



ADVANCING GREENHOUSE GAS VERIFICATION IN CANADA

International Greenhouse Gas Verification

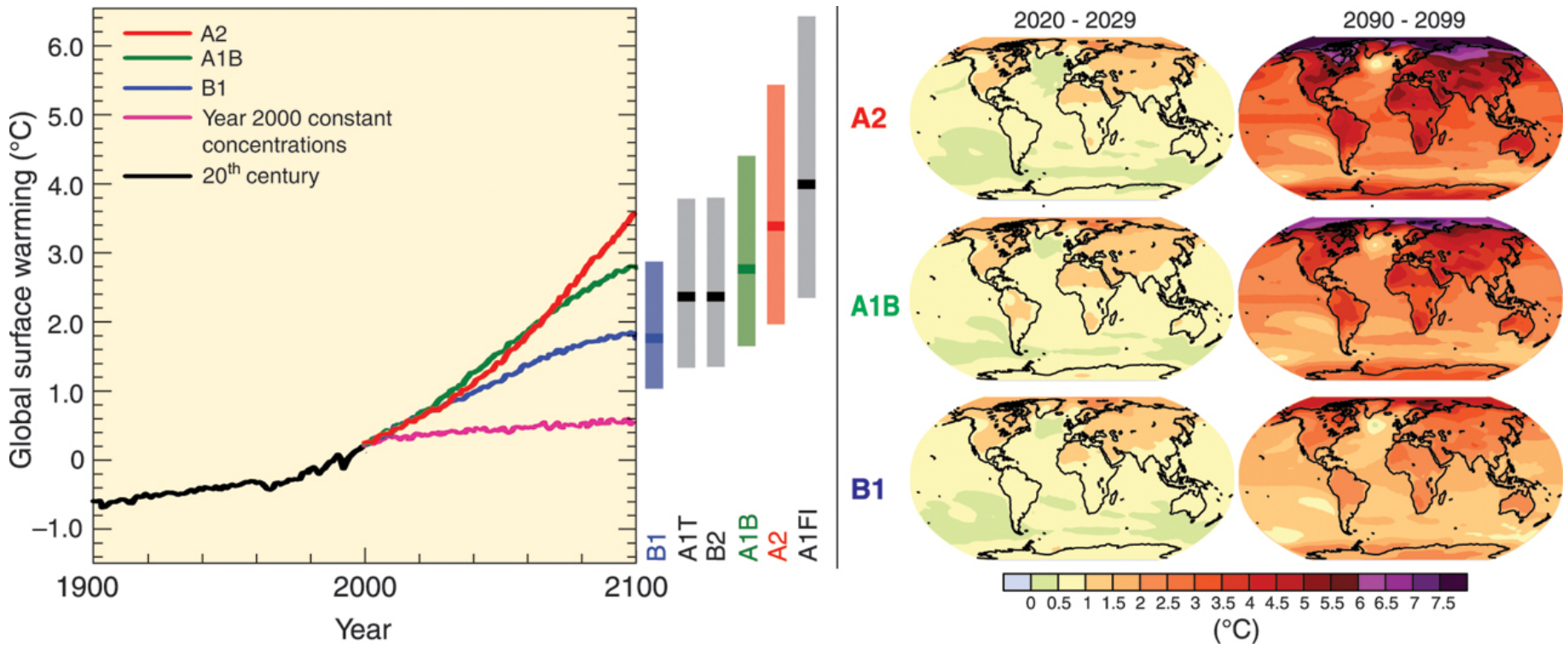
Domestic and International Perspectives

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PRICEWATERHOUSECOOPERS 

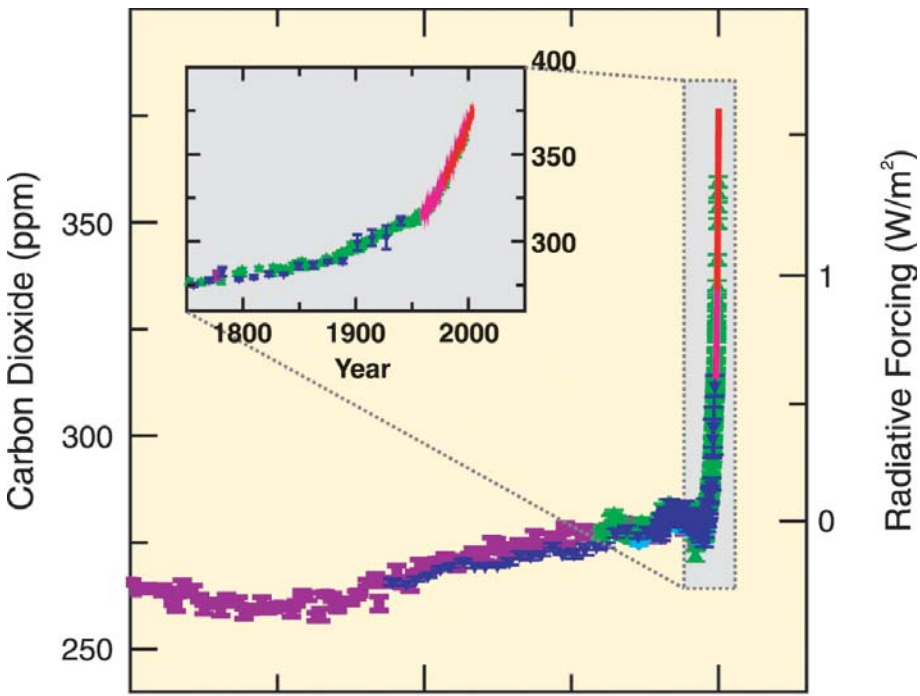
Climate Change is Occurring

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level



IPCC, 2007, Climate Change Synthesis Report, Table 3.2

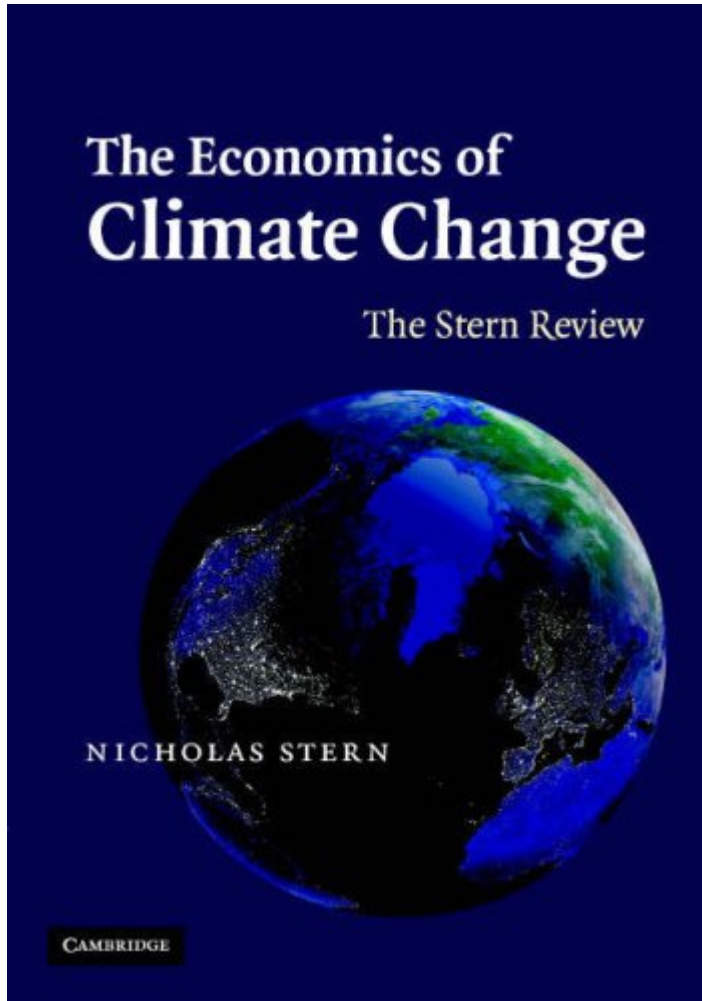
Climate Change is Anthropogenic in Nature



Most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic GHG concentrations.

IPCC, 2007, Climate Change Synthesis Report, Figure 2.3

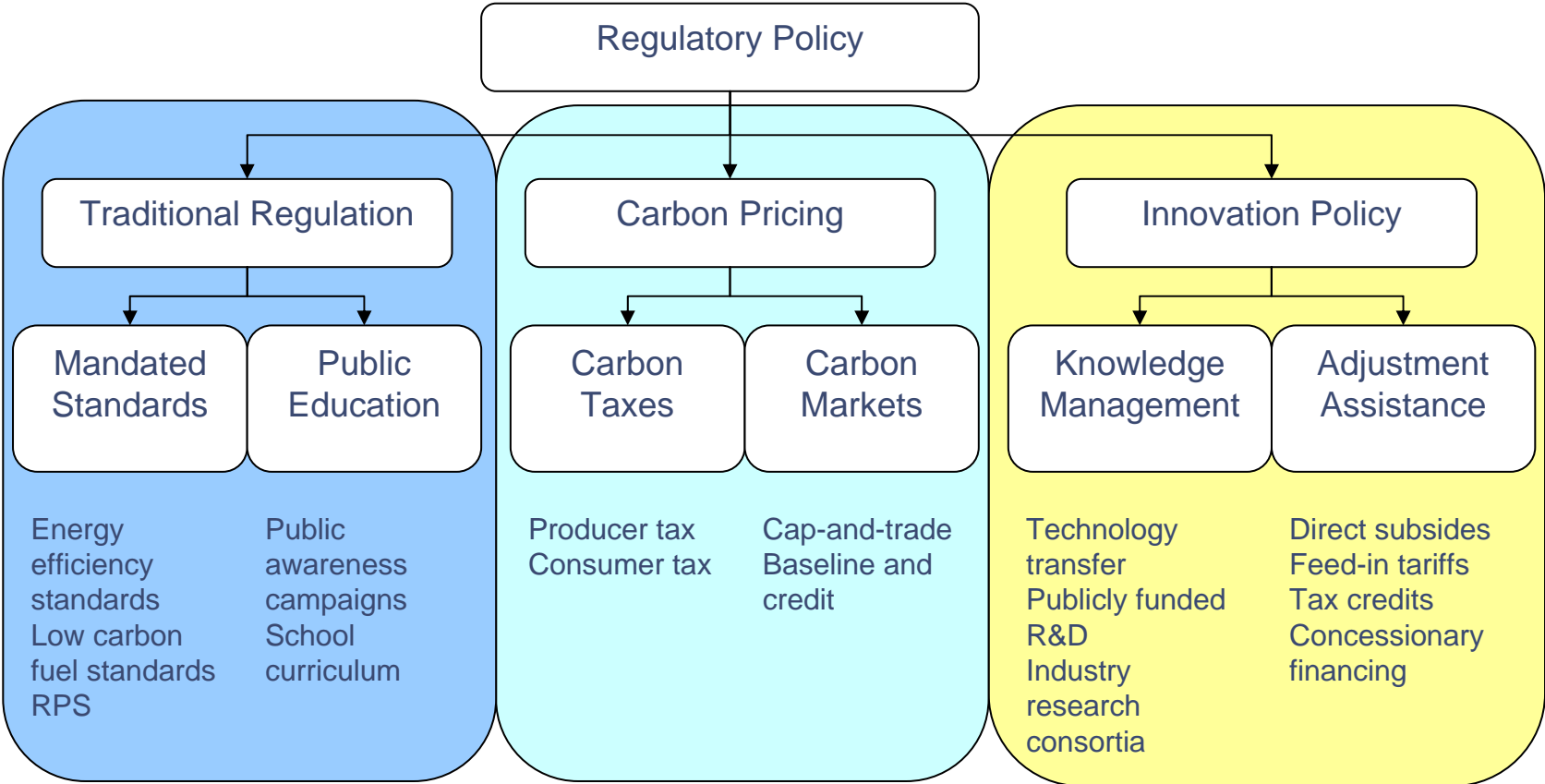
Climate Change is a Market Failure



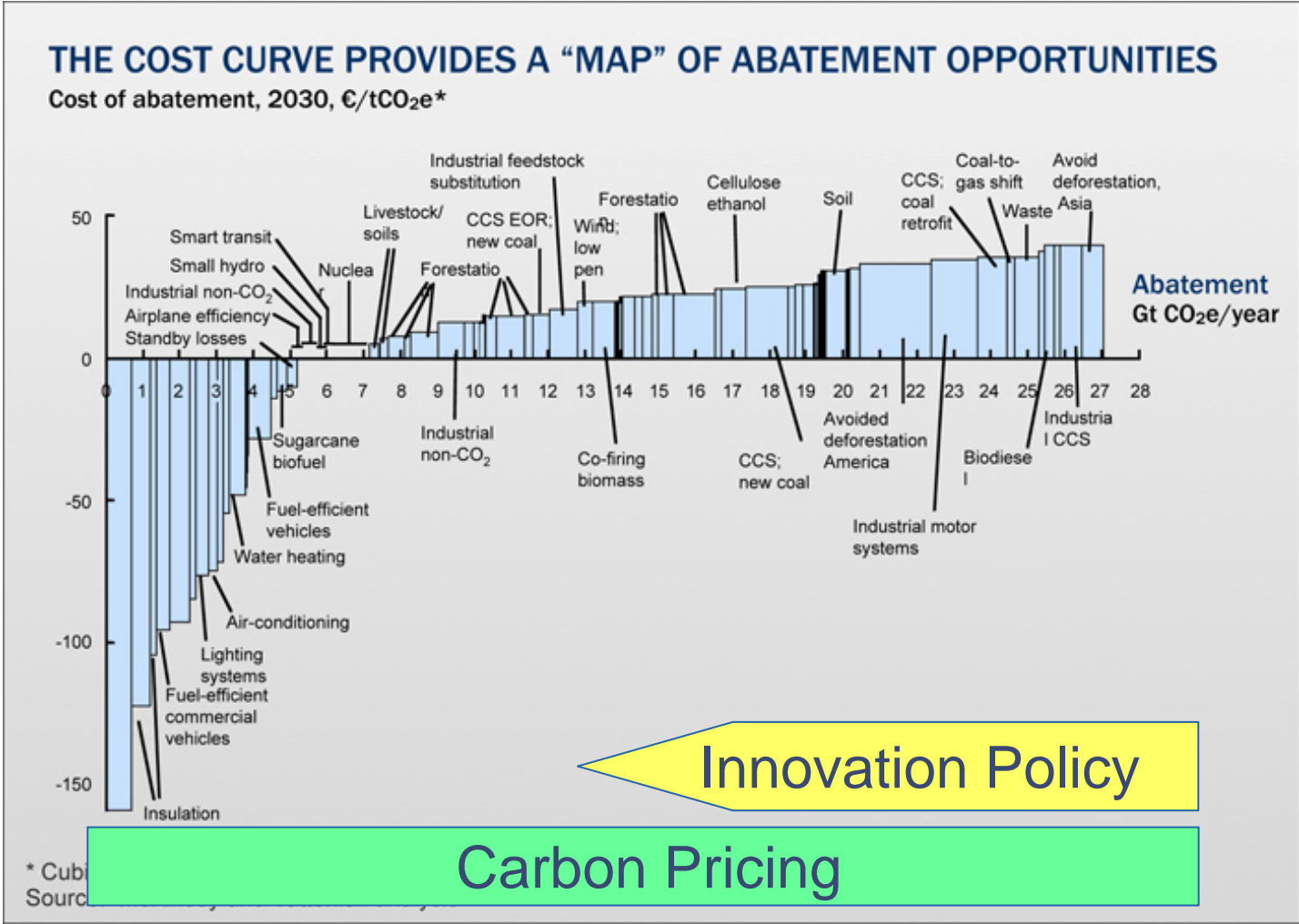
“The problem of climate change involves a fundamental failure of markets: those who damage others by emitting greenhouse gases generally do not pay. Climate change is a result of the greatest market failure the world has seen.”

Nicholas Stern, 2007, Royal Economic Society (RES), public lecture, Manchester

One Method of Addressing a Market Failure is Regulation



Different Regulatory Policy for Different Mitigation



Carbon Markets vs Carbon Tax

Consideration	Carbon Market	Carbon Tax
Environmental Certainty	Sets a cap on emissions and is certain	No cap, no certainty
Price Stability	Less	Greater
Simplicity and Bureaucratic Burden	Greater	Less
International Linking	Possible	Inconsistent
Innovation	Revolutionary depending on price signals	Incremental
Political Acceptance	Greater	Less

Risk and Regulation



Compliance Response

Preconditions for Regulations to Work

- Motivation
- Information
- Knowledge of the law
- Deterrence and threats
- Resources
- Skills
- Efficient management and coordination structures

Preconditions for Markets to Work

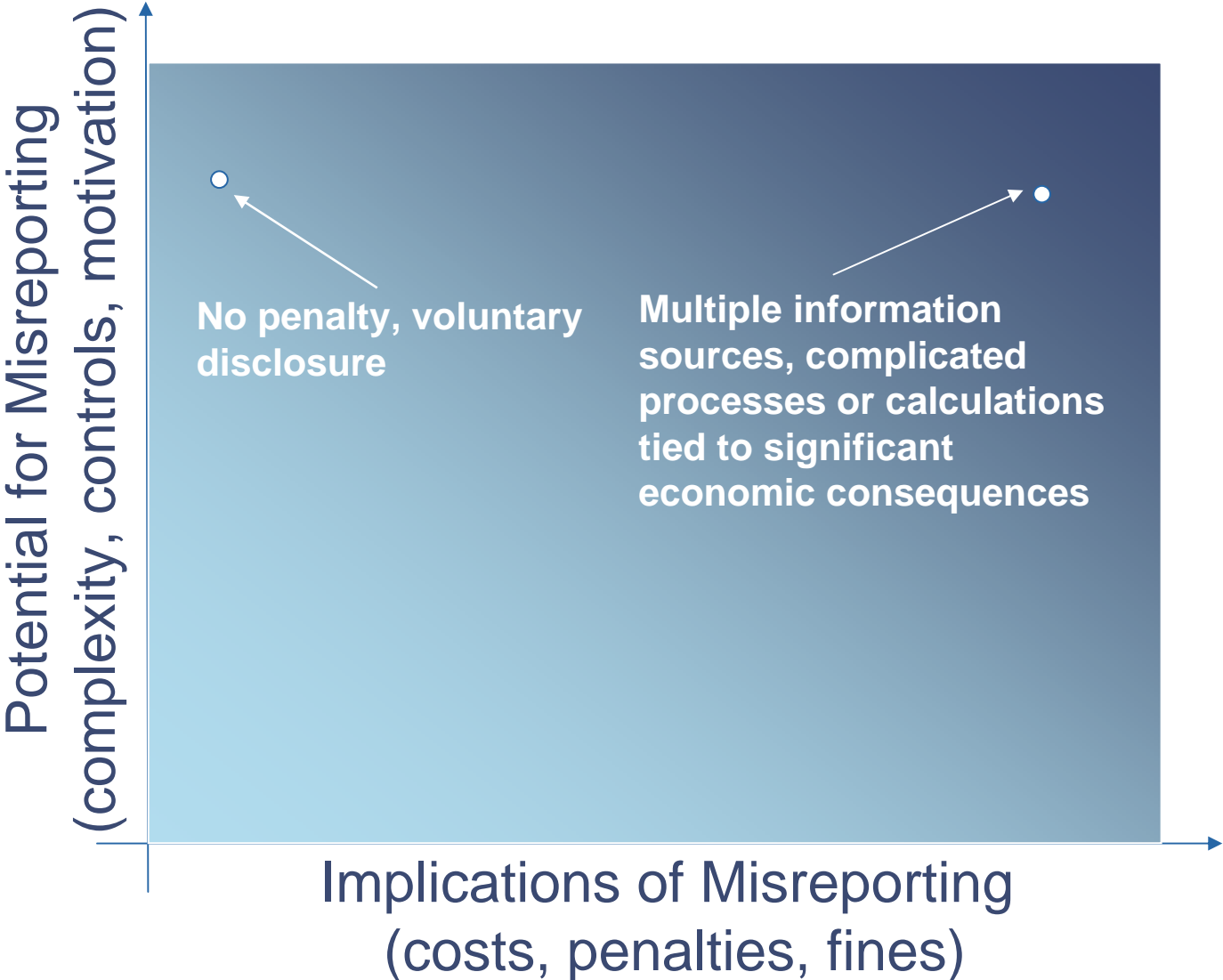
- Homogeneous product;
- Large number of small firms;
- Firms optimize the economics;
- No barriers to entry and exit; and
- Firms and consumers have perfect information.

Risk and Regulation

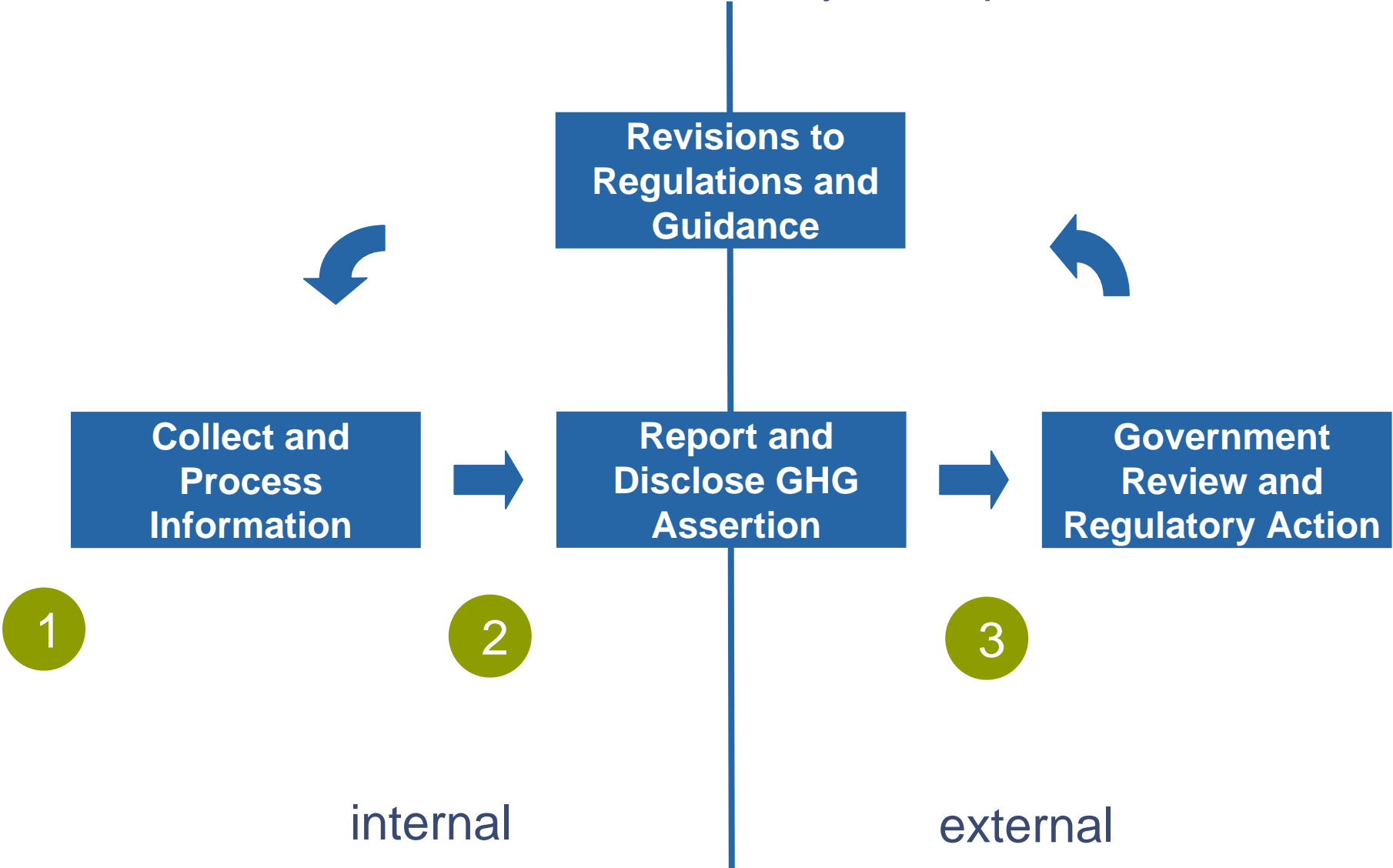


Compliance Response

Evaluation of Misreporting



Where in the Process can Data Quality be Improved



1 Regulatory tools before data collection

Development of legal instruments

Awareness campaigns

Clear concise regulations regarding the reporting requirements

Clear concise regulations regarding the data integrity and systems

Supporting guidance documentation

Development of infrastructure

Hiring of skilled personnel

2 Regulatory tools during data collection

Internal checks

Internal audit

Mandatory sign-offs on data

Mandatory sign-off on controls

Specified procedures and results of tests

Third party audits on data

Third party audits on systems

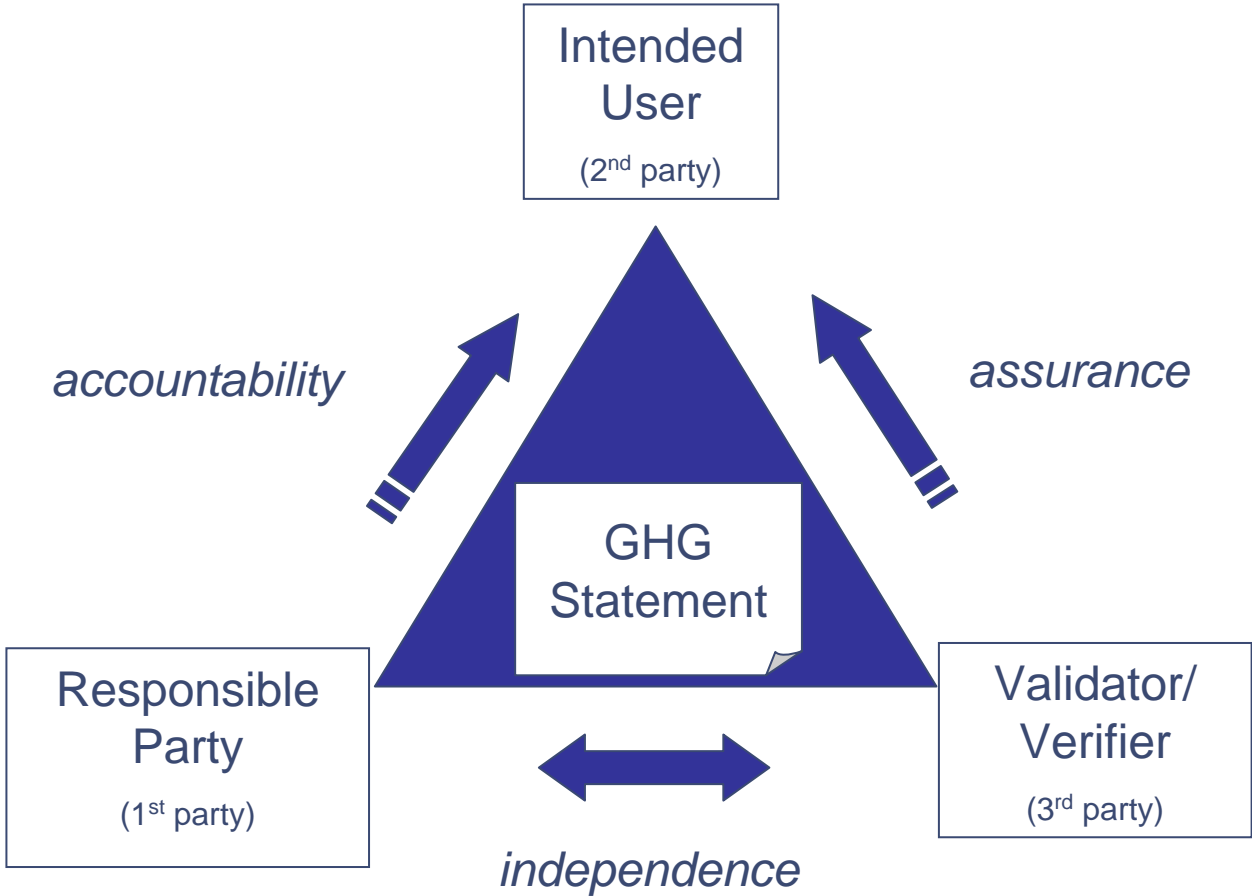
3 Regulatory tools after data reporting

External screening

Second party audits on data

Second party audits on systems

Second vs. Third Party Audits



Comparison of Second and Third Party Audits

Second Party

“Tax Model”

Government implements

Not all reporters are subject to a full audit

Government is not independent or subject to confidentiality clauses

Requires capabilities and capacity within government

Conducted after reporting, legal ramifications if discrepancies are found

Third Party

“Financial Model”

Service provider

All reporters are subject

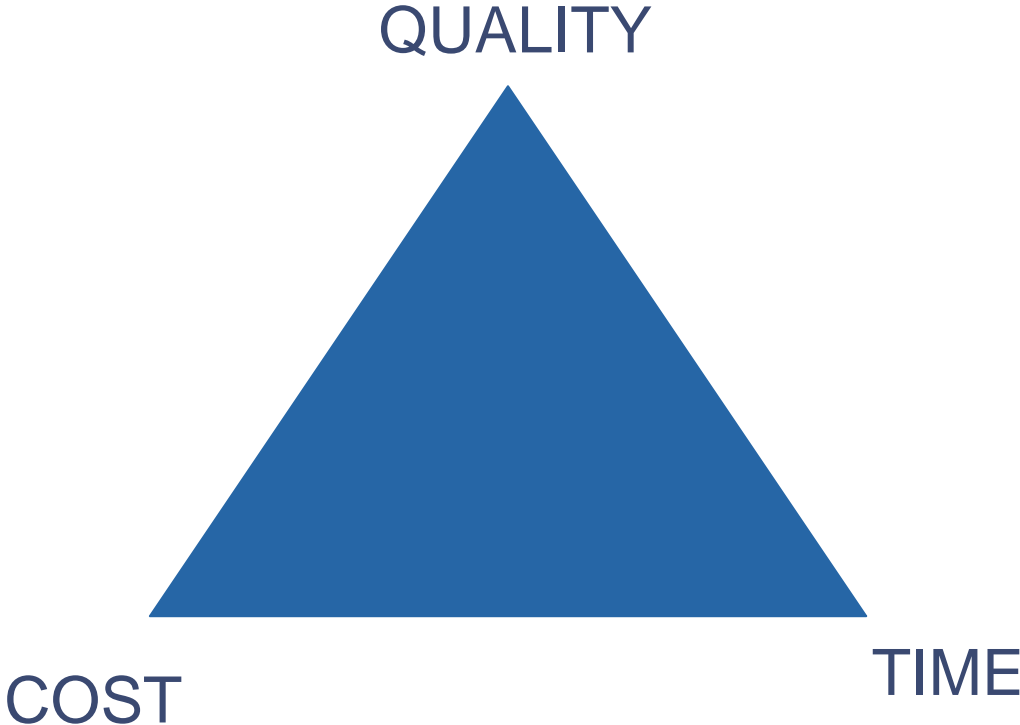
Independent and confidential

Requires correct capabilities

Conducted during reporting so that any major discrepancies are corrected before assertion is made

Continuous improvement model

GHG Verification Management Triangle



Pick Two

Costs of GHG Verification

Scope

Level of Assurance

Complexity of the Regulations

Complexity of the Process, Data Management Systems and Calculations

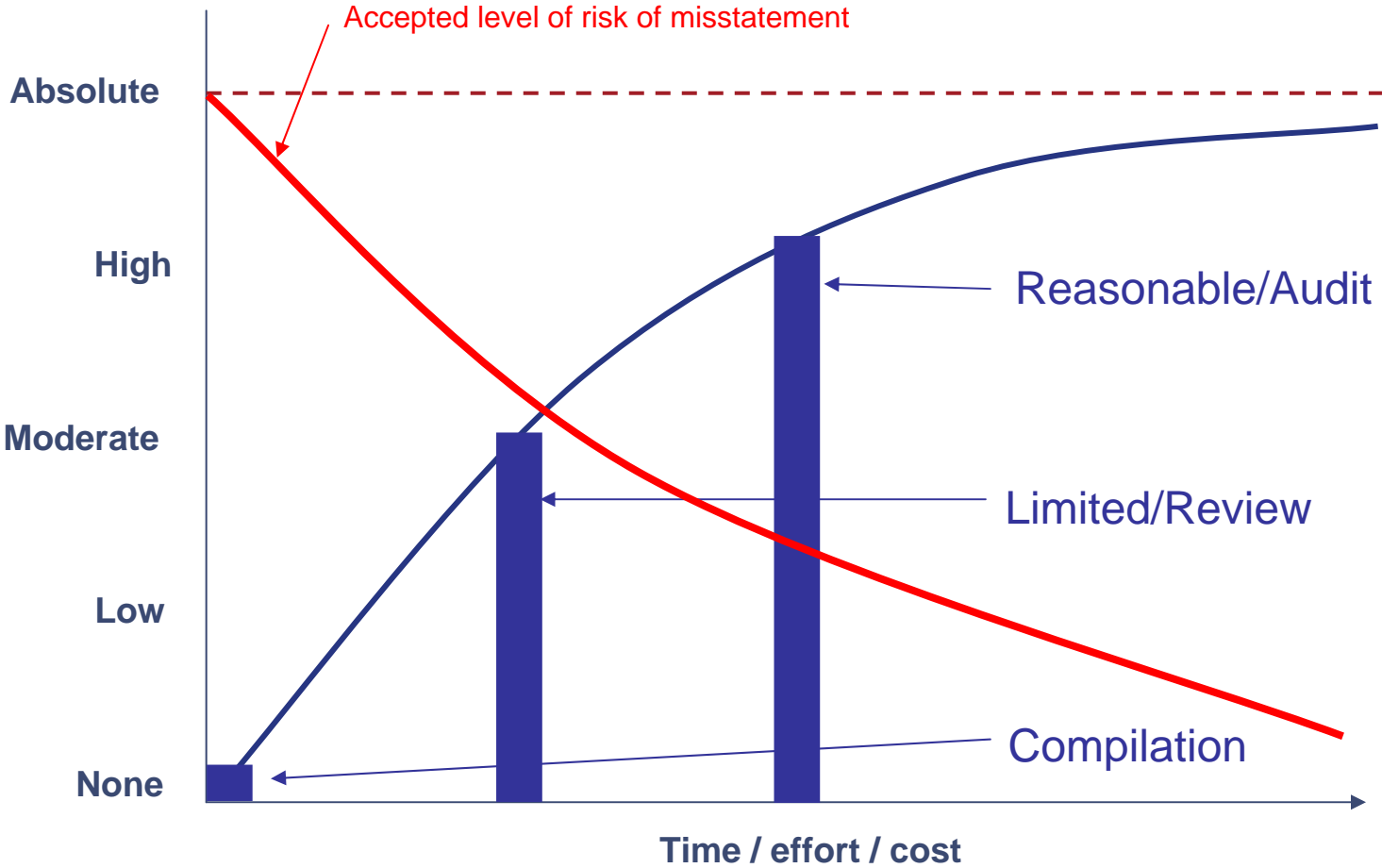
Availability of Evidence

Complexity of Reporting Requirements

Data Controls

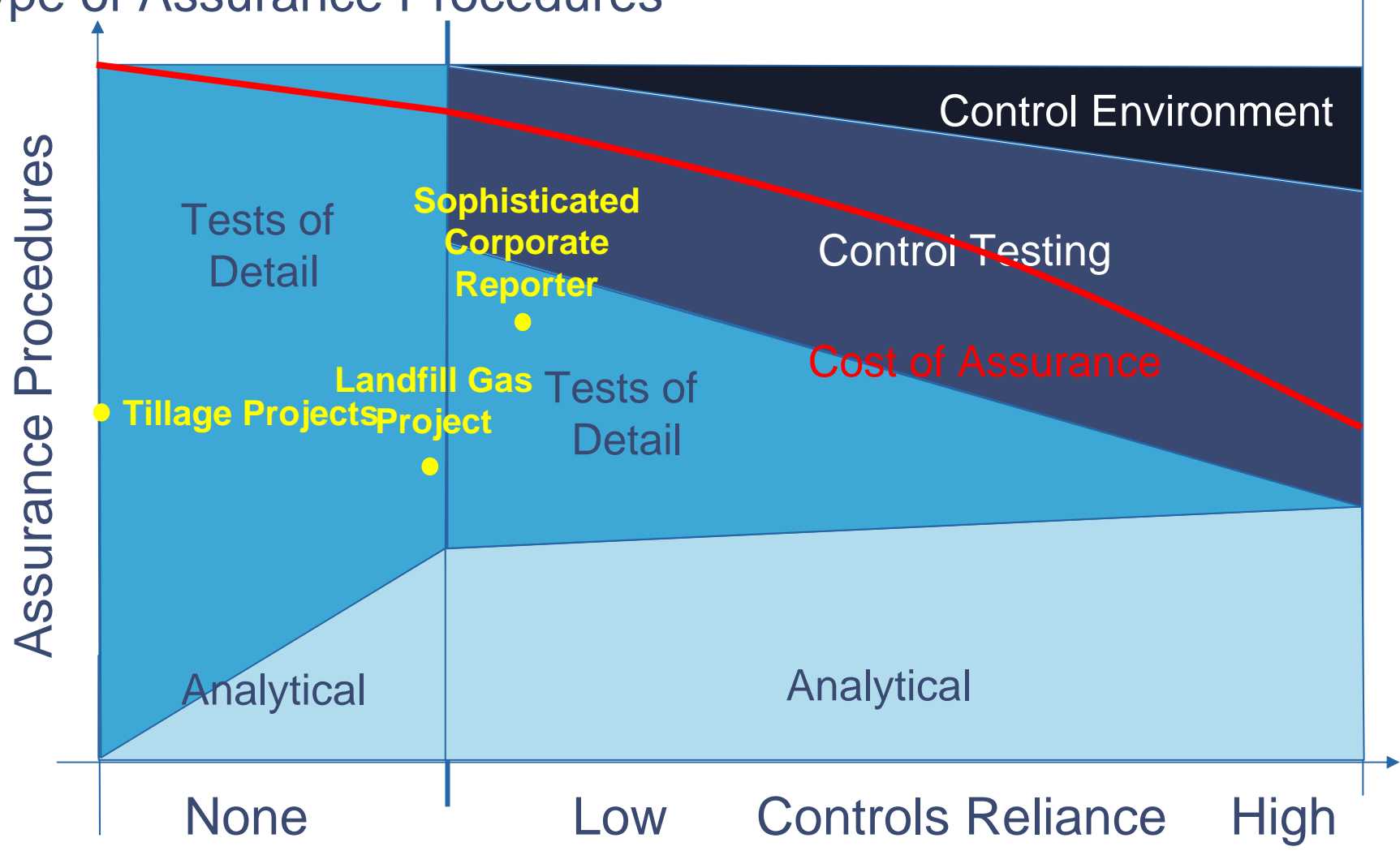
Costs of GHG Verification

Level of Assurance



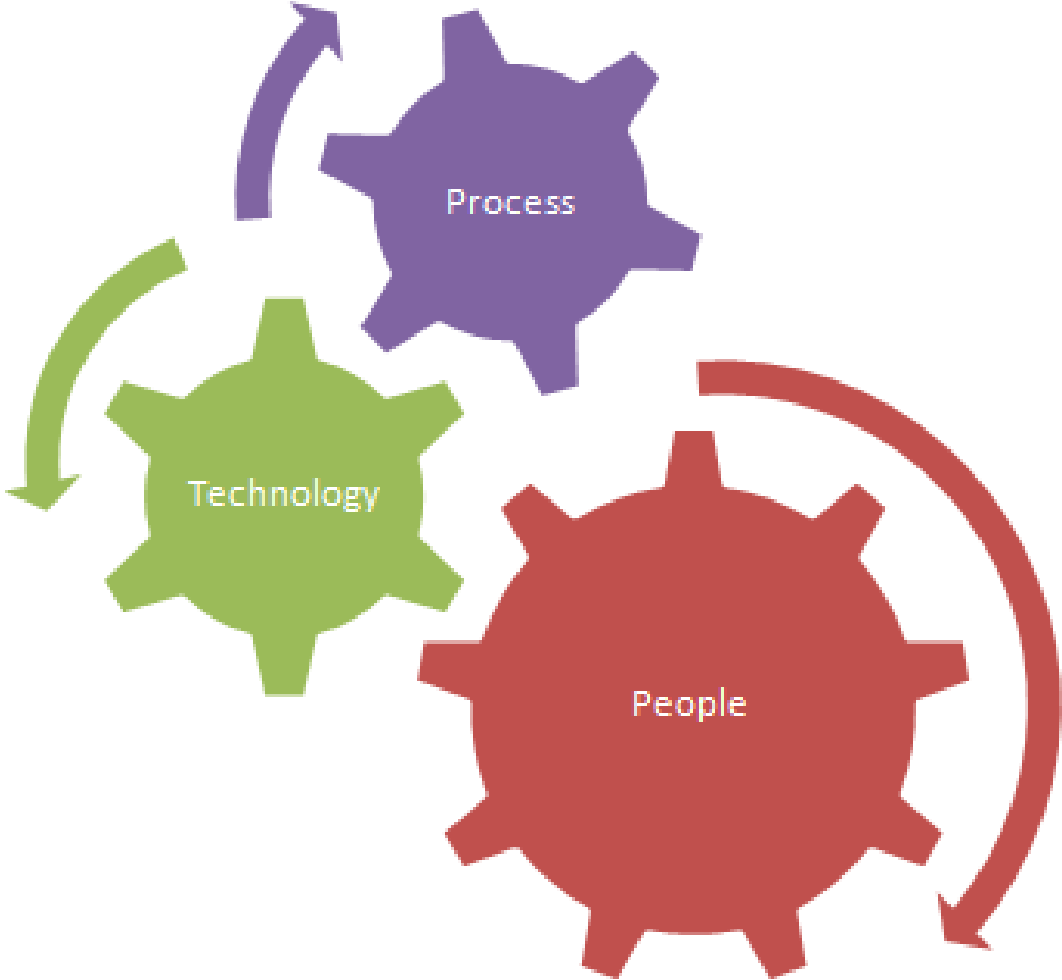
Cost of GHG Verification

Type of Assurance Procedures

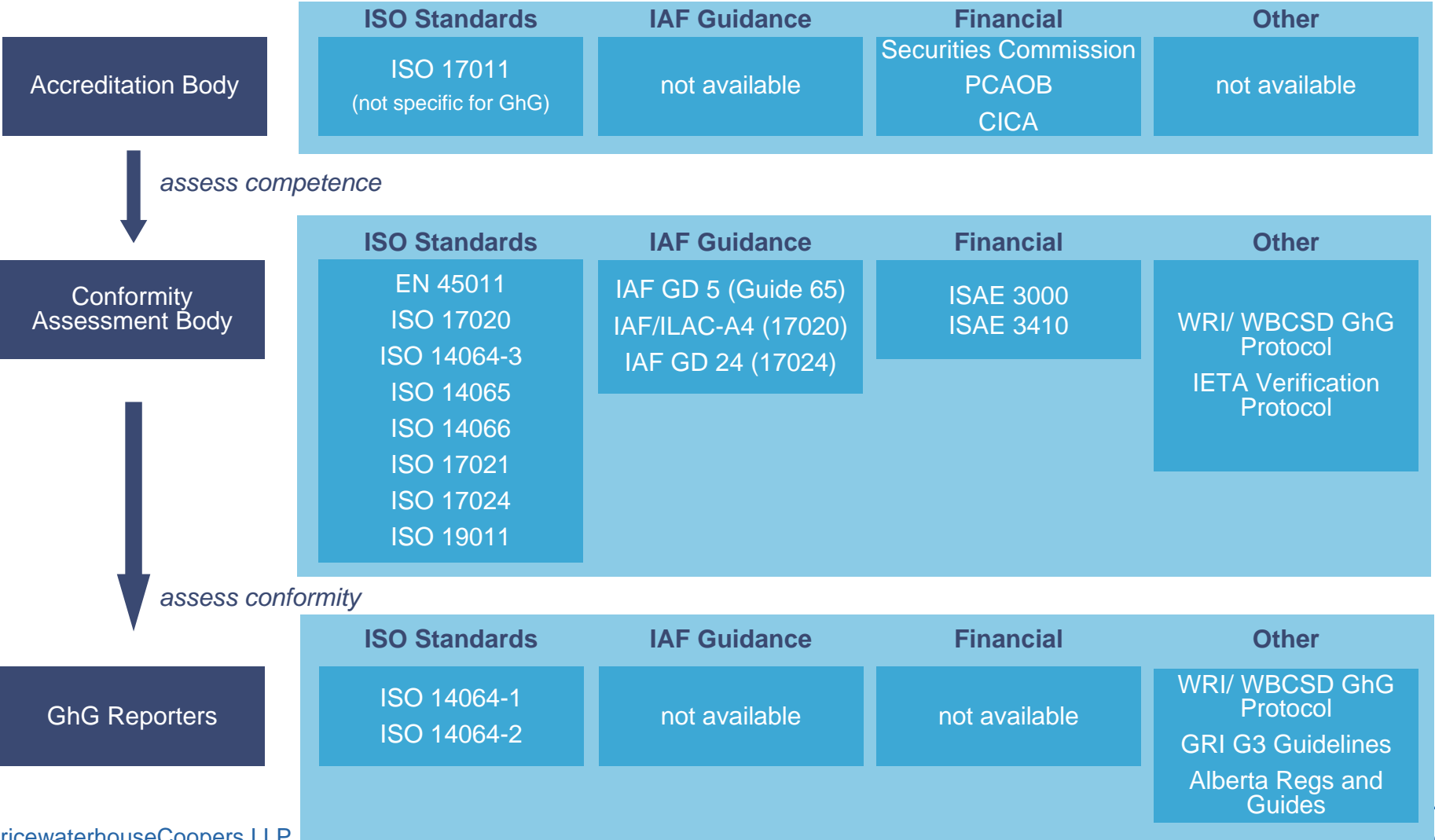


Quality of GHG Verification

- Process
- Technology
- People



Quality of GHG Verification Standards



Quality of GHG Verification Technology

CAATs

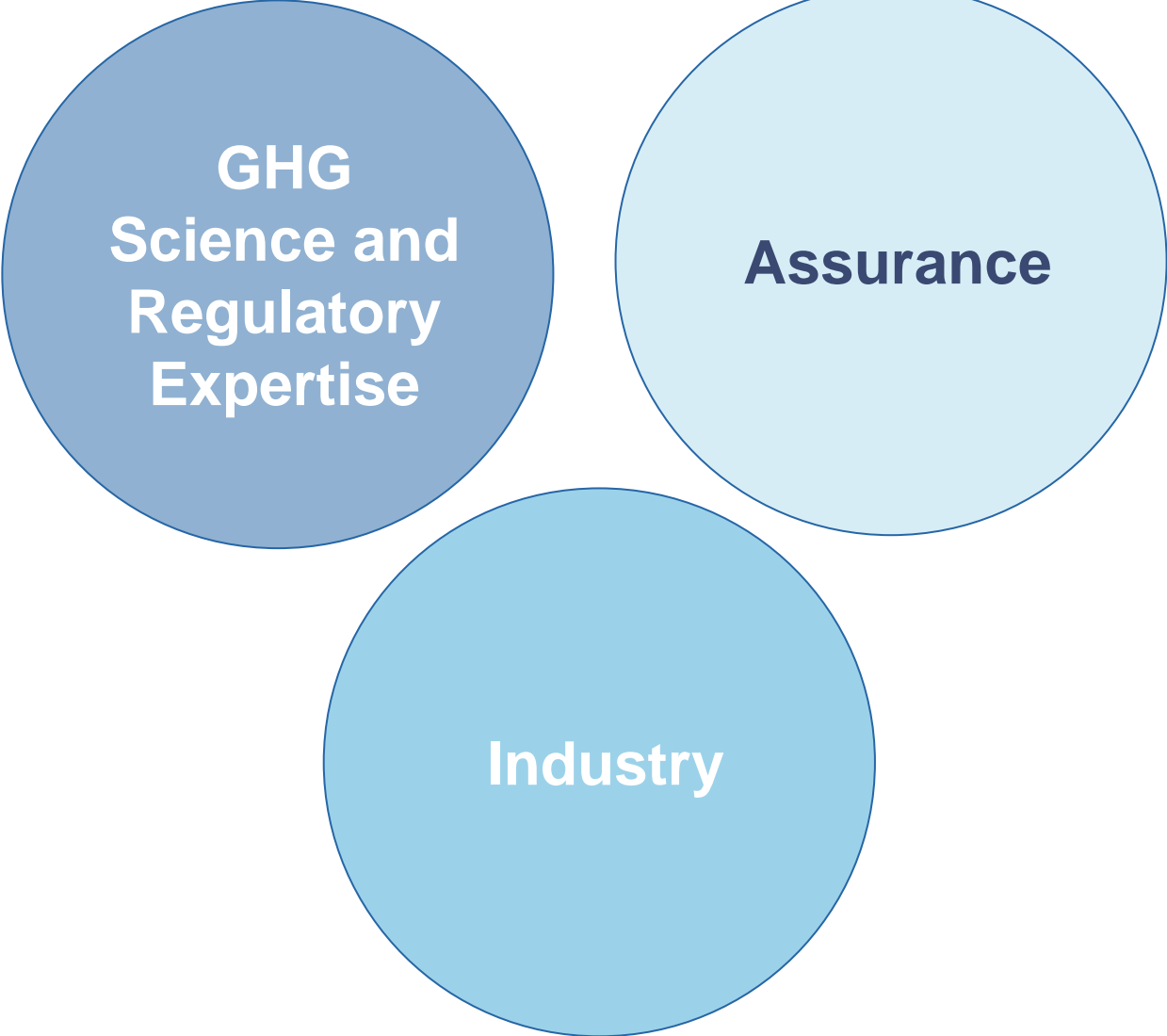
Electronic Working Paper Files

Automated Analytical Testing with Built-in Expectations

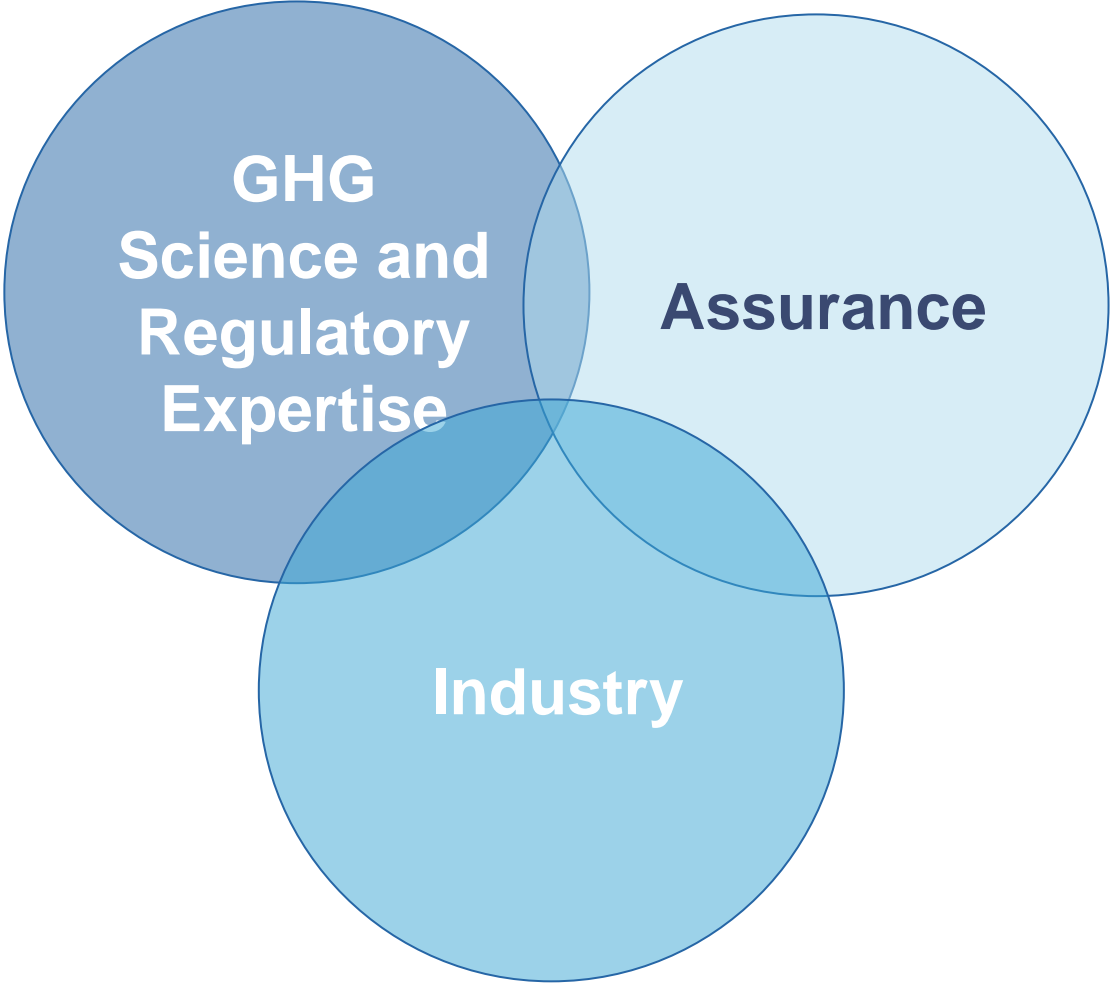
Databases of Emission Factors

xBRL Reporting

Quality of GHG Verification People



Quality of GHG Verification Team

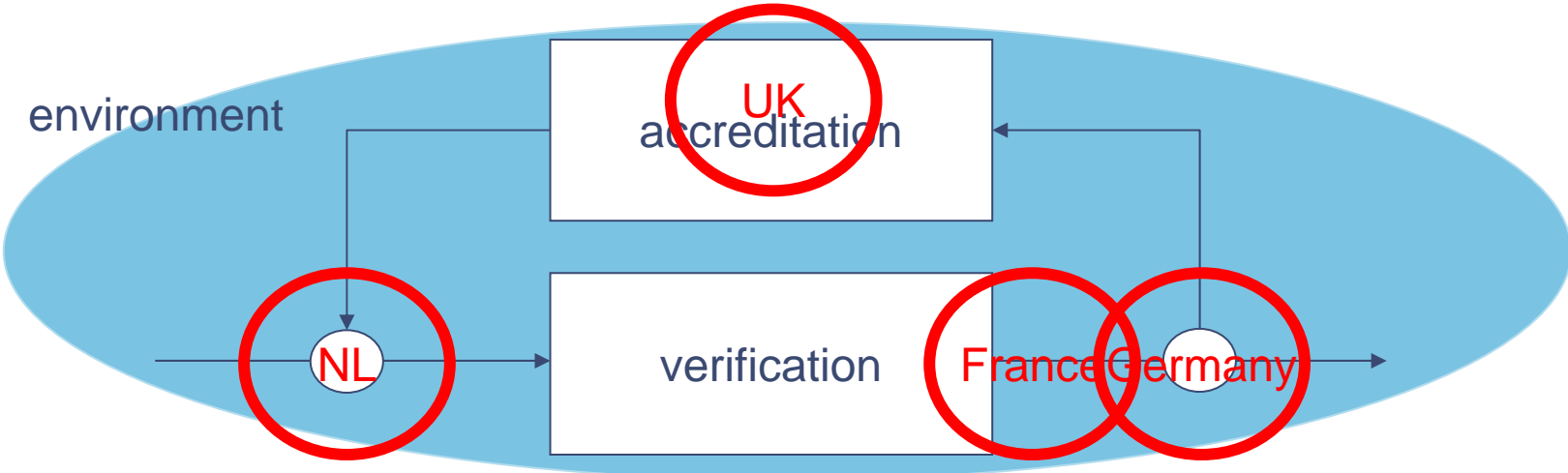


Quality of GHG Verification

The EU Experience

Member States chose different emphasis to ensure adequate verification of emissions reporting:

- upfront measures, such as extensive MPs and guidance (NL)
- during execution, checking on verifiers (most MS relied on verifiers)
- strong involvement at the end of verifications (FR, GER, IT, SE)
- system control relying on accreditation (UK)
- combinations of these including expanded use of inspection and enforcement (probably next year)



Concluding Remarks

- 1 Climate change is occurring and we are the cause
- 2 Climate change is a market failure that requires regulation to correct
- 3 Carbon pricing addresses all forms of mitigation measures
- 4 Strong preference for a carbon market based systems
- 5 Good data integrity is a fundamental requirement for a functioning market or regulation
- 6 Data integrity can be enhanced many ways; however, GHG verification is a commonly employed tool

Concluding Remarks

- 7 The level of data integrity must match the level of risk posed by misreporting
- 8 The higher the need for data integrity the greater the costs of compliance
- 9 GHG verification costs are related to level of assurance, complexity and the maturity of the data controls
- 10 Quality in the assurance is dependent on the people and the process
- 11 There are variety of standards, chose them for longevity, applicability and rigour.

Concluding Remarks

12. It is the rare individual that possesses adequate knowledge to conduct GHG verification solo, in most cases you need a team.
13. The EU regulatory system has been functioning for about eight years and still does not have things absolutely perfect.
14. The financial regulatory systems have been functioning for about 100 years and still does not have things absolutely perfect.

Thank you

They always say time changes things, but you actually have to change them yourself.

Andy Warhol (1928 - 1987), The Philosophy of Andy Warhol