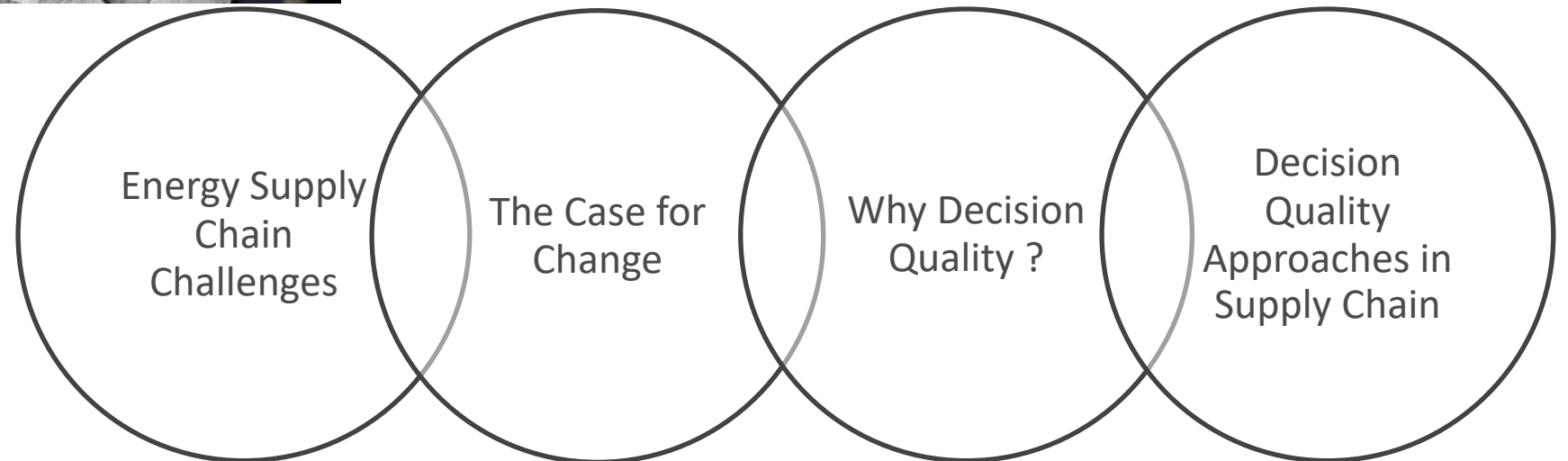# Why decision quality is critical for resilient, sustainable, and future-ready energy supply chains.

SDP Conference : Virginia USA

Srividhya Vaidyanathan: SDP Member Houston Chapter
Shell

Overview

Energy Supply Chain Challenges

The Case for Change

Why Decision Quality ?

Decision Quality Approaches in Supply Chain
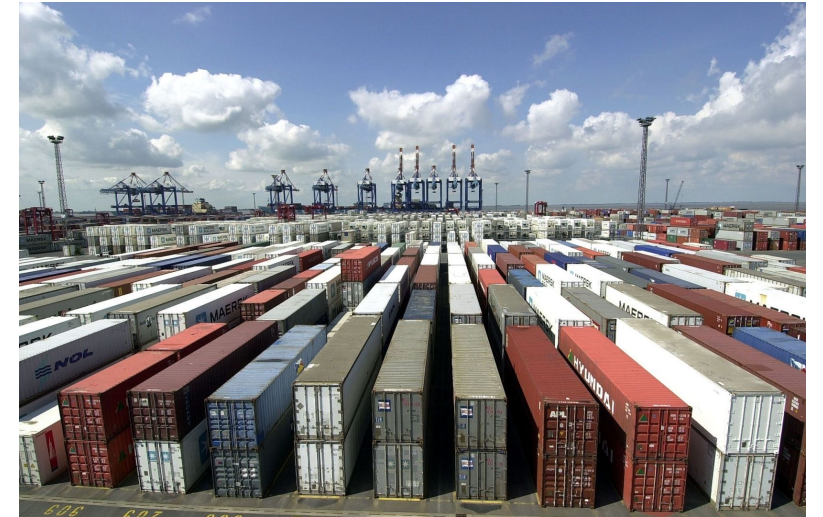
We live in interesting times……..

May You Live In Interesting Times

A Chinese Curse

Fragility in energy supply chains

100-year events are happening every year………….

Red Sea

#pandemic

MIRAFLORES LOCKS
PANAMA CANAL

The World of Risk Interconnections and Dependencies in Energy Supply Chains
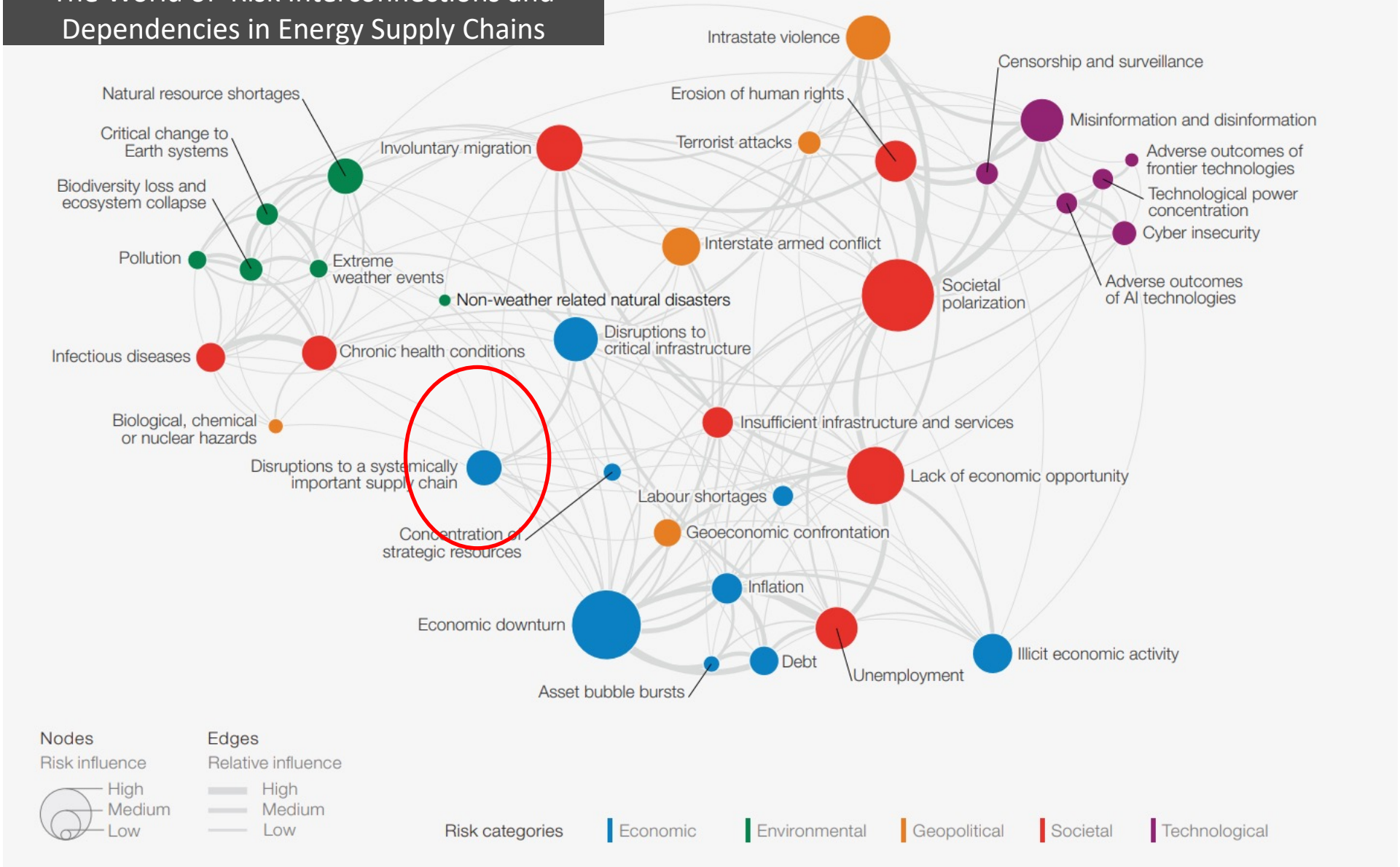
Source: World Economic Forum

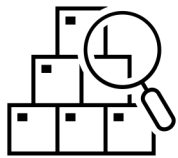# Laser focus on costs alone – does it work any more?

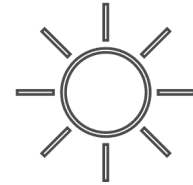Yesterdays answers for todays problems?

A Paradigm shift ?

- Vulnerability to disruptions
- Accepting hidden costs
- Sustainable Choices Vs Lowest Cost?
- Supply Chain Concentration – Sole focus on low-cost sourcing
- Lack of organizational preparedness

Business impacts of poor decision making in supply chains

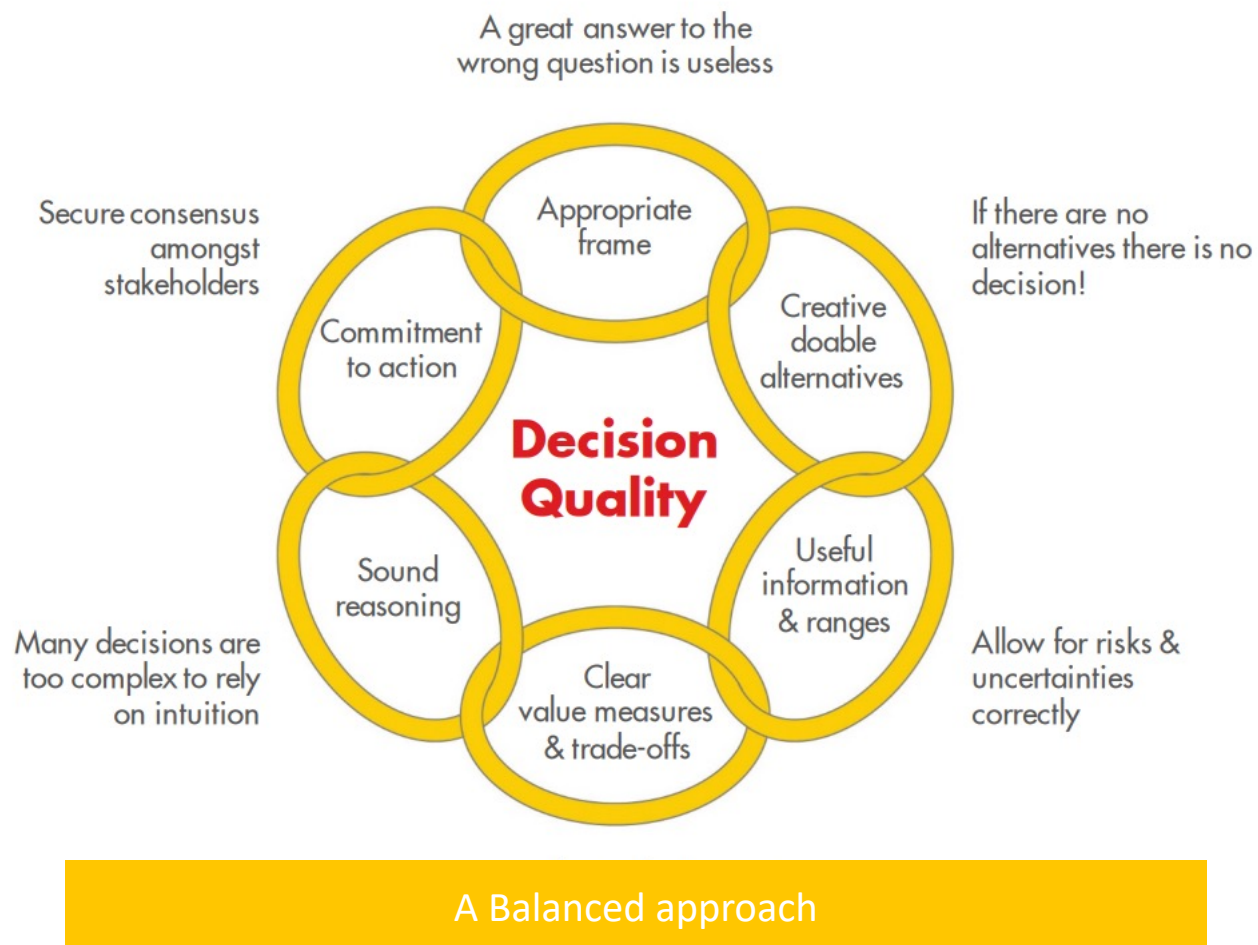Poor forecast accuracy

High inventory

Stock outs and back orders

Long lead times, capital project schedule impacts

Obsolescence, write offs

There is a better way – Decision Quality in Energy Supply Chains

A great answer to the wrong question is useless

Secure consensus amongst stakeholders

If there are no alternatives there is no decision!

Appropriate frame

Commitment to action

Creative doable alternatives

Decision Quality

Sound reasoning

Useful information & ranges

Many decisions are too complex to rely on intuition

Clear value measures & trade-offs

Allow for risks & uncertainties correctly

A Balanced approach

An appropriate frame

Quality supply chain decisions start with framing	A decision led approach to supply chain design, some questions beyond cost

- What supply chain actions are required to support the business strategy?
- What do our customers want and when?
- How do we minimize leakages and achieve operational excellence?
- How can sustainability become a profit driver vs a cost driver?
- What is the right inventory strategy to meet service levels?

Create alternatives

MAKE OR BUY ?

Location of supply network

No alternatives = No decision
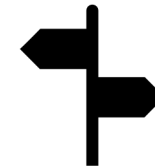
ISSUE	JUST IN CASE	JUST IN TIME
Main Objective	Maximum Efficiency	Maximum Efficiency
Stocks	Integral part of system	Wasteful: to be eliminated
Lead Times	Taken as given and incorporated in planning routines	Reduced to render small batches, economical
Batch Size	Taken as given and economic order quantity is calculated	Lot size of one is the target because of flexible system
Production	Various means – MRP (Manufacturing Resources Planning) models	Centralized forecasts
Planning & Control	Existing system and optimizes within it. Information 'pull' for hot orders	In conjunction with local pull control
Trigger to Production	Algorithmically derived schedules. Hot lists. Maintenance of sub-unit efficiencies.	Imminent needs of down-stream unit via Kanban cards
Quality	Acceptable quality levels. Emphasis on error detection	Zero defects. Error prevention
Performance Focus	Sub-unit efficiency	System/organization efficiency
Organizational Design	Input-based; functional	Output-based, strategic
Suppliers	Multiple, distant, independent	Single or dual sourcing. Supplier is extension of production

Is there an AI for that? Digital first alternatives

Alternatives are critically important for energy supply chains to build resilience.

Energy security and supply chains, Value of Information – DOE Example

- The creation of the Council on Supply Chain Resilience

- New cross-governmental supply chain data-sharing capabilities

- Building broad partnerships across government, industry, and academia, including collaborating with the Department of Energy (DOE) to conduct deep-dive analyses on clean energy supply.

- The Department of Transportation's (DOT) Freight Logistics Optimization Works ("FLOW") program is a public-private partnership.
  - FLOW brings together U.S. supply chain stakeholders to create a shared, common picture of supply chain networks.
  - The goal of FLOW is to facilitate a more reliable flow of goods.
  - DOT is announcing a new milestone for FLOW, where participants are beginning to utilize FLOW data to inform their logistics decision making.
  - This utilization of data is helping to avoid bottlenecks, shorten lead times for customers, and enable a more resilient and globally competitive freight network.
  - It also provides earlier warnings of supply chain disruption.

Become aware of biases and using decision quality helps in making sustainable choices in energy supply chains

Common Biases

- **Short-term bias:** Focus on immediate gains, overlooking long-term sustainability benefits.

- **Status quo bias**: Resistance to change existing, non-sustainable processes.

- **Confirmation bias:** Favoring information that confirms existing beliefs about sustainability (e.g. Sustainable choices are expensive)

- **Overconfidence bias:** Overestimating ability to manage sustainability issues.

- **Availability bias**: Basing decisions on readily available information, rather than seeking all relevant sustainability information.

Overcoming Biases with Decision Quality

- Data-driven decisions: Use accurate, real-time data for objective decision-making.

- **Scenario analysis: Understand potential long-term impacts of decisions.**

- Benchmarking: Learn about best practices in sustainability.

- Risk analysis: Identify potential risks associated with different decisions.

- Comprehensive information: Provide a wide range of information about sustainability.

# Scenario thinking for robust supply chain strategy development

You cannot predict exactly what will happen, but you can prepare for a range of possible outcomes

- Why Scenario Thinking?

- Decision led approach

  - Risk Mitigation: Identify a range potential supply chain risks, uncertainties

  - Strategic Decision Making: It enables decisions that are both robust and flexible, that could work in many future worlds

  - Sustainability: Anticipate changes in regulatory, environmental, and social factors, guiding sustainable strategies.

  - Improve Resilience : **Move from prediction to preparedness!**
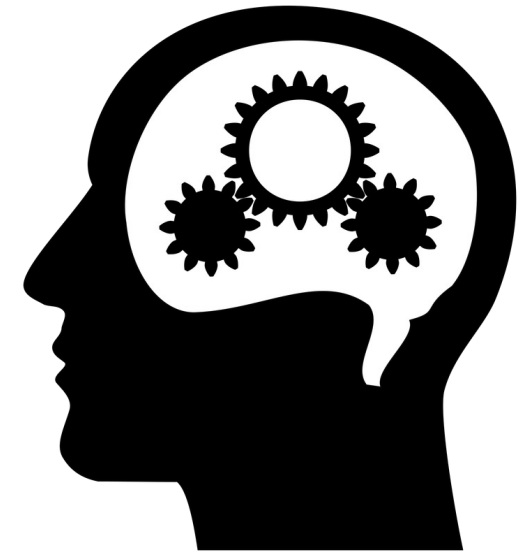
Shout out to visit the poster booth for a case study on scenario thinking for supply chain strategy!

Value measures and trade offs – Seeking value beyond cost
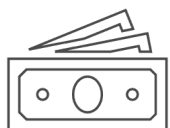
Revenue, EBDITA uplift from meeting demands

Improved Customer Satisfaction

Inventory Reduction

Agility- Flex to capture upside, Resilience

Reduced Carbon footprint

- **Managing Volatility:** Energy markets are subject to significant volatility. This approach not only helps manage risk and create opportunities for revenue generation.

- **Advancing Sustainability:** There is increasing pressure on the energy sector to reduce emissions and balance trade-offs in complex global supply chains

- **Building Resilience:** Building resilience in the supply chain promotes flexibility while controlling costs and managing risks. This involves developing capabilities to adapt to changing circumstances, such as supply chain disruptions or shifts in market demand.

- These strategies are mutually reinforcing and can generate significant value for energy companies. For example, managing volatility can generate revenues to fund initiatives that promote sustainability.

Supply chain decision intelligence with AI

•**Proactive Decision-Making**: Leveraging AI for predictive analytics enables anticipation of future outcomes.

•**Enhanced Resilience**: AI aids in foreseeing and managing potential supply chain disruptions.

•**Optimized Processes**: Intelligent automation powered by AI eliminates inefficiencies, streamlining the supply chain.

•**Informed Planning**: AI provides valuable insights and recommendations, bolstering decision-making and strategic planning.

•**Promoting Sustainability**: AI assists in balancing complex global supply chain trade-offs, fostering sustainability.

•**Safety and Maintenance:** AI enhances safety by assessing the likelihood of accidents and optimizes asset maintenance by identifying patterns in vast amounts of data1.

Company name appears here

Date appears here