new organizational structures/initiatives
- Requires new data and approaches/systems
- Requires strategic commitment of top management
- **■** But.....

...delivers competitive advantages and positive P/L impact between 3-10% p. a. of purchasing value and in addition risk insurance for the company

### **Assessing the Exposure**

### Assessing risk exposure involves developing an understanding of both raw material and supplier risk

#### **Risk Assessment Process**



### Raw material risks are assessed by gaining understanding of commodity costs and potential future market scenarios

#### **Raw Material Risk Assessment Approach**

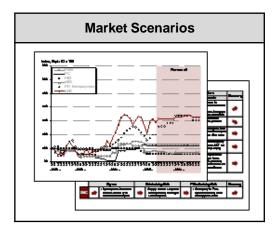
### Develop Raw Material Spend Profile

- Develop raw material share of total spend
- Assess contracts and price compensation mechanisms already in place

# Raw Material Cost Break Down 53% of total price Shaft Forged steel Rotor Steel, copper Hot Rolled Plate 12% Strator Steel grades, copper Steel grades, copper Steel grades, copper Steel grades, copper Steel grades Strator Steel grades Scrap iron Scrap iron

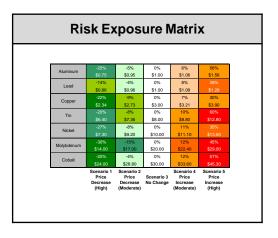
### Generate Future Market Scenarios

 Employ historic market data, volatility figures and forecasts to generate potential future market scenarios



### 3. Develop Risk Exposure Matrix

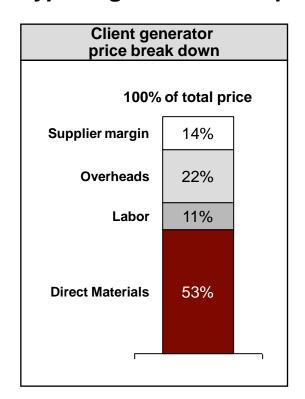
 Combine understanding of cost components and potential scenarios to develop risk exposure matrix

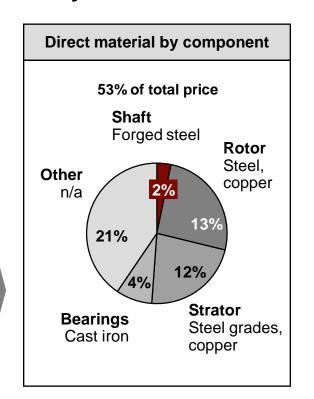


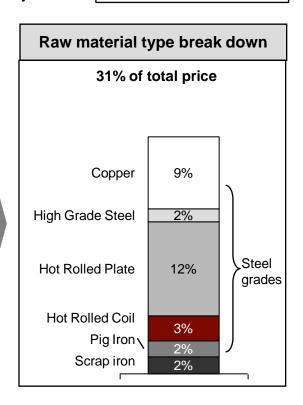
### 1. Raw material costs can be derived by breaking direct materials into their component costs

Typical generator components by share of total value (%)

**Illustrative Example** 





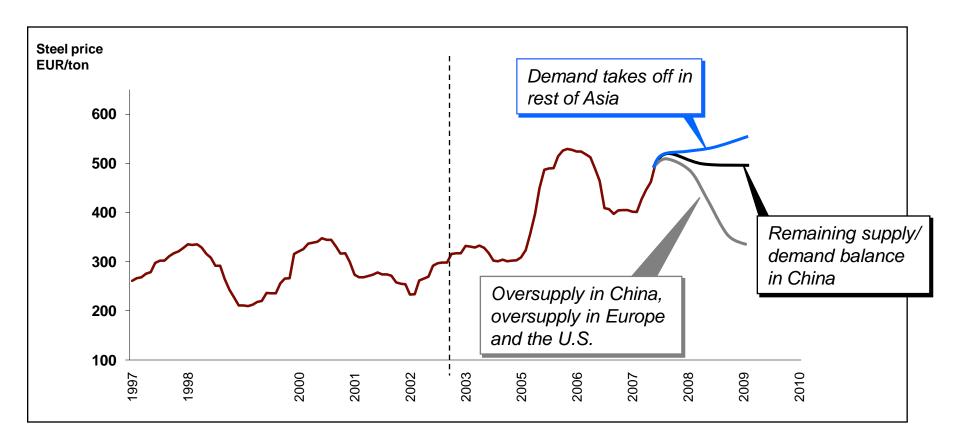


The development of steel and copper will define the development of ~30% of the cost of a generator

### 2. Scenarios are developed based on potential market variations

Steel price forecast 2004–2010, (European Hot rolled coils)

**Illustrative Example** 

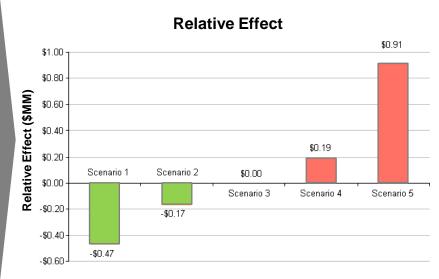


### 3. A risk exposure matrix can then be generated that quantifies the total costs of various future scenarios

Risk exposure matrix (Heat map) and Total cost effect

**Illustrative Example** 

High Signit	icant Moderate	Low	Low	Moderate Sign	ificant High	
	Scenario 1 Price Decrease (High)	Scenario 2 Price Decrease (Moderate)	e Scenario 3 Price Price se No Change Increase Increa			
Cobalt	\$24.00	\$28.80	\$30.00	\$33.60	\$45.30	
	-20%	-4%	0%	12%	51%	
Molybdenum	\$14.00	\$17.00	\$20.00	\$22.40	\$29.00	
	-30%	-15%	0%	12%	45%	
Nickel	\$7.30	\$9.20	\$10.00	\$11.10	\$13.50	
	-27%	-8%	0%	11%	35%	
Tin	\$6.40	\$7.36	\$8.00	\$8.80	\$12.80	
T1	-20%	-8%	0%	10%	60%	
Copper	\$2.34	\$2.73	\$3.00	\$3.21	\$3.90	
C	-22%	-9%	0%	7%	30%	
Lead	\$0.86	\$0.96	\$1.00	\$1.08	\$1.28	
Land	-14%	-4%	0%	8%	28%	
Aluminum	\$0.75	\$0.95	\$1.00	\$1.06	\$1.56	
Aluminum	-25%	-5%	0%	6%	56%	



### Supplier risk management begins with a risk identification based on upon strategic importance and dependency

#### Supplier risk management approach

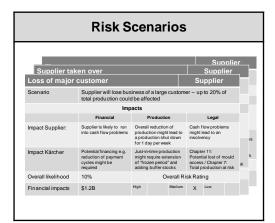
### 1. Identify Risks

- Screen supplier and categorize their risk potential based on:
  - key risk factors
  - dependency

# 

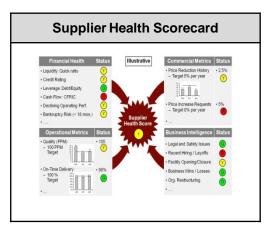
### Define Potential Risk Scenarios

- Define scenarios for each risk cluster
- Develop preventive and reactive measures to mitigate risk



### 3. Measure and Prioritize Supplier Risks

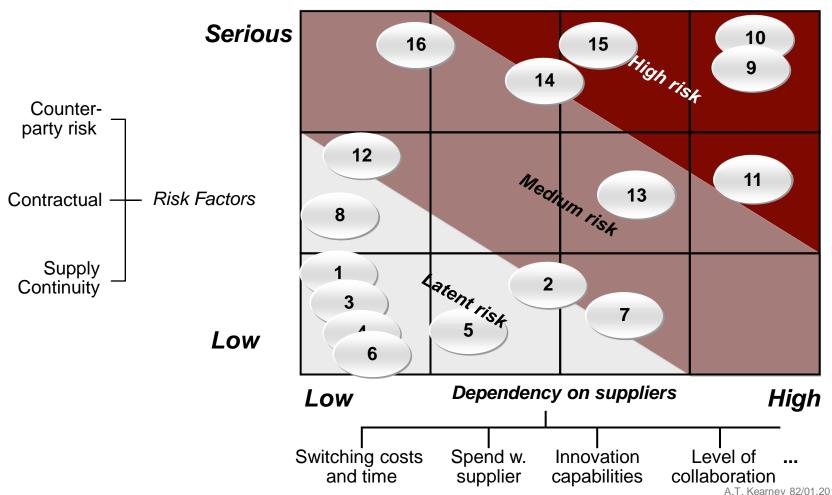
- Develop scorecards to measure supplier health
- Prioritize suppliers by risk profile



### 1. Supplier risks are first identified and categorized by key risk factors and supplier dependency

#### Supplier screening

**Illustrative Example** 



### 2. Potential risk scenarios are developed

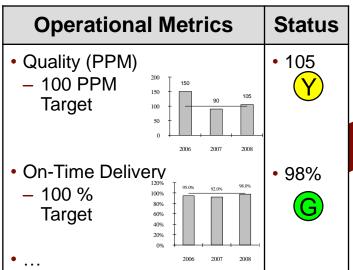
### High-level scenario analysis

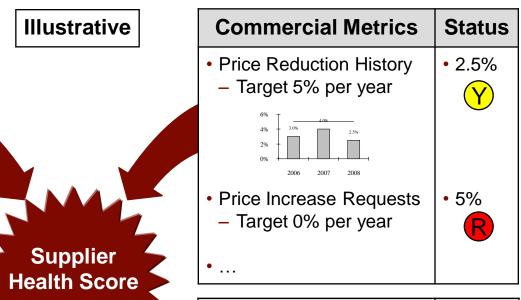
**Illustrative Example** 

Supplier taken over Su				Sun Suppl Ipplier	plier ier			
Scenario Supplier will lose business of a large customer – up to 20% of total production could be affected					f			
Impacts								
	Financial	Production		Legal				
Impact Supplier:	Supplier is likely to run into cash flow problems			ns		S		
Impact on Client	Potential financing e.g. reduction of payment cycles might be required	Just-in-time production might require extension of "frozen period" and adding buffer stocks		might require extension Potential lost of more of "frozen period" and access / Chapter 7:		7:	sk	k
Overall likelihood	10%	Overall Risk Rating						
Financial impacts	\$1.2B	High M	ledium	X	Low			

### 3a. A comprehensive scorecard is critical to understand supplier health

Financial Health	Status
Liquidity: Quick ratio	Y
Credit Rating	Y
Leverage: Debt/Equity	G
Cash Flow: CFRIC	R
Declining Operating Perf.	Y
Bankruptcy Risk (< 18 mos.)	Y
•	





<b>Business Intelligence</b>	Status
<ul> <li>Legal and Safety Issues</li> </ul>	G
Recent Hiring / Layoffs	R
• Facility Opening/Closure	Y
Business Wins / Losses	G
Org. Restructuring	G
•	)

Source: A.T. Kearney

### 3b. Measures of supplier health are combined with strategic importance to segment suppliers into risk profiles

#### **Supplier Health**

- Develop supplier health scorecard
  - Financial Health
  - Negative change in Operational Metrics
  - Legal / Safety Compliance Issues
  - Business Intelligence (layoffs, expansions, major business wins / losses, etc)



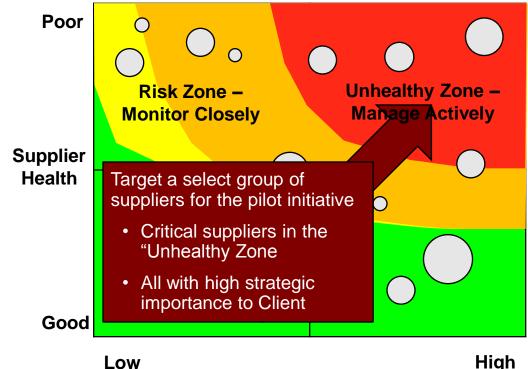
#### Strategic Importance

- Define strategic importance of supplier to Client. Examples include:
  - Supply Market Complexity
  - Proprietary technology / designs versus commodities
  - Re-tooling cost / switching cost
  - Unique supplier capabilities
  - Supplier development lead time



Illustrative

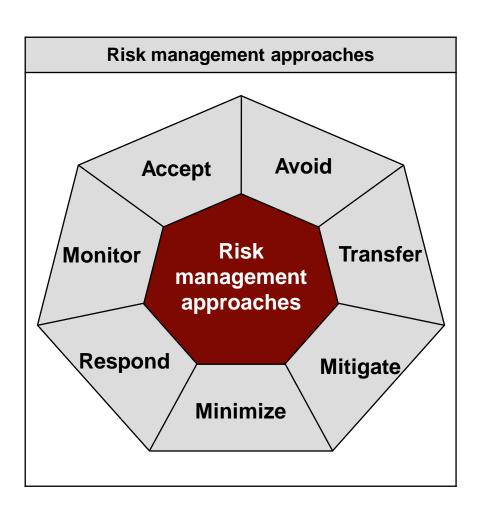
#### **Proactive Risk Monitoring Framework**



**Supplier Strategic Importance** 

### **Managing the Risks**

### Risk can be managed through the use of seven approaches



#### **Definitions**

- Risk Management Approach High level methods to address risk. Seven approaches can be used to manage most types of risk
  - Avoid Proactive action that eliminates possibility of a potential event
  - Transfer Proactive action (e.g., financial or legal) that shifts risk to a 3<sup>rd</sup> party
  - **Mitigate** Proactive action that reduces the financial impact if an event occurs
  - Minimize\_- Proactive action that reduce the probability of an event occurring
  - Respond Predetermined actions that are taken after an event occurs in order to reduce the impact
  - Monitor Scanning of the environment to take alternative actions or implement certain measures if certain thresholds are exceeded
  - Accept Decision made by the business to bear the risk exposure without taking any additional actions
- Risk Management Actions Detailed, actionable activities to address risk. Actions are specific to the type of risk and environment

### Managing the Risks -**Examples**

- Wheat and Flour
- Mega-Supplier Approach
- Stages of Excellence

## For a large U.S. foods manufacturer, we combined traditional sourcing with risk management tools for exchange-traded commodities

Client example **Commodity strategy** Commodity **Key price components** (Wheat / Flour) **Description** strategy **Approach**  Processing of commodity **Processing** Conversion into finished products Leverage volumes to **Traditional**  $(\sim 15\%)$ cost Transportation from conduct best price sourcing 25% Freight processing plants to negotiations (~ 10%) client plants **Basis**  Premium/discount to (~10%) board (determined by Risk management physical movement of strategies based on certain commodities, Business requirements grades and local Raw (e.g., manage to supply/demand) material market versus manage Organized, traded Risk to budgets) cost Board financial markets (i.e., Coverage 75% management futures, options) and/or  $(\sim 65\%)$ requirements(1) traditional cash Purchase timing<sup>(2)</sup> markets Financial risk management tools (e.g., options)(3)

<sup>(1)</sup> Coverage requirements relate to minimum volume requirements needed to ensure manufacturing / processing facilities have sufficient material to maintain continuous operations.

<sup>(2)</sup> Aggressive food companies typically attempt to purchase commodity products during seasonal lows.

<sup>(3)</sup> Financial tools are generally restricted to futures purchases and, occasionally, collars – as anything more aggressive is usually considered "speculative trading" which is not valued by financial market analysts

### The first step in the process was to determine the client's over-riding business requirements for the category

#### **Key business requirements**

Client example

**Predictable prices** 

- Client aims to meet or exceed AOP, by commodity, on both a quarterly basis and an annual basis
- Predictable refers to prices that are known or can be secured out to a defined time horizon (e.g. 6 to 12 months)

**Competitive prices** 

 Client aspires to realize market average or better commodity prices on a quarterly and an annual basis (board, basis, and byproducts)

**Stable prices** 

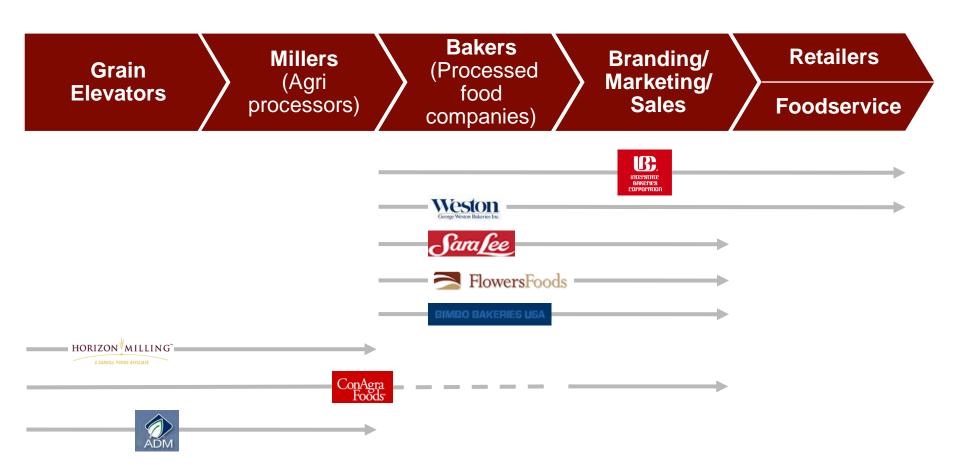
 Client seeks to engage in activities that result in conversion costs (milling margin, freight) that are equal to or less than the prices realized in the previous fiscal year

Assumption was that Client purchases high quality flour that will meet required specifications, be stable and be consistent for its bakeries

## In parallel, we conducted a detailed analysis of the value chain and the key competitors and suppliers

### Flour value chain

Illustrative



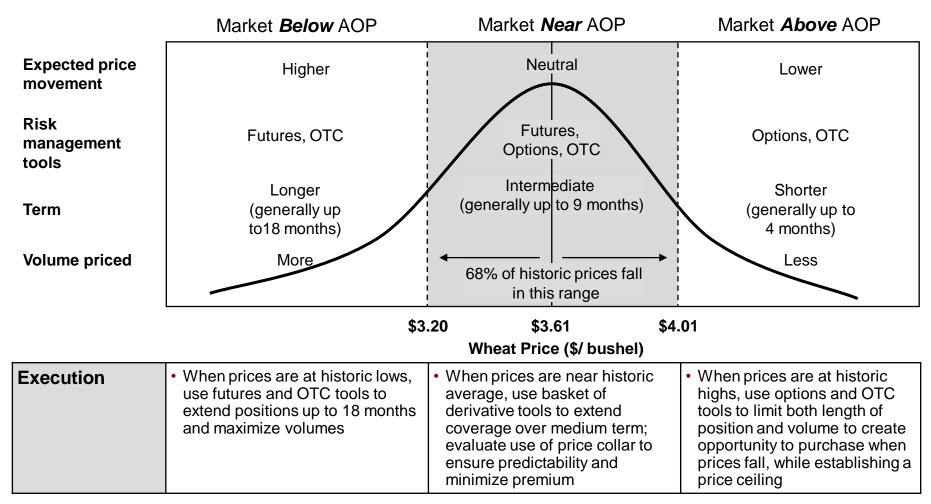
### The next step in the process was to adopt the appropriate purchasing approach for the Client

### **Purchasing approaches**

Client current strategy Recommended strategy

	1. Manage to AOP	2. Manage to Market	3. Blended AOP / Market
Strategy description	"Lock-in" prices for extended periods when market prices are at AOP targets	Follow market prices to ensure competitiveness	Use risk management tools to meet AOP and allow some competitiveness
Process for setting AOP	AOP based on best available futures information	AOP set at 0.5 std. dev above 10 year market average – "upper ceiling"	AOP based on best available futures information and adjusted for risk premiums
Changes to existing strategy	• None	<ul> <li>Buyers are constrained from purchasing more than 3 months unless historical market lows prevail</li> <li>Buyers are rewarded based on performance relative to market (not to AOP)</li> <li>If actual prices approach upper ceiling, commodity manager works with business units to determine use of risk management tools</li> </ul>	<ul> <li>Active participation by key suppliers during AOP target setting process</li> <li>Broader use of risk management tools (e.g., options)</li> <li>Consider extending or "locking in" positions over an 18-month period using a combination of futures, options and OTC tools</li> </ul>
Benefits	<ul> <li>Strong possibility that AOP will be protected</li> <li>High price predictability over 12-18 months</li> </ul>	<ul> <li>Actual prices are likely to be competitive and in-sync with the market</li> <li>Buyers must more closely monitor markets</li> </ul>	<ul> <li>Strong possibility that AOP will be protected</li> <li>Some degree of market competitiveness</li> </ul>
Issues / Risks	High probability that prices will be uncompetitive with market	<ul> <li>Higher AOP may result in unacceptable finished goods prices</li> <li>If market prices are significantly above 10-year average prices (and thereby above AOP), the company may not be able to protect AOP</li> <li>Requires significant cultural change</li> </ul>	<ul> <li>Premiums are likely to be priced into the AOP</li> <li>Actual prices paid are likely to be out-of-sync with the market</li> <li>Difficult to measure and reward buyers based on performance relative to actual market prices</li> </ul>
Execution difficulty	• Easy	Difficult	• Medium

### Clear guidelines on risk management needed to be determined ahead of time ...



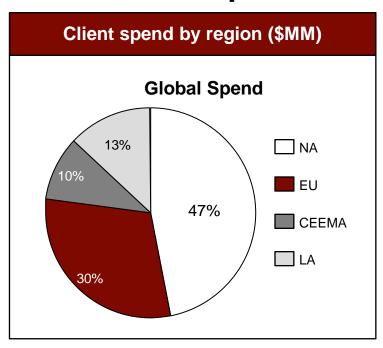
### ... to ensure the proper usage of the large range of risk management tools

	Forwards	Futures	Options	OTC tools
Description	A contract committing the user to buying or selling an asset at a specific price on a specific date in the future	A forward contract that is traded on an exchange	A contract that gives its holder the right but not the obligation to buy or sell a particular asset at a specified price on or before a given date	Over-the-Counter tools are non-exchange traded
Advantages	Guarantees against price fluctuations	<ul> <li>Standardized quality, quantity and delivery time, parties need only agree on price and number of contracts</li> <li>Lock in purchase price without committing to a specific supplier</li> <li>Performance of futures contract guaranteed by clearing house</li> </ul>	<ul> <li>Lock in purchase price without committing to a specific supplier</li> <li>Known cost up front; risk limited to premium paid (and basis)</li> <li>No further action required, but may be offset or exercised if advantageous</li> </ul>	Highly flexible and can be tailored to any commodity     Can be imbedded into the physical product
Disadvantages	<ul> <li>Counter party risk</li> <li>Privately negotiated and are not standardized</li> <li>Lack of liquidity – potentially higher transaction and entry/exit costs</li> <li>Must perform on contract or offset</li> </ul>	<ul> <li>Margin account required; subject to margin calls</li> <li>Must perform on contract or offset</li> <li>Can't benefit from lower market prices</li> </ul>	<ul> <li>Required to pay option premium up front</li> <li>Will lose option premium if options expire out-of-themoney</li> </ul>	Not standardized and not traded on organized exchanges – requires 3 <sup>rd</sup> party dealer

### Managing the risks – examples

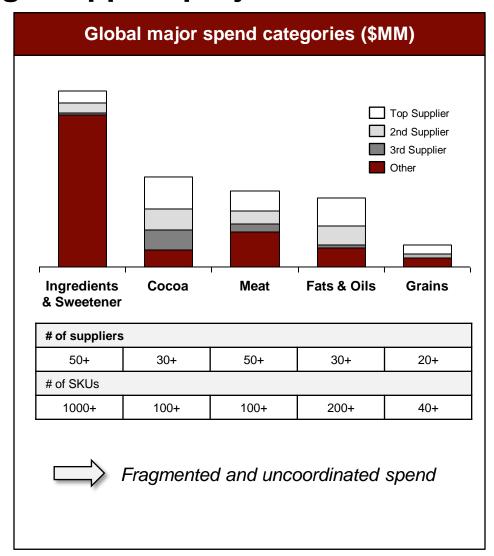
- Wheat and Flour
- Mega-Supplier Approach
- Stages of Excellence

## For a CPG client, we addressed one third of their commodities spend in a mega-supplier project



### **Supplier Market Mechanism**

- On average across categories, conversion cost represented approximately 20% of total cost
- Underlying commodity typically managed on the financial market, disconnected from the supplier/processor



## Client's relationships with commodity suppliers were largely tactical and local

### **Commodity conversion sourcing practices**

### **Client sourcing practices**

- Competitive, bidding-focused environment
  - Distribute spend to create maximum competition among supplier base
  - Shorter-term contracts with limited scope
- Local, regional execution
  - More than 30 buyers negotiating contracts with largest supplier individually
  - No supplier had more than 35% share of any category
- Cost rather than value focus
  - Limited integration with R&D
  - Metrics not incentivizing long term value creation

### **Implications**

- Underleveraged spend globally
- Reduced access to supplier driven innovation and productivity projects
- Proliferation of specifications
- Resources mostly allocated to highly tactical activities
- Increased complexity of interfaces
- Reduced internal R&D leverage

### The mega-supplier strategy was intended to transform supplier relationships into global strategic partnerships

### Mega Supplier strategy

#### Leverage Client's scale

- Go to market with superior value proposition for mutual benefit for Client and supplier (consolidate spend to fewer suppliers, holistically optimize spend mix)
- Global negotiations
- Ensure preferred customer status

### Restructure relationships

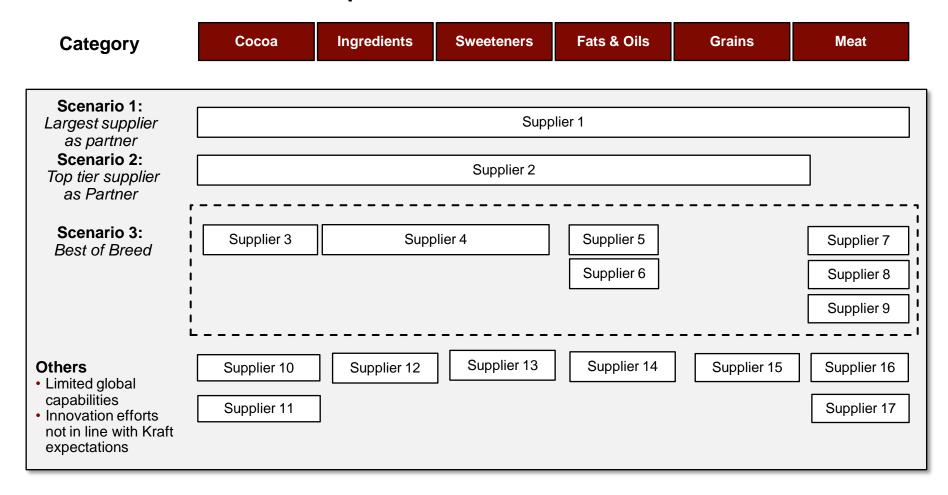
- Establish "one global voice" on both sides
- Longer term contracts
- Establish complete cost transparency

### **Build platform for** future growth

- Create a win-win mentality by incentivizing and managing joint value creation
  - Innovation programs
  - Productivity improvement projects

## Three key scenarios emerged including both category specialist and cross-category generalists

### Global market structure and possible scenarios



## Based on a total assessment of all proposals the team recommended Best of Breed as the way forward

Ranking of scenarios

(Based on current offers)





Desirability

### Top tier supplier as partner

#### Financial benefit

Negative impact on cost position

#### Innovation capability

 Falls short in comparison with others

#### Relationship structure

 Voiced preference to maintain tactical relationship with Client

### Largest supplier as partner

#### Financial benefit

- ~1% up-front payment
- ~1% cost step-down

#### Innovation capability

 Supplier vision of onestop-shop (technology integrator)

#### Relationship structure

 Process revealed inability to act as one company

### **Best of Breed**

Recommended

scenario

#### Financial benefit

- ~3% cash impact
- 3%+ cost step-down

### Innovation capability

- Clear market leaders in respective categories
- Preferred choice of R&D

#### Relationship structure

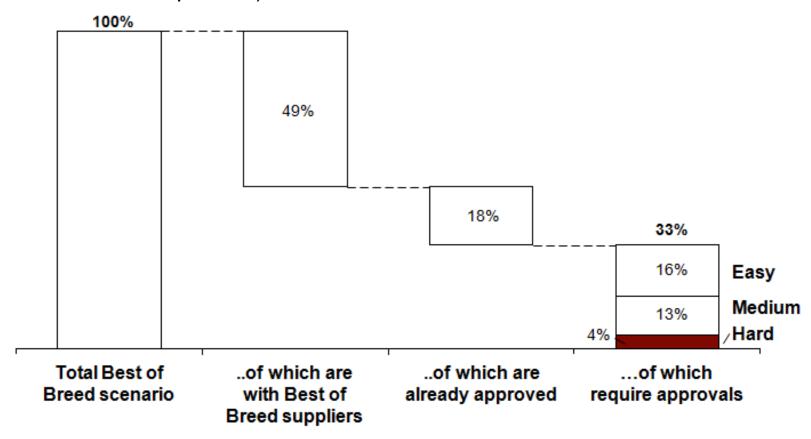
 Able to provide strategic, category specific relationships with joint innovation programs



### Risks were manageable as volumes considered "hard to approve" accounted for only 4% of spend

Best of Breed assessment of approval complexity(1)

(volumes in million of pounds)



(1) Based on SKU level assessment of about 30% of volumes to be approved Source: Client R&D, A.T. Kearney analysis

## This approach resulted in 10-15% savings of addressed conversion

#### Results

- Addressed several billion in spend in a single go-to-market effort
  - 75% underlying commodity
  - 25% conversion cost
- Significantly consolidated supplier base offering a 3X growth for selected suppliers
- Achieved about 10-15% cost reduction on conversion cost (~3-5% on total spend including underlier)
  - Significant upfront payments
  - Remaining savings as price reduction
- Long term agreements established
  - Preferred customer status
  - Joint innovation structures in place
- Populated pipeline of joint productivity improvement projects

### Managing the risks – examples

- Wheat and Flour
- Mega-Supplier Approach
- Stages of Excellence

# Evaluate current risk management program against leading practices for each Procurement Area (Packaging, Ingredients, Indirect)

Risk management stages of excellence

Group	Element	Leading practice	DPSG Current risk management program		Level			
Group	Liement	(Level IV)			П	Ш	IV	
ategy & Org. alignment	Strategy / Policy	<ul> <li>Clear, company-wide positions on risk tolerance and processes are communicated and effectively embedded within the corporate culture</li> </ul>						
	Resources	<ul> <li>A skilled and fully dedicated set of individuals are responsible for running the Risk Management program. Stakeholders throughout the organization provide input and assistance on an on-going basis</li> </ul>						
	Incentives & performance metrics	<ul> <li>Risk Management metrics are incorporated into corporate, business, and employee performance goals and a portion of individual compensation is tied to reaching RM goals</li> </ul>						
	Governance & decision rights	<ul> <li>The Board is actively involved in the management of risks</li> <li>One individual is accountable for corporate Risk Management (i.e., CRO or equivalent). Decision rights are clearly defined for each type of risk including supply chain</li> </ul>						
Core processes	Enterprise risk management	<ul> <li>Risk types are assessed and prioritized at the corporate level, with resources allocated to the risks with the greatest exposure</li> <li>Cross-risk analysis is performed at the enterprise level</li> </ul>						
	Individual risk planning	<ul> <li>A rigorous, well-documented planning framework consisting of leading indicators is followed throughout the company and its functions</li> </ul>						
	Tracking & reporting	<ul> <li>Standardized, timely reporting of risk exposure and management strategies</li> </ul>						
<u></u>	IT systems	IT systems are leveraged to support efficient/timely updates						
	Instruments	<ul> <li>Templates, surveys and other information tools are leveraged to facilitate Risk Management process</li> </ul>						
Key el	Culture & Training	<ul> <li>Risk management training (e.g. policy, process, tools) is routinely provided to internal and external stakeholders</li> </ul>						

### **Assessing and Mitigating the Supply Risks**

Presentation to ISM Hispanic Supply Management Summit

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