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# Scanning the Horizon: S&T and Foresight

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Canada

# There is increasing intensity, variability & frequency of change...

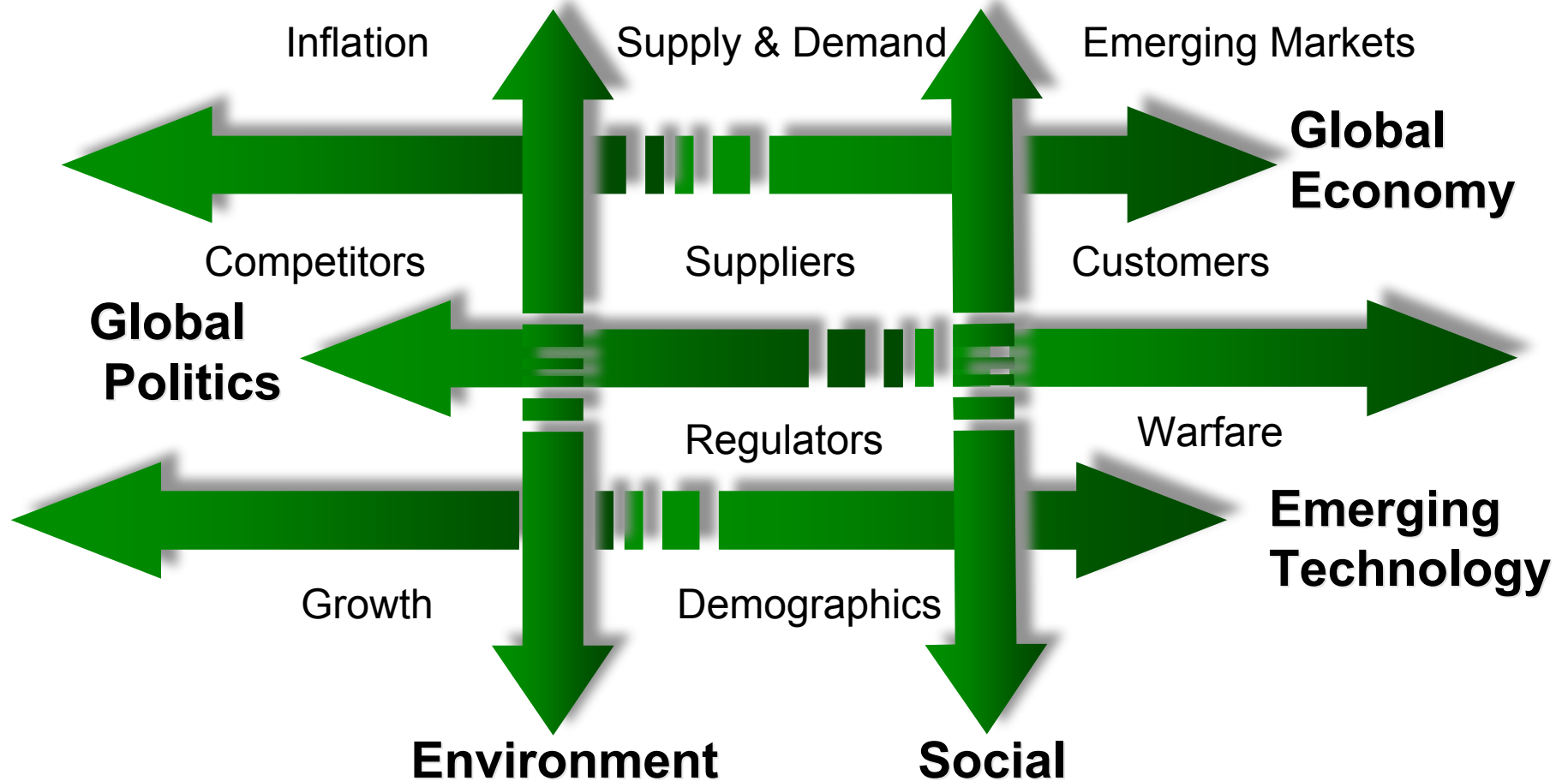
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- **Competitiveness and productivity**
- **Climate change – mitigation and adaptation**
- **Energy – renewable sources**
- **Water – quality, quantity, availability**
- **Global Food Safety & Security**
- **Pace & Nature of Technological change**
- **Health & wellness – animals, plants, people**
- **Demographics – rising global population**



... and they are more and more interrelated

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# Approaches to decision-making in the face of uncertainty

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## The future will be the same as the recent past

- We know the challenges and opportunities
- We know what works and what doesn't
- Keep doing what we've been doing – and hope for different outcomes

## The future will follow the trend over the past “x” years

- We know the key drivers and how they influence future challenges and opportunities
- We know the expected variability around the trends and can establish probabilities of future outcomes
- We can effectively manage the risks



# The future is unknown

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- New drivers are emerging
- Increasing variability
- Greater uncertainty
- Multiple future possibilities
  - **BUT** we can *anticipate* the possibilities
  - **AND** we can *influence* the outcomes



# **Foresight is a systematic approach to planning for/under uncertainty**

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*“Foresight is neither prophecy nor predictions, but invites us to consider the future as something that we can create or build rather than as something already decided.*

*Foresight assumes that there are numerous possible futures, any of which can be created through the actions we choose to take today.*

*Foresight is not only understanding the system and looking into the future, it is also a collective learning process with a view to long-term strategic decision making.”*

**Marie de Lattre-Gasquet**

# Foresight is about current decision-making...

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**“... Strategic planning does not deal with future decisions, but with the futurity of present decisions”.**

*Peter Drucker*

**“The phonograph is of no commercial value”  
- Thomas Edison, 1880**

**“There is no reason for any individual to have a computer in their home.” - Ken Olsen, President of DEC, 1977**

**“Anyone who thinks the ANC is going to run South Africa is living in cloud cuckoo land.” - Margaret Thatcher, 1987**

# ... and uncertainty and complexity drive the need for complex adaptive management

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“The only relevant discussions about the future are shifting the question from whether something **WILL** happen to what we would do **IF** it did happen.”

*Arie de Geus*

## *Who would have guessed that...*

- Nokia would be the largest seller of digital cameras?
- The most common uses of the Internet would be porn, viruses & spam – and now VOIP?
- China, not the US, would drive world stock markets?
- “Transfat” and “Omega 3” would be common terms?
- Climate change would spread beetles and cap carbon?



# Complex adaptive management



## PRINCIPLES

- Focus on sector resilience and support systems that enable flexibility in the face of uncertainty
- No one player can address complex challenges and opportunities alone – coordination and collaboration will be critical
- Systems approach will be essential due to complex interactions among various players and drivers

## CHARACTERISTICS

**It's about possibility  
not probability**

**It's multi-disciplinary  
and non-linear**

**It's integrative  
and innovative**

**It's collaborative  
and dynamic**

# Developing strategies requires stakeholder engagement

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- **A well informed dialogue is key:**
  - to sifting relevant knowledge from noise,
  - and to the development of evidence-based science priorities, marketing strategies, and policy options
- **A broad based dialogue on all these issues is essential to understanding trade-offs and making choices**
- **Foresight helps stakeholders develop a shared vision**
- **Ongoing communication is integral to a foresight-based engagement strategy**
- **This common understanding of future challenges and opportunities helps integrate subsequent science priorities, industry strategies and policy options**

# Our foresight process informs science and policy development

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## Stage 1 – Scenario Development

## Stage 2 – Analysis and Implications

- Policy/Market Implications
- Science & Innovation Implications
- Systems Mapping

## Stage 3- Sense Making (Insights)

- Innovative Solution Sets
- Internal/External Assessment

## Stage 4 – Dissemination of Results

# Foresight outcomes

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Activates:  
early-warning  
radar

Engages:  
multiple  
stakeholders

Identifies:  
critical S&T,  
policy,  
markets

Prepares:  
for change

Removes:  
current  
constraints

Co-creates:  
with  
partners



# What we have learned so far

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- We need to move away from policies and programs designed to **solve** specific problems
- We need to move toward policies and programs that **enable** both industry and government to respond flexibly to as yet unknown complex challenges and opportunities
- We need to embrace **a systems approach** to successfully adapt to whatever comes along