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Developing Standards-Based Protocols: ISO 14064-2 Framework:

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Covered Manure Storage Protocol Workshop
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Outline

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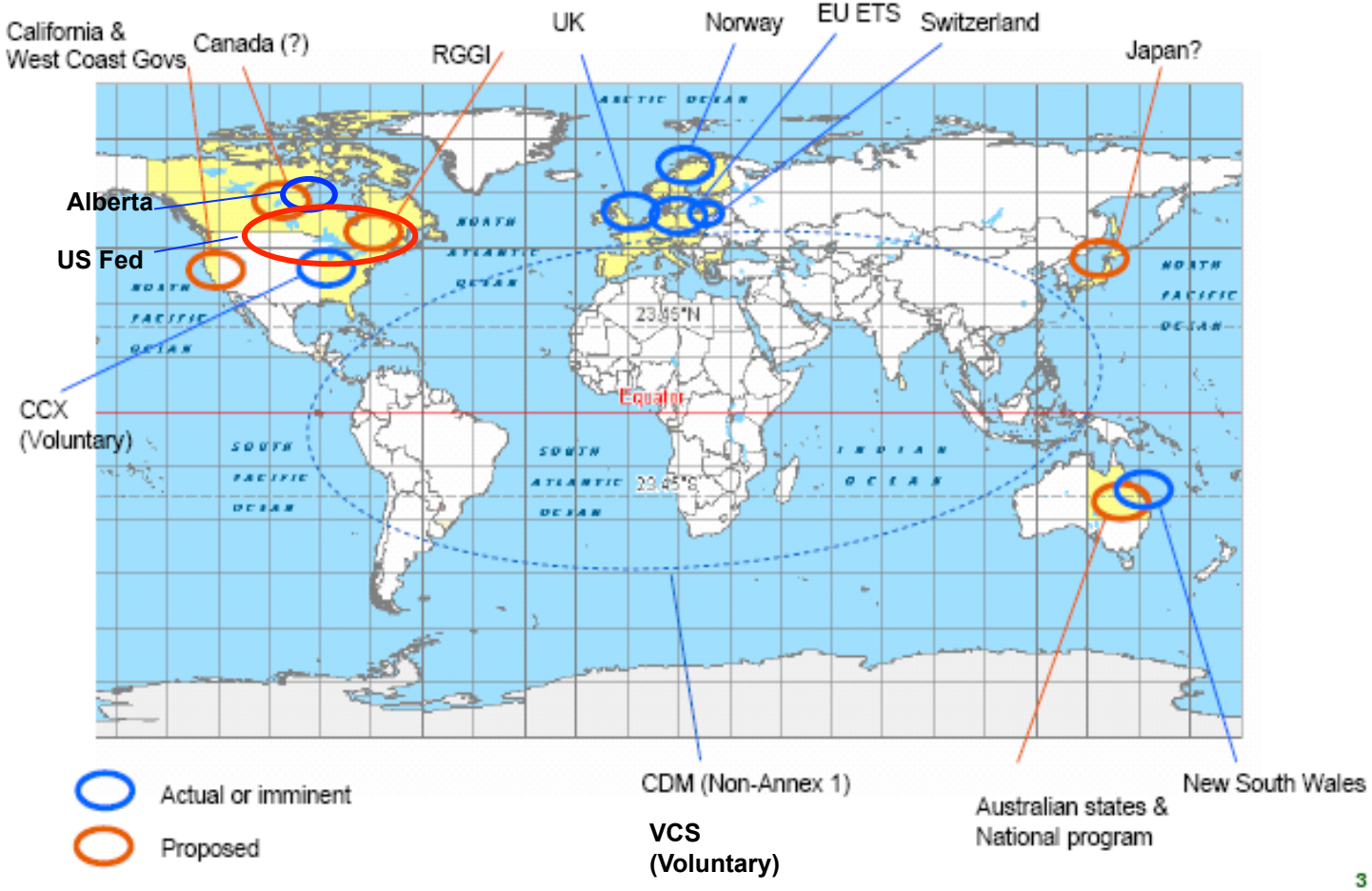
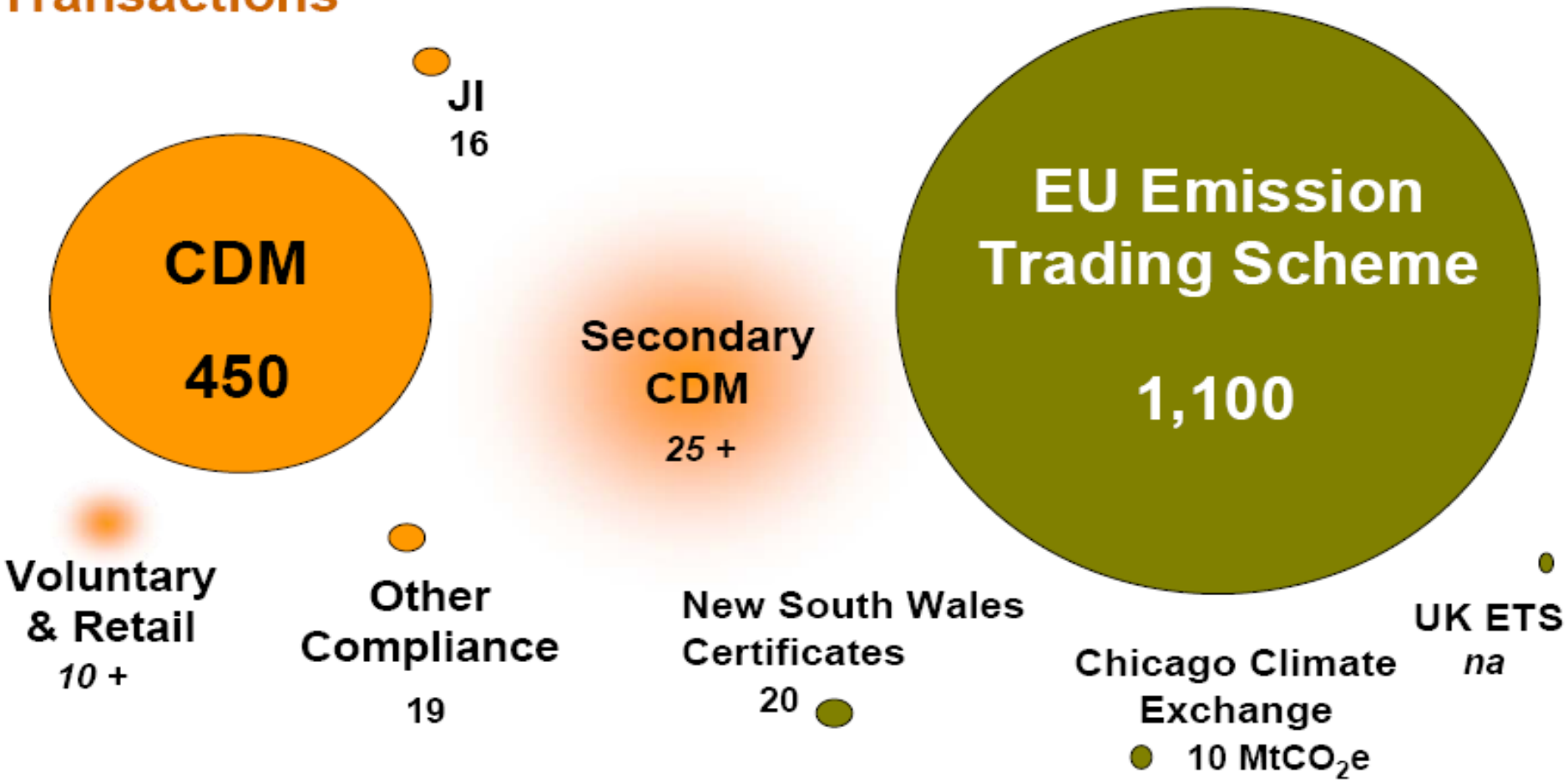
- Context
- Policy Drivers
- Offset Criteria
- Standards and Quantification Frameworks
- Quantification Resources
- Alberta Protocol Development

The Evolving Global Carbon Market



Project-Based Transactions

Allowance Markets



*Point Carbon 2010

Alberta's GHG Emissions in the Canadian Context

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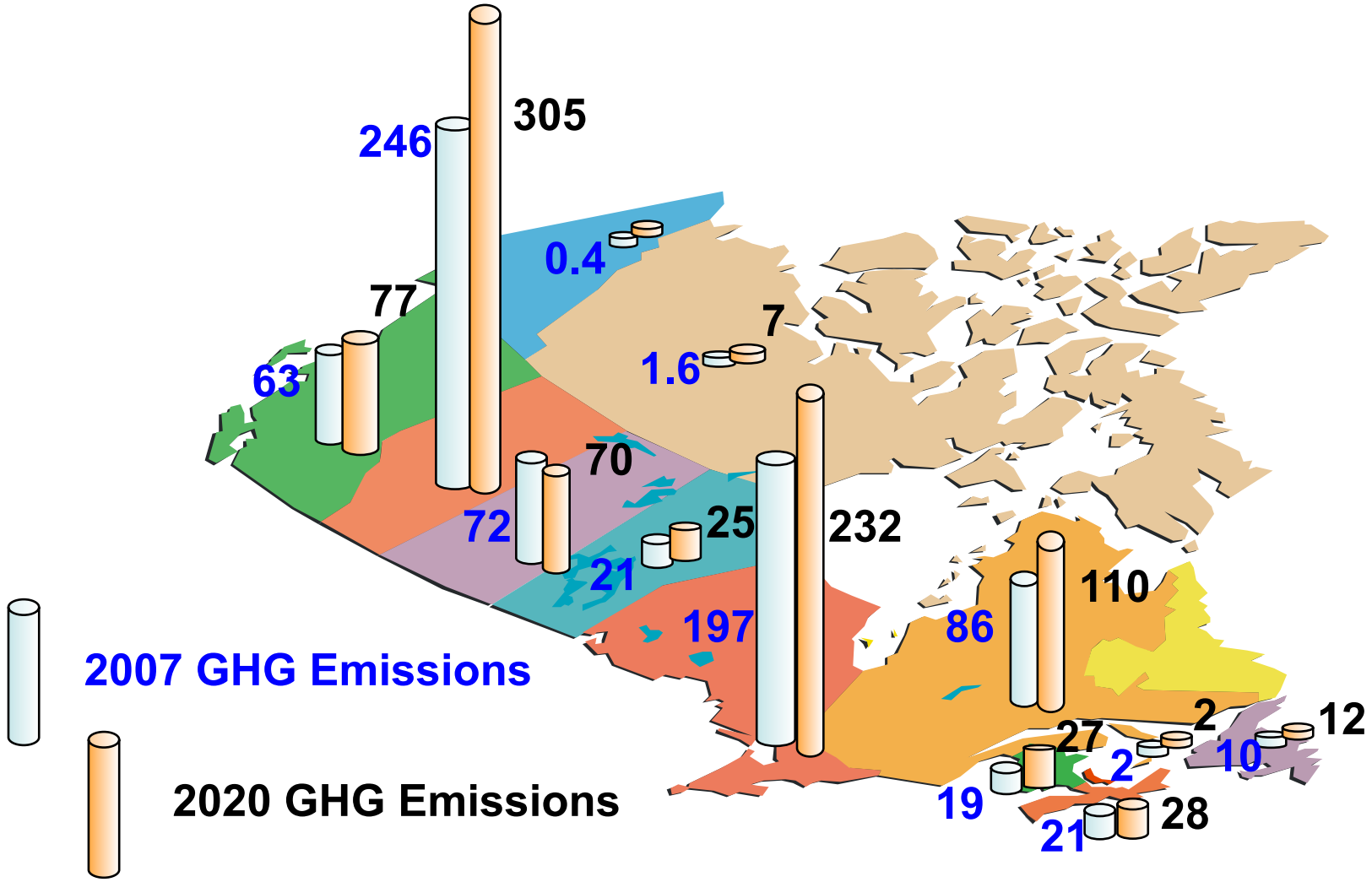

Policy Drivers

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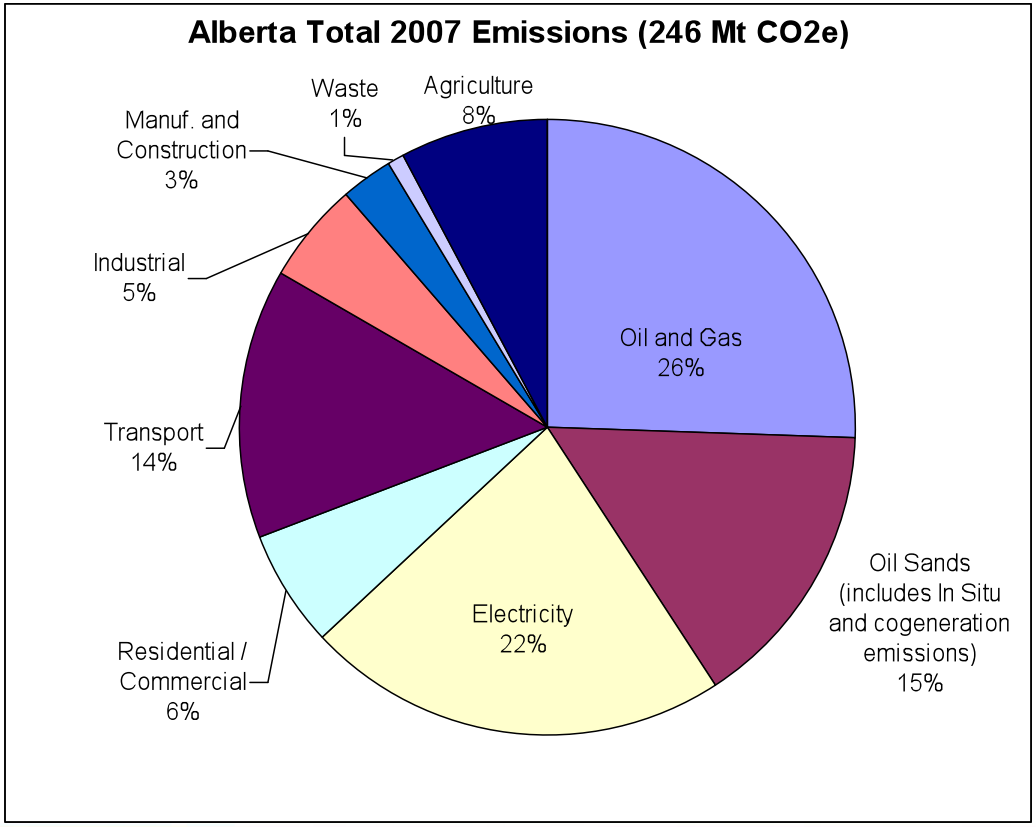
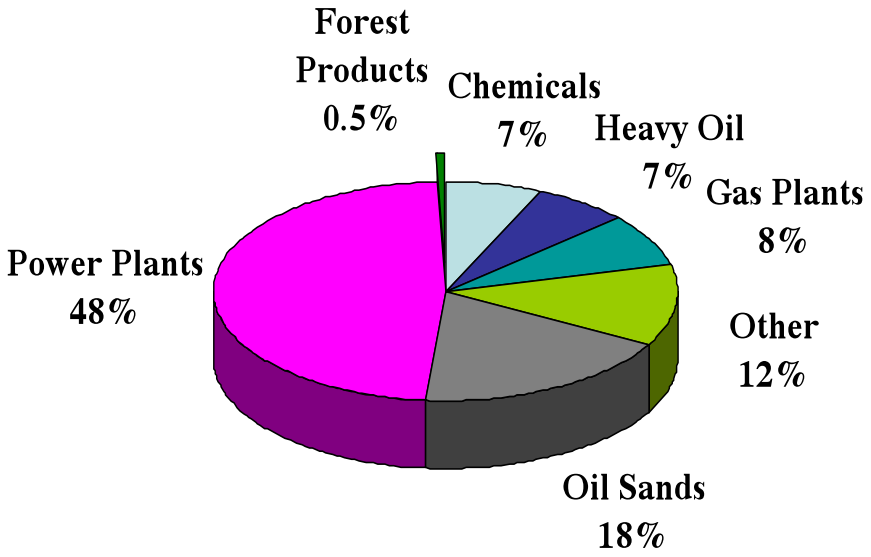
Regulated Large Industrial Emitters Profile
(>100,000 tonnes CO2e/year)





Options to Achieve Targets

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1. Emission Performance Credits (EPCs)
   - These are credits for better than target performance – created by regulated companies
2. Payment into the Fund
   - Compliance payment to the Climate Change and Emissions Management Fund at $15/tonne
   - Safety valve - essentially caps industry's risk as we transition into a new regulatory and economic system
3. *Carbon Offsets*
   - Incents reductions outside of the regulated facilities, unleashing ingenuity of the broader market
   - Rewards reduction activity not otherwise required by law

Emission reductions by unregulated sectors sold to 'offset' target reductions by LFEs

Offsets – Core System Elements in Alberta

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- A **demand** for credits
  - Created through the Specified Gas Emitters Regulation (SGER)
- A **supply** of credits
  - Creation allowed through the regulation; government approved protocols and methodologies
- **Rules** to govern the system
- **Consequences** for non-compliance
  - % of projects are audited each year

Offset Rules – Regulatory Definition/ Supporting Infrastructure

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- Are reductions in greenhouse gas emissions that occur outside any *Regulation;* Result from a change in practice

- Emission Offsets Eligibility Criteria:
  - Action (project) taken on/after January 1, 2002
  - All actions must occur in Alberta
  - Must be *real, quantifiable and measurable*
  - Not otherwise required by law; clearly owned
  - Must be verified by 3rd party

  - Provide Guidance Documents (Projects, Verification, Protocols)
  - *Develop Protocols – Most comprehensive set in NA*
  - Establish Project-based Registry = Alberta Offset Emissions Registry

Quantification Protocols

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- Government Approved Protocols:
  - Science-based
  - International compatibility
  - Streamlined use
  - Transparency and consistency
  - Reduced costs and administration
  - Considerable technical review
  - Provides certainty for investors – GHG tonnes reduced

DEFINES THE SUPPLY – SIZE OF THE REDUCTION

Alberta Approved Quantification Protocols

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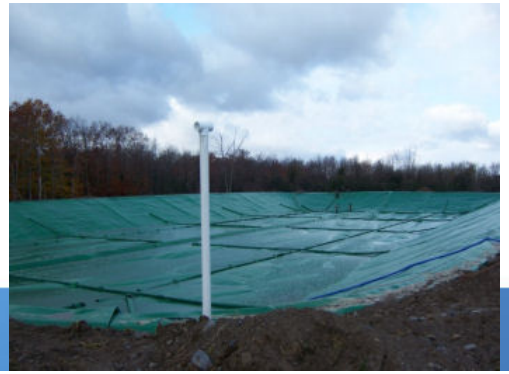
APPROVED

- **GHG Emission Removal Projects =** Carbon Sinks (remove GHGs from atmosphere)
  - **No-Tillage Management**
  - **Afforestation** (PENDING - Planting Trees)
- **GHG Emission Reduction Projects**
  - **Pork** (Feeding/Manure Storage & Spreading)
  - **Biogas** (Anaerobic Decomp. Ag Materials)
  - **Beef Feeding of Edible Oils**
  - **Beef Reducing Days On Feed**
  - **Beef Lifecycle** (Reducing age at slaughter)
  - **Biofuels**
  - **Energy Efficiency** (pork, dairy, poultry facility process changes/retrofit)

PENDING APPROVAL

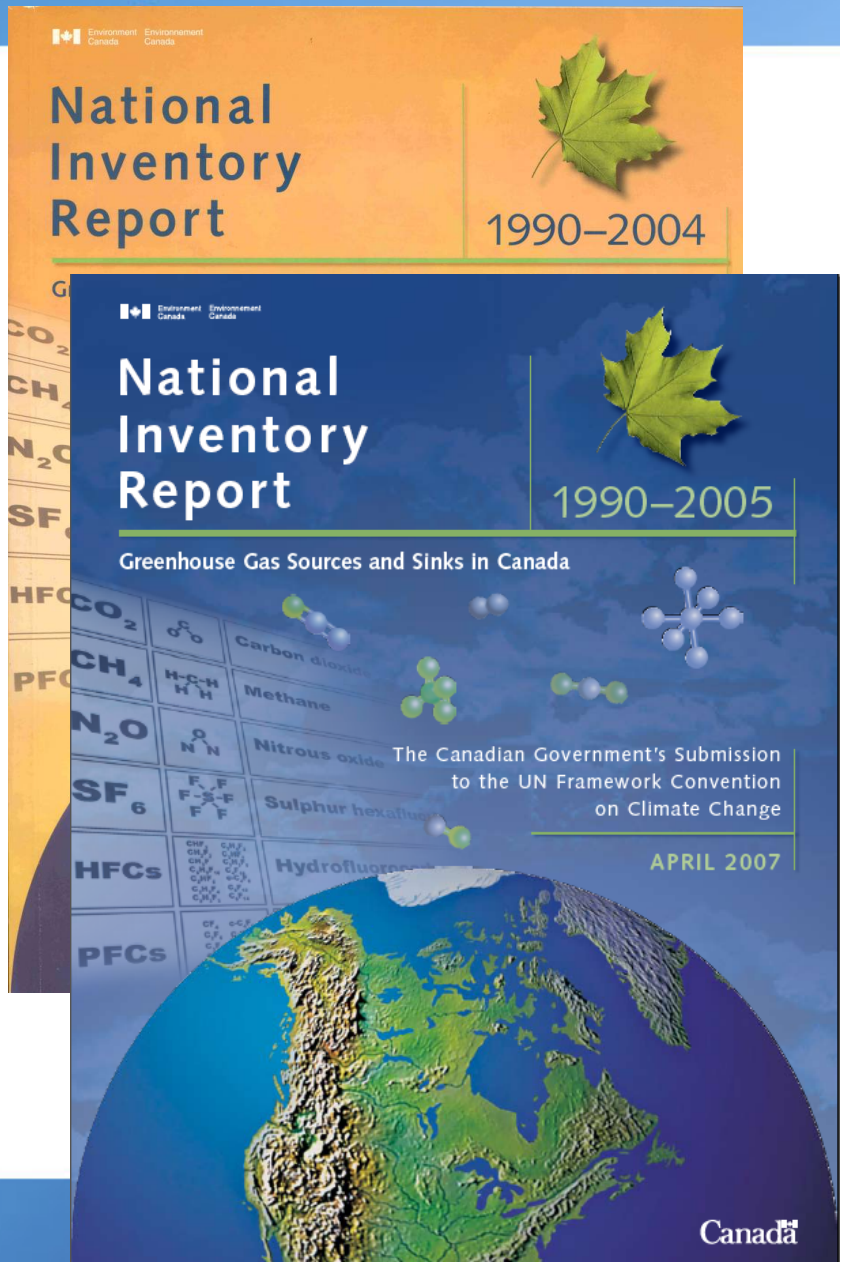
- **GHG Emission Removal Projects**
  - **Reducing Summerfallow Practices**
- **GHG Emission Reduction Projects**
  - **Selection for Residual Feed Intake in Beef Cattle**
  - **Nitrous Oxide Emission Reduction (On-farm management)**
  - **Mechanical Pulp Sludge Application on Agricultural Lands**



Quantification - ISO 14064-2 and Inventory methodology for Project Based Accounting

- Two Major International Enablers:
  1. Country-Level Accounting Standards or 'Good Practice Guidance' - Intergovernmental Panel on Climate Change
     - Guidance on Tier I, II and III approaches
  2. Project-Level (Offset) Accounting Standards
     - WRI GHG Protocol/ISO 14064-2
     - Promotes consistency and transparency in GHG quantification, monitoring, reporting and verification
- Similarities:
  - Quantification, assessment, fidelity and truthfulness stressed in both
  - Principles - completeness, accuracy, consistency, transparency and documentation

- Project Quantification – alignment with National Inventory methods preferred in Canada
  - Similar Principles
  - Project activity level (msmts of cattle, diets, feed intake, acres) linked to inventory modeling/ indirect measurement methods
  - Cost-effective, systematic accounting
  - “Accuracy in Aggregation”



Inventory by Sector - Illustration

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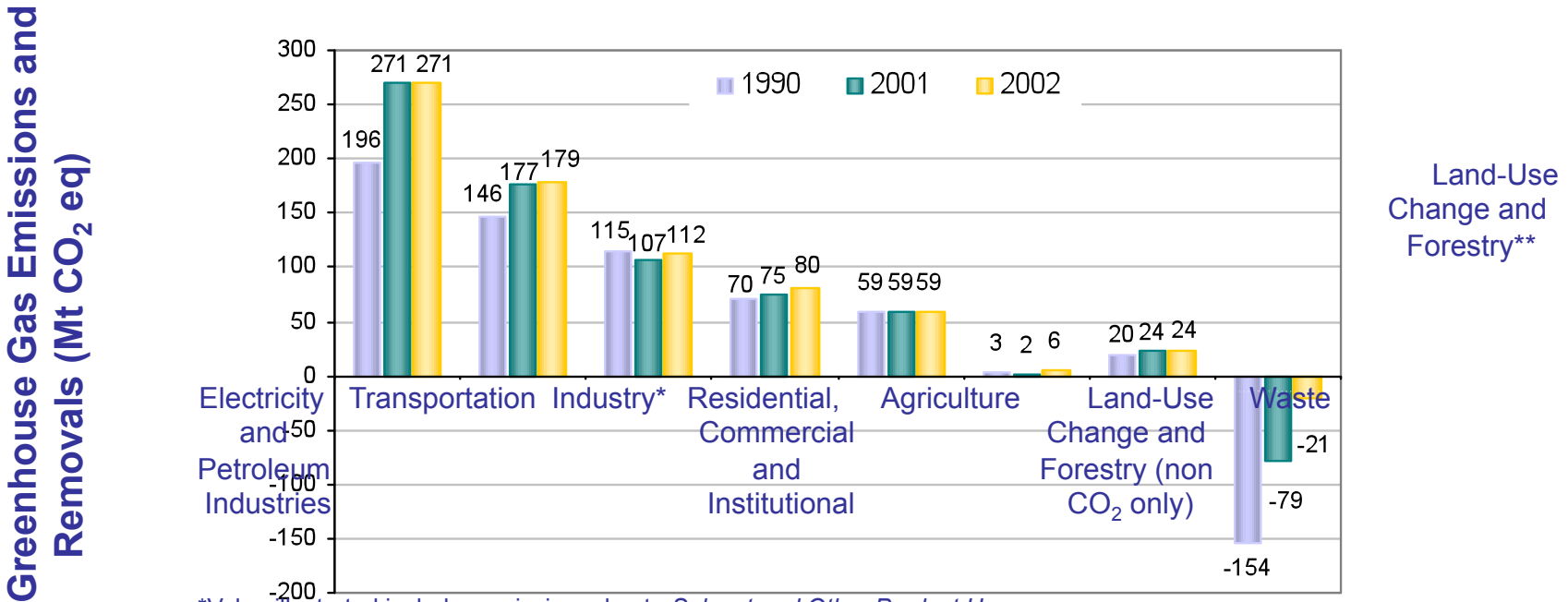
2000 2006

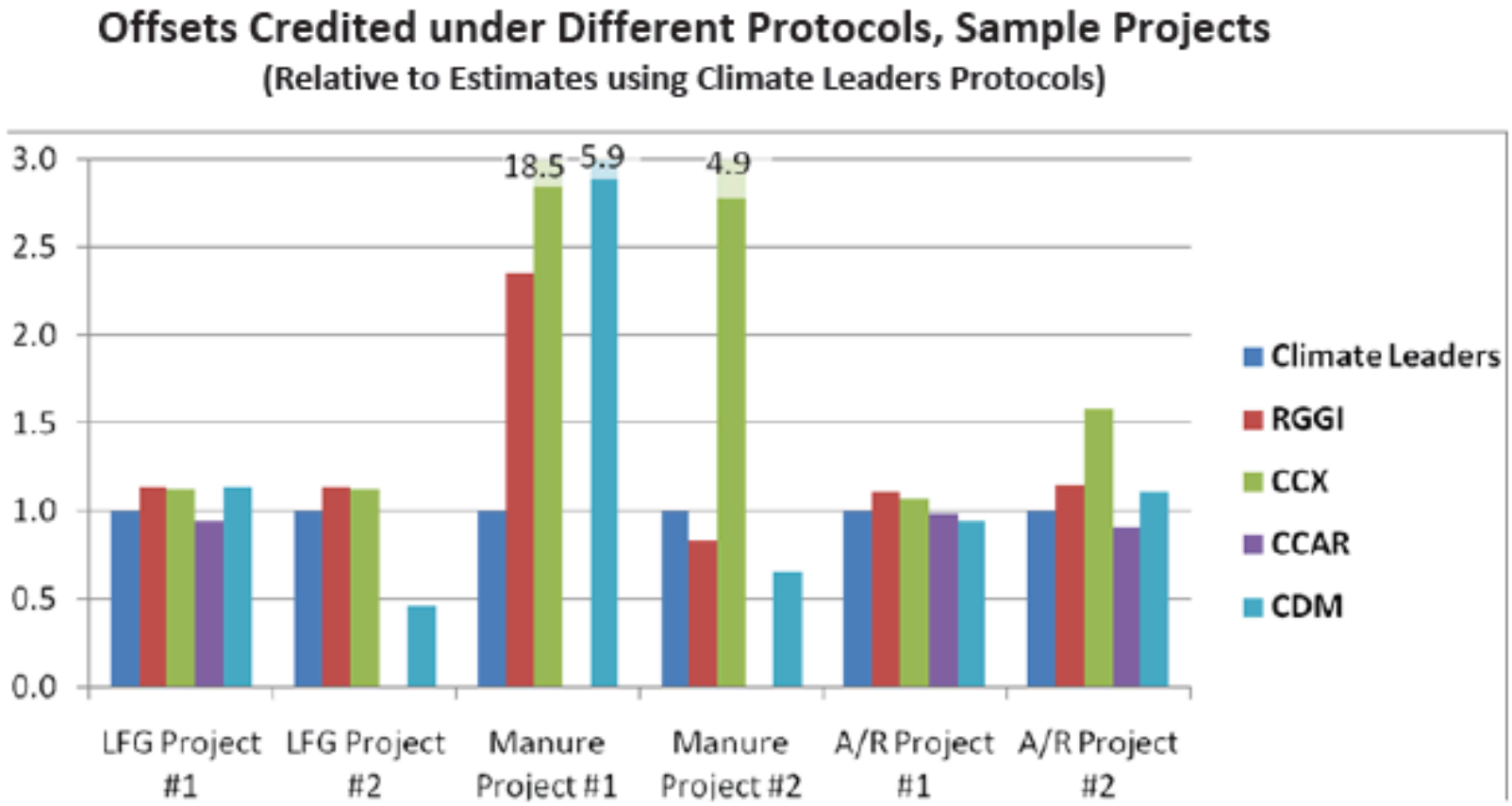


*Value illustrated includes emissions due to *Solvent and Other Product Use.*

**Carbon dioxide emissions from the Land-Use Change and Forestry sector are not included in the national inventory totals.

Numbers approximate for illustrative purposes.

A ton is not always a ton



Sample projects are illustrative: relative results will vary with project conditions

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Source: SEI work-in-progress; protocols current as of February 2009

Carbon Offset Accounting Standards

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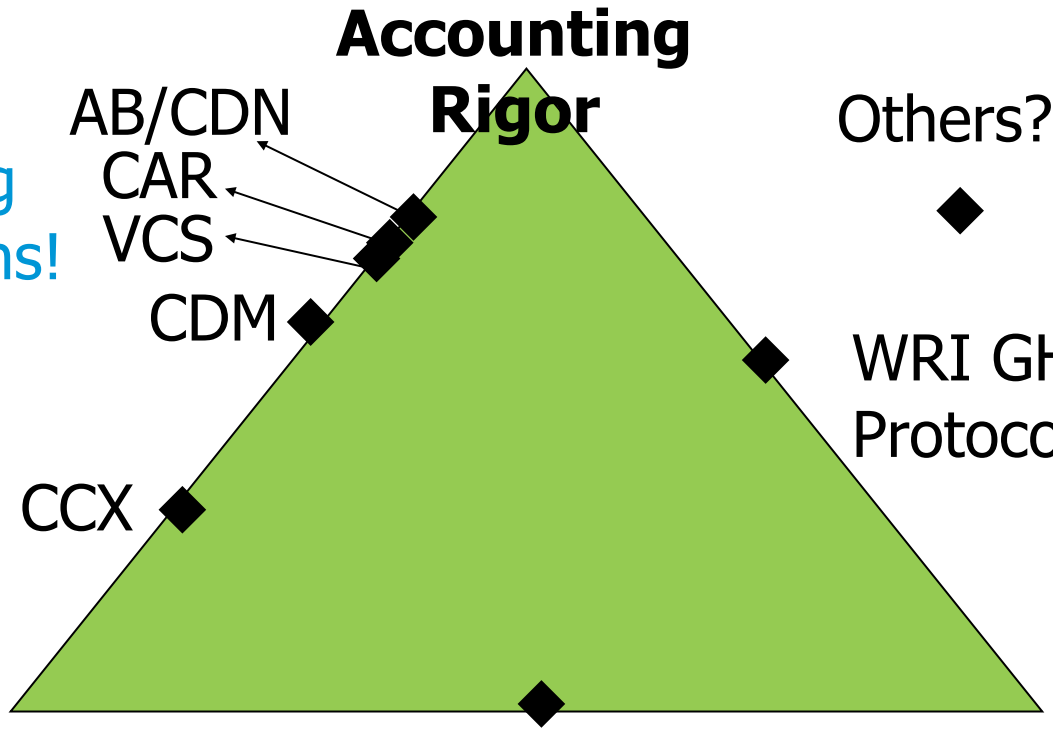
Standardizing means making policy decisions!



Program Offset Criteria

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- Additional/Incremental
  - beyond business as usual/common industry practice – (establish valid and defensible baseline post system start date); surplus to regulations/received incentives)
- Measurable, Quantifiable
  - agreement on best available science and farm activity data – develop a Protocol. Must stand up to a Review Process; account for all 6 GHGs and relevant sources/sinks.
- Permanent
  - must protect against carbon reversals in sequestration projects and for a certain

Protocol Development Requires.....

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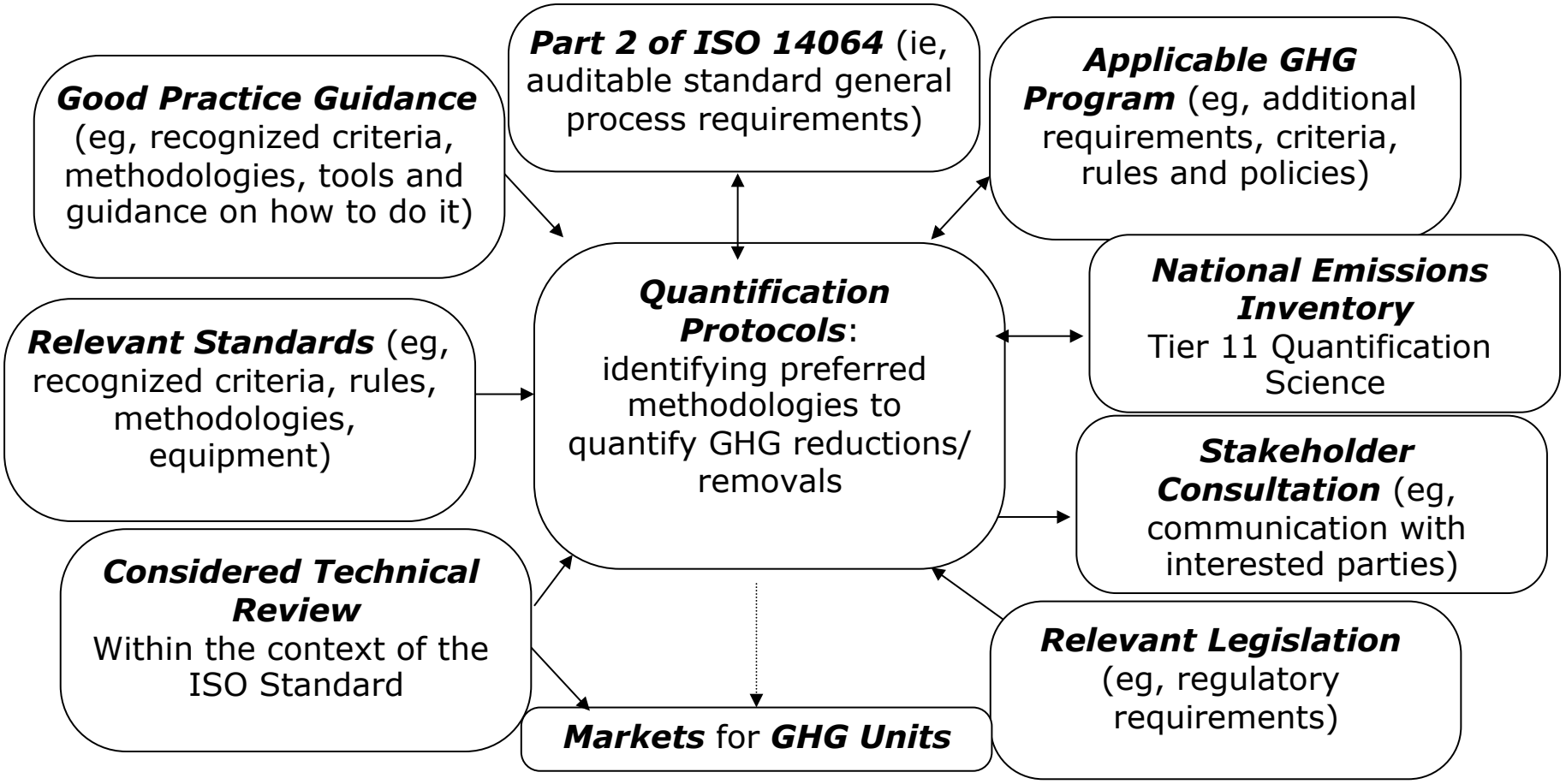

Development Process

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- Phase 1 – Planning and compilation of Technical Background Document (CMS: July ’08 – Sep ‘08)
- Phase 2 – Development of a Science Discussion Paper (CMS: Sep ‘08 – Jan ‘09)
- Phase 3 – Science Coordination (Today)
- Phase 4 – Standardize into Alberta Template (2-3 mos)

Then proceeds to the Alberta Protocol Review Process (4 to 8 mos)

ISO 14064-2 Principles

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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.

ISO 14064 Part 2

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- ***Principle of Completeness, 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 . "

ISO Principles

- 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”

ISO 14064-2 Quantification Framework

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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)

GHG Project Quantification Resources

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1. International Good Practice Guidance (e.g. IPCC, World Bank, UN Climate Change Mechanisms – CDM)
2. Other Evolving Systems (CCAR, VCS, RGGI)
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
9. Canada`s National Emissions Inventory

- National GHG Accounting and Verification System (NCGAVs) for Agriculture
- CanAg-Mars for Forestry/Agriclture
- Tier II and Tier III development

Critical Protocol Elements - Establishing Baselines

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- Consider Baseline; Permanence; Leakage
- Credits - difference between "without project" emission baseline and the "with project" emissions
- Establishing baselines for projects will need to consider additionality (over and above business-as-usual practices)

- Three main types:
  - **Baselines assessed on a project by project basis**
  - **Regional industry practices with standard coefficients**
  - **Industry Performance Standard (sector-wide)**

- Choice-depends on availability of data, complexity of data (many sources, many variants), quality of data

Many Approaches:

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- 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; regional project type
- Pre-registered – already approved baselines in other Protocols, where applicable.

Additionality/ Incrementality in Alberta

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- Policy Thinking Evolving:
  - Activity-based protocols are different than technology based protocols
  - Activity – can change from year to year depending on conditions; A piece of capital is built – different
  - Strict regulatory interpretation – practice change must occur after 2002, or not eligible
  - Activity – if activity increases after 2002 – eligible for those tonnes (composting, tillage) from incremental activity
  - Not necessarily exclusion at all because the activity (at some level was occurring)

Beginning of the Review Steps

Standards-Based Protocols

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ISO 14064-2	Alberta OS Rules	Alberta Protocol Application	Project Plans
•Defines the Requirements •Tells the developer what to do not how to do it •Generic, nonsectoral	•Some requirements defined through the Policy •Some procedures are a given •Sectoral	•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 specific • Must show they meet the requirements • Establish some criteria and procedures

Protocol Development and Validation Process

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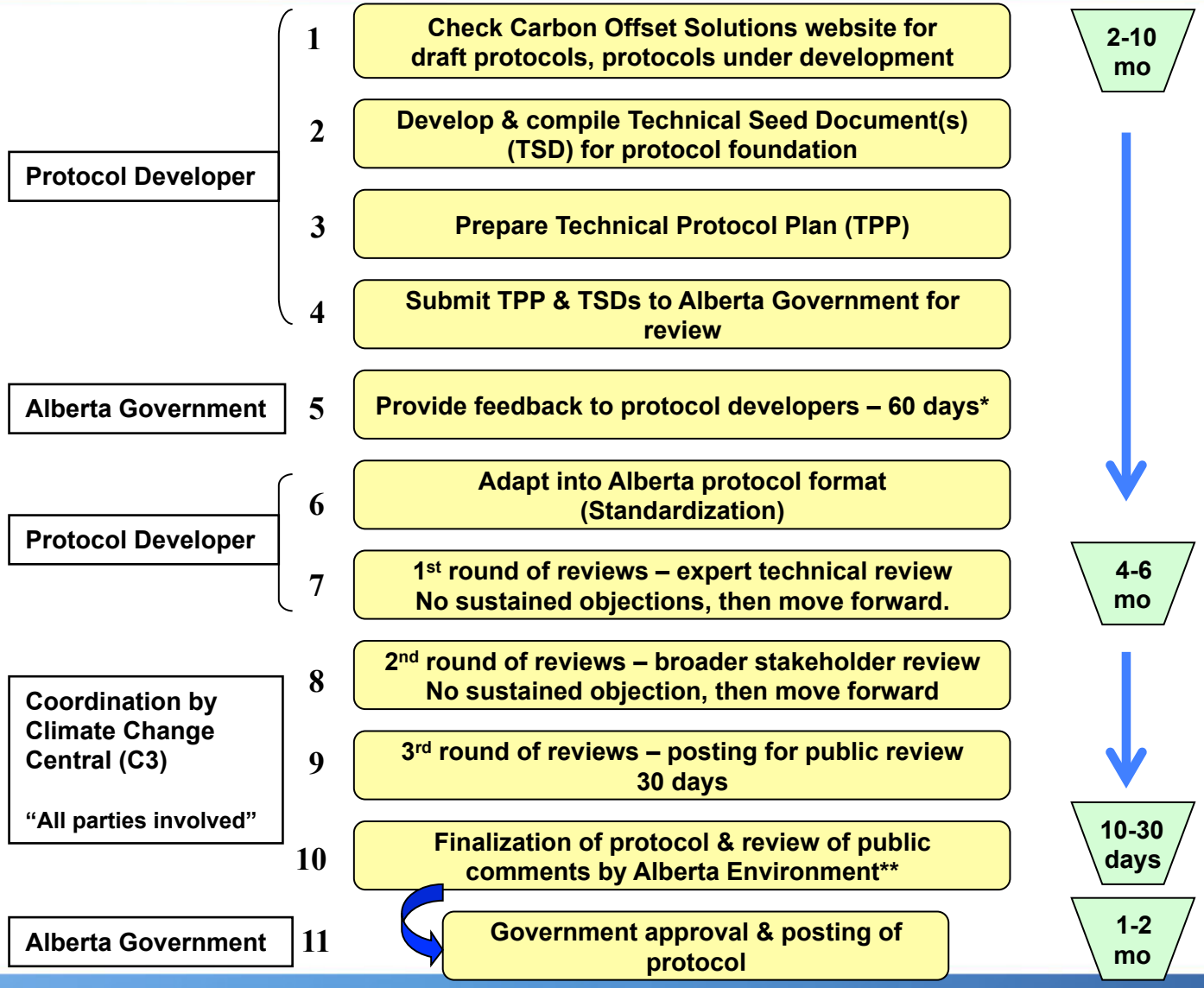

Creating Offset Credits

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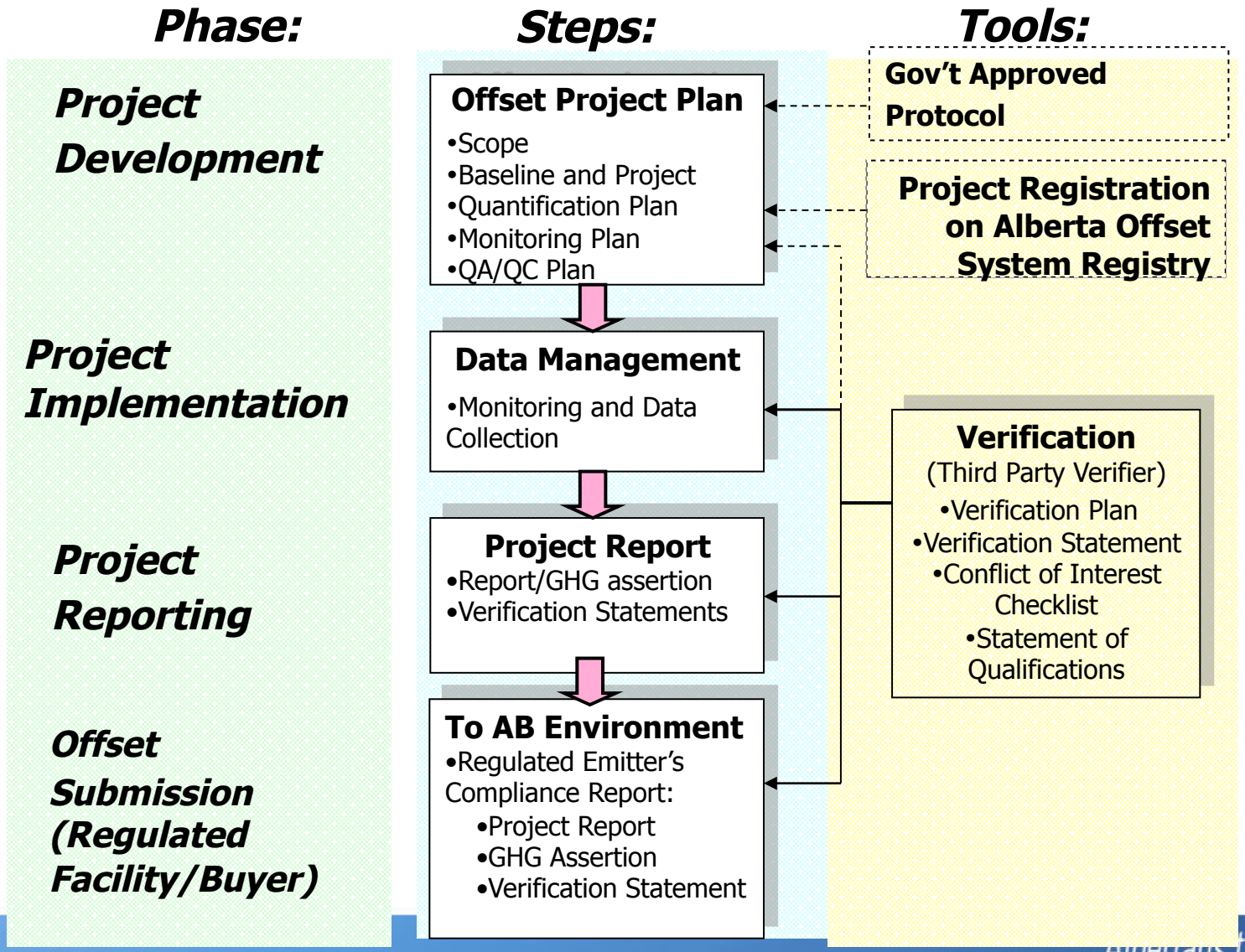

Where We're At

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- 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)

Regulatory Considerations

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- 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