



# **Standards-Based Protocols: ISO 14064-2 Quantification Framework**

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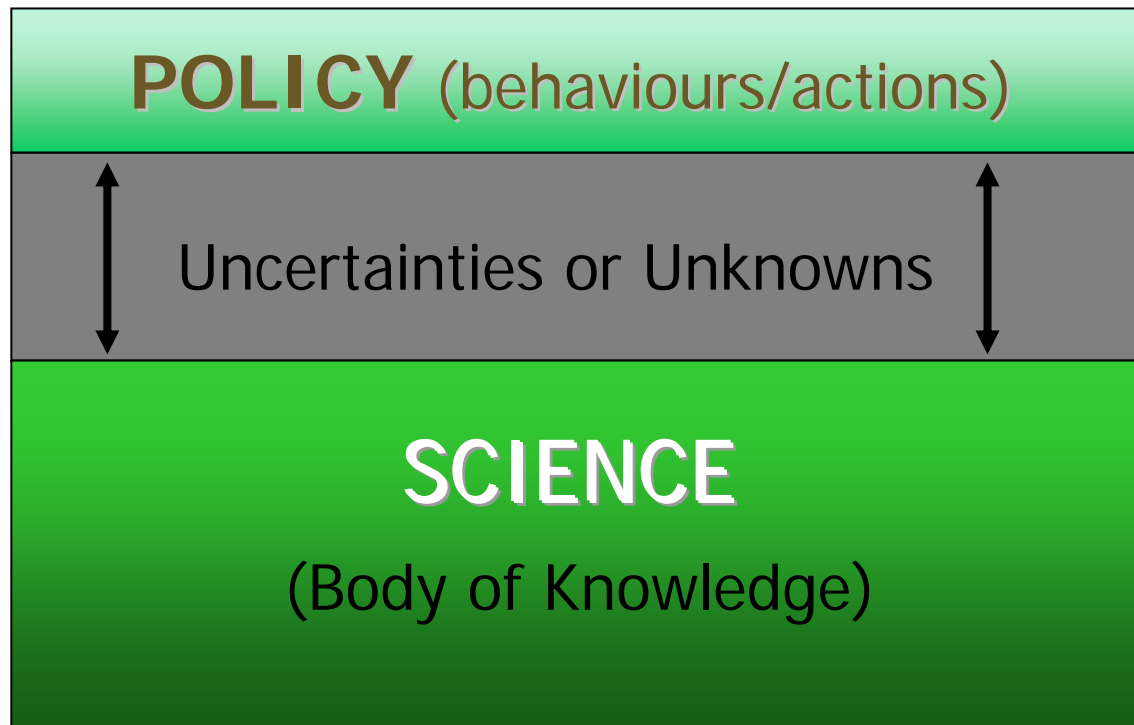
- Climate Change – seen as a Risk Management Issue
- Environmental Risk Characteristics:
  - Usually high-stakes economic development and resource exploitation policies involved
  - Large uncertainties that cannot be resolved sometimes before the impacts hit

## **Climate Change – Fits**

– *Dr William Leiss, Haskayne School of Business, UofC*



- *What (if anything) should we do in relation to what the science is telling us??*



Decisions need to be based on available science within a risk-based assessment approach

-precautionary principle increasingly being used to address the gap



- World has collaborated on Guidance for GHG Quantification
  - Intergovernmental Panel on Climate Change (IPCC 1994, 2001, 2006)
  - Pioneering Standards for GHG Quantification for Country level accounting
  - A Framework for understanding best available science:
    - regularly compiling it and identifying consistent, agreed-to ways of calculating baseline year emissions;
    - which sources/sinks count,
    - emission factors to be used,
    - standard formulae;
    - and QA/QC procedures.



1. International Good Practice Guidance (e.g. IPCC, World Bank, UN Climate Change Mechanisms – CDM)
2. National – Canada’s GHG Inventory Methodologies (Tier 2 and 3)
3. Project-Based Quantification Frameworks (ISO 14064-2 and World Resource Institute GHG Protocol)
4. NRCan – Energy Use Data Handbook
5. Carbon/GHG Mass Balance and Engineering Calculations
6. Project Typology (WRI/WBCSD GHG Protocol)
7. Additionality Tests and Barriers Assessment
8. “Precedent” project-specific methodologies

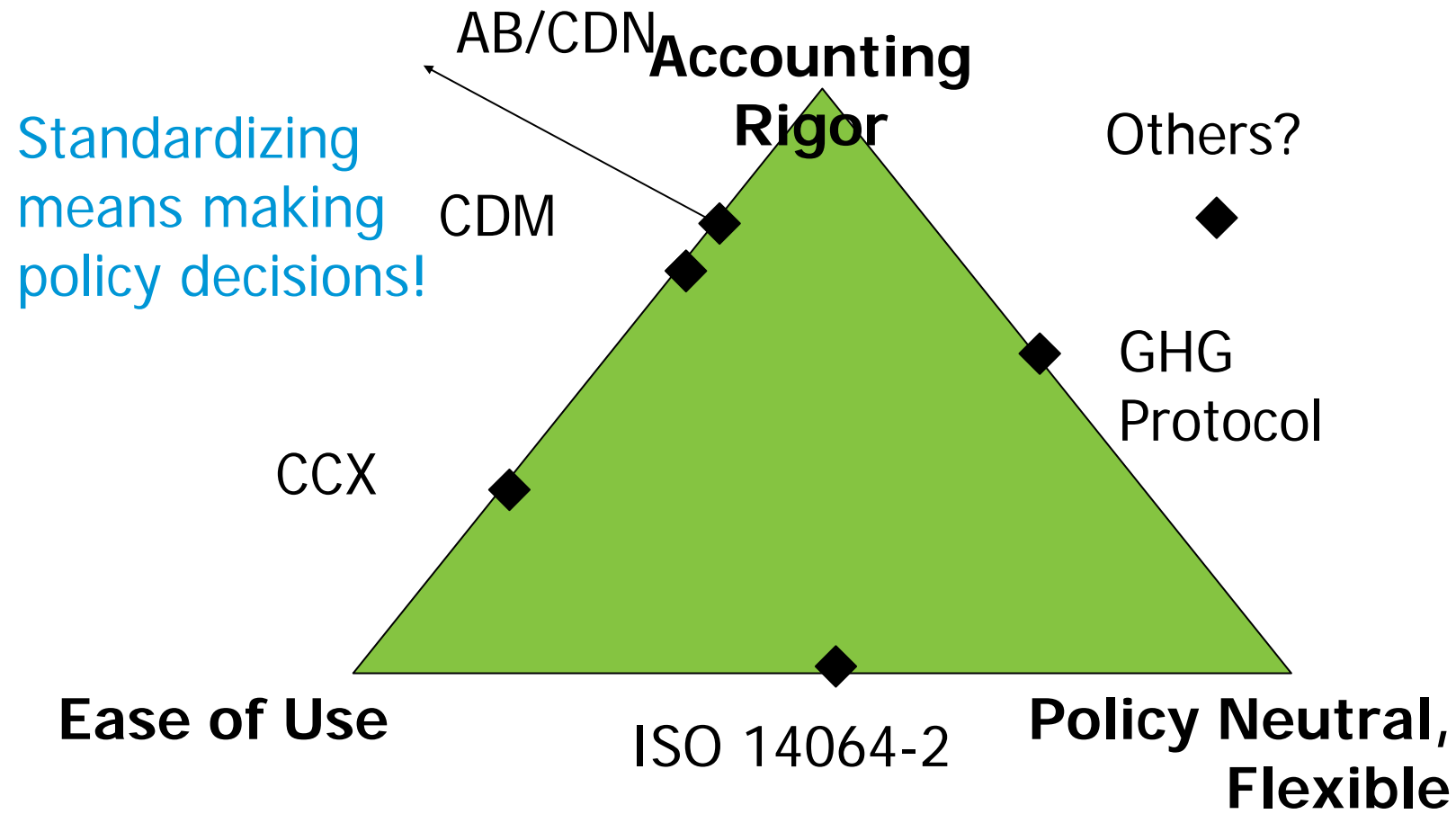


- National GHG Accounting and Verification System (NCGAVs) for Agriculture
- Tier II and Tier III development
- 2006 Milestone with continuous improvements
- World Pioneers (and Settlers)
  - Dr. David Dent , Director, ISRC Wageningen
  - United Nations Environment Program - Carbon Benefits Project: modelling, measurement and monitoring of soil GHGs



- **Real Reductions** – beyond business as usual (Establish valid and defensible baseline – activity and emission factors are the best available (post 2002))
- **Measurable, Quantifiable** – agreement on best available science and activity data – guided by a Protocol. Must stand up to several Review Processes.
- **Verifiable** – Tracking process and Aggregation process must be clear, defensible, and have good QA/QC procedures.
- **Functional Equivalence** – the Metric for comparison is important - for a project-baseline comparison to be meaningful, the service provided by the project must compare in quantity and quality to the same areas in the baseline. (ie per kg beef, per hectare of land)

# Carbon Offset (Project-based Accounting Standards)





# ISO 14064-2 as a Quantification Framework for Project Based Accounting



- 1. Relevance** - select GHG sources and sinks, emission factors and formulae appropriate to the environmental integrity of the protocol.
- 2. Completeness** – should consider all relevant GHG emissions and removals. Relevant information used to support decisions made in the quantification process should be transparently documented.
- 3. Consistency** - to ensure meaningful comparison of GHG-related information. In particular, like emissions need to be compared in baseline and project scenarios – ‘Functional equivalence’.
- 4. Accuracy** - reduce bias and uncertainties as far as practical; rely on IPCC and National Inventory methods as much as possible.
- 5. Conservativeness** - conservative assumptions, values and procedures are used to ensure that GHG emission reductions or removal enhancements are not over-estimated.
- 6. Transparency** - present your calculations, assumptions and decisions in a clear, upfront manner that facilitates review by reviewers, interested parties, verifiers - ultimately Program Operators will accept the protocols.



- **Completeness Principle:**
  - Knowledge and Scientific Judgment
    - Substitute for direct evidence where lacking
    - Models and conversion factors
    - Estimate uncertainty
- **Conservativeness Principle**
  - Applied as a risk-based approach where gaps in consensus-based science exists or uncertain data sources used.
    - Strive to underestimate baseline emissions
    - Use the 80:20 rule; collective decisions
    - “Serves as a moderator to accuracy”



- **Section A.3.1:**

- *“In the absence of such direct evidence, expert judgment is often required to provide information and guidance in establishing and justifying elements of the GHG quantification. This might include the appropriate use of models and conversion factors, as well as estimation of uncertainty.”*



- ***Principle of Conservativeness,  
Section A.3.6:***

*“...The implementation of the conservativeness principle frequently is a matter of balance (e.g., between accuracy and conservativeness or accuracy and relevance) and therefore almost always involves compromise .”*



## **Project**

1. Describe the project
2. Identify GHG Emission Sources and Sinks (SS's) for the project

## **Baseline**

3. Select baseline scenario (historical, comparison, projection, baselines of similar projects that have been registered)
4. Identify GHG Emission Sources and Sinks (SS's) for the baseline scenario

## **Select 'relevant SS's' and requirements for quantification**

5. Select 'relevant SS's' for quantification (those affected and controlled)
6. Establish 'relevant SS's for monitoring
7. Describe quantification procedures for emissions and removals from 'relevant SS's'

## **Quantify reductions / removals**

8. Quantify emission reductions or removal enhancements (or reversals)



- **Credits** - difference between “without project” emission baseline and the “with project” measured emissions
- Establishing baselines for projects will need to consider business-as-usual practices
- **Three main types:**
  - **Baselines assessed on a project by project basis**
  - **Regional industry practices with standard coefficients**
  - **Industry Performance Standard**
- Choice-depends on availability of data, complexity of data (many sources, many variants), quality of data



- Historic – site specific usually; assumes past trends continue
- Performance Standard – assumes a typical emissions profile for the industry or sector is a reasonable representation of the baseline.
- Comparison-Based – control group compared with Project – must establish both.
- Projection-based – either forecast emissions with models or straight-line growth assumptions.
- Pre-registered – already approved baselines in other Protocols, where applicable.



# The Process for Developing Protocols

## ISO 14064-2

- Defines the Requirements
- Tells the developer what to do not how to do it
- Generic, nonsectoral

## Alberta OS Rules

- Some requirements defined through the Policy
- Some procedures are a given
- Sectoral

## Alberta Protocol Application

- Performance-based standard' approach:  
-simplified and prescriptive to achieve a certain level of performance
- Project Type
- Many criteria and procedures established and justified – the how to's

## Project Plans



- Project specific
- Must show they meet the requirements
- Establish some criteria and procedures



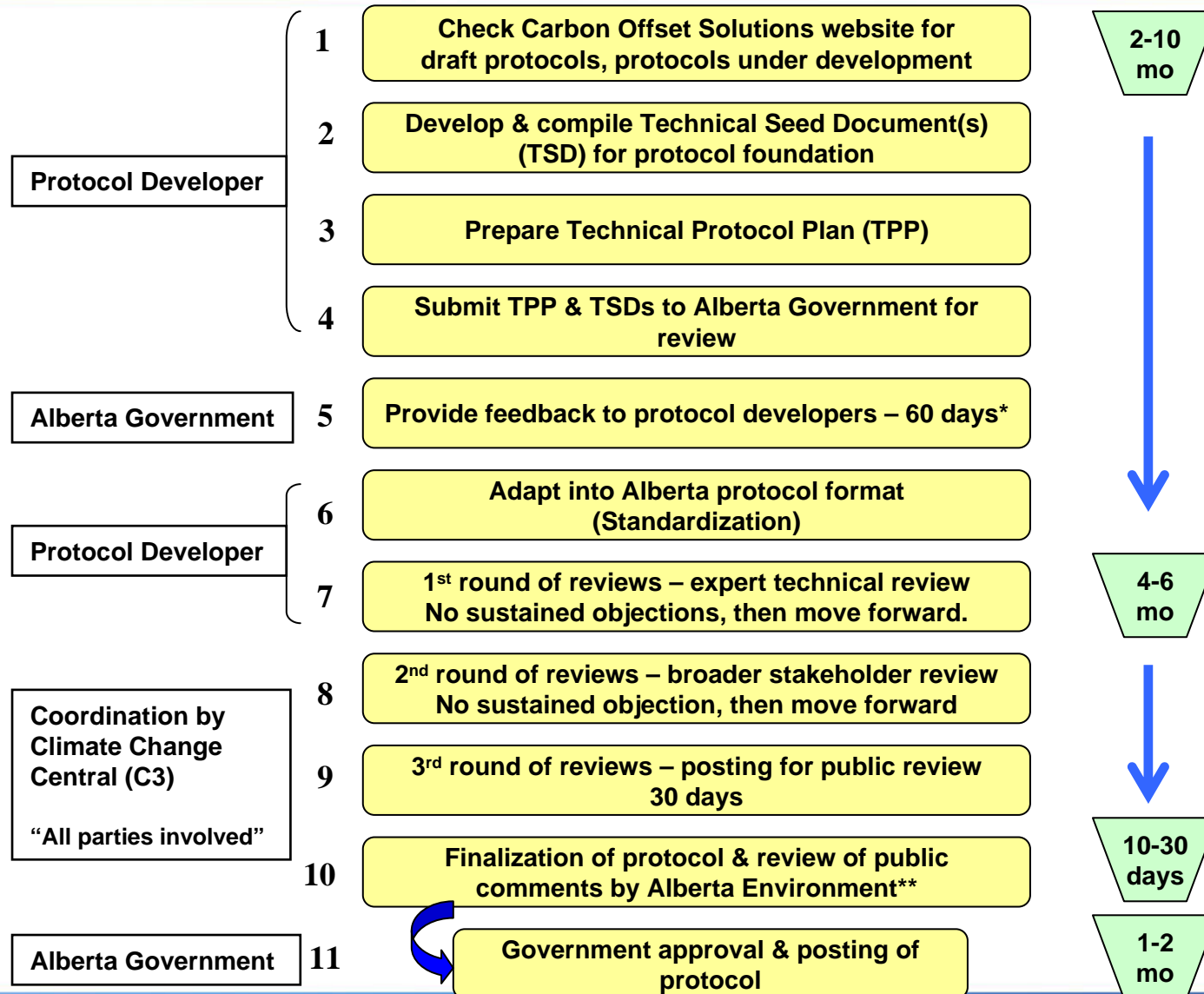
- **Phase 1** – Planning and compilation of Technical Seed Document (NERP: August '07 – Feb '08)
- **Phase 2** – Development of a Science Discussion Paper (NERP: Feb '08 – Sept '08)
- **Phase 3** – Science Coordination (Today)
- **Phase 4** – Standardize into Alberta Template (1.5 mos)

Then proceeds to the Alberta Protocol Review Process (2 to 6 mos)

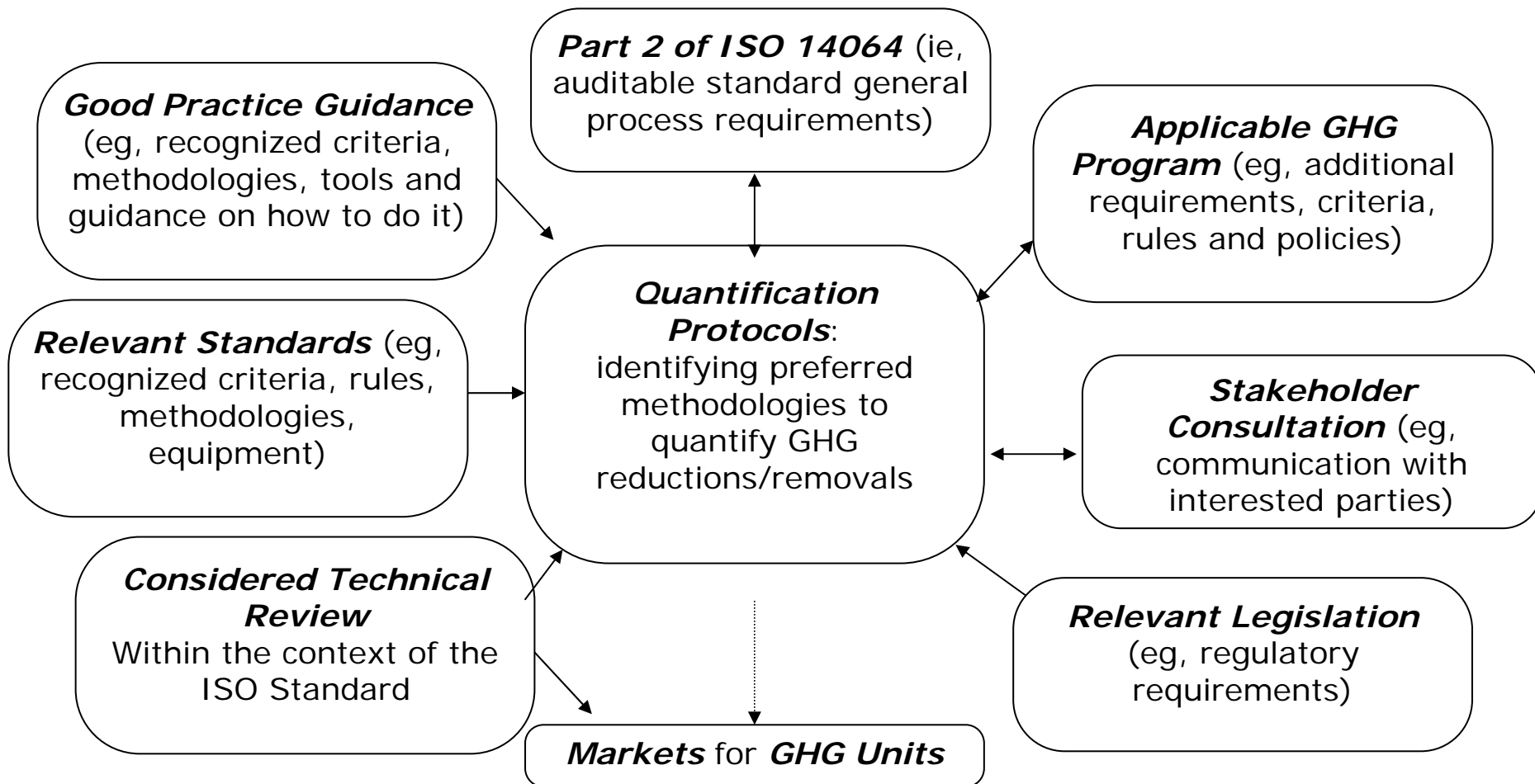
# Protocol Development and Validation Process



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# Protocol Development Requires.....



- Designing initial Protocol approach
  - Rules too complex = few projects, little learning
  - Rules too loose = false credits, less reductions; credibility issues
  - Start with practical rules (First Generation Protocols)
  - Learn by doing, revise/update in 5 years
  - Don't let the perfect be enemy of the good