This is a new section of the Public-Private Partnership Resource Center website and is currently in draft form. Your feedback is welcome: If you would like to comment on the content of this section of the website or if you have suggestions for links or materials that could be included please contact us at ppp@worldbank.org.

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Robust MRV Approaches

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On this page: *Robust Monitoring, Reporting, Verification (MRV) approaches can provide the necessary support to ensure high-quality ERCs. Read more below, or visit Strategic Guidance for Country System Assessments, Guidance for Countries in Assessing ERC Projects, or Mobilizing ERC Finance.*

V1: Robust MRV approaches. For countries choosing to roll out their own crediting systems, identifying the distinct and complementary activities and mechanisms that can be undertaken by the state to support the integrity of ERCs generated by local projects throughout their lifecycle. These activities and mechanisms can provide the necessary support to ensure high-quality ERCs that can be effectively traded in local and international markets.

Guideposts for best practice

Sequencing for roadmap

- Transparent, streamlined, and robust MRV mechanisms aligned with standards/methodologies/ protocols adopted, covering the project development lifecycle; ensuring processes are complementary and non-duplicative whenever other standard-setting bodies are involved (e.g., Verra, Gold Standard for their Verification and Validation Bodies (VVBs)).
- Mechanisms and frameworks in place to ensure proper accounting and avoidance of double crediting (2 crediting systems issue 1 credit each for the same 1 ton of emissions avoided/removed) and double counting (2 entities count the same 1 ton/credit against their emissions).
- Regular review and update of the MRV approaches in line with international standards.
- [Best practice] Application of appropriate and updated technologies (e.g., satellite imaging, GIS) to the right granularity for the reliable and accurate quantification of carbon avoided/removed.

Guideposts for best practice		
Sequencing for roadmap		
Impact	High-MRV quality is the top consideration in purchase decision for potential ERC buyers, which can be directly affected by adopted standard and process	Phase 2: Developing the pillars for market integrity
Resources needed	High-Setup of MRV mechanism often lengthy and complicated and may require adaptation of international methodologies to suit local context	

It is important for countries rolling out their own crediting systems to undertake complementary activities and mechanisms to ensure the integrity of ERCs generated by local projects throughout their lifecycle. Ensuring that overlaps are avoided is critical for countries choosing to adopt the standards set by global standard-setters, to ensure that no additional transaction costs are to be incurred by local project developers in getting their projects validated and verified.

This report identifies several key integrity-mechanism activities identified in markets around the world. These activities aim to prevent the double counting of ERCs, mitigate the risk of leakage and reversal of emission reductions, and ensure transparency and accountability in the ERC market. Below are some examples of such activities that can be considered as part of a comprehensive MRV framework.

Integrity mechanism activities	Description	Examples

Registration vetting	Initial vetting process to ensure that projects meet the criteria for the specific methodology being used (can involve a review of project design documents, monitoring plan, as well as a site visit).	**California.** CARB reviews project plan against relevant protocol. **Australia.** CER conducts project documentation plan and site visits. **Thailand.** Thailand Greenhouse Gas Management Organization (TGO) reviews project application form, validation report, and co-benefit report.
Self-reporting	Regular reporting of project developers on its emissions reductions or removals (can include regular monitoring and reporting of project data, such as energy usage, GHG emissions, and carbon sequestration rates).	**Australia.** Projects required to submit report to CER on one-month to two-year intervals. **California.** Project reports submitted to and screened by partner registry (Verra, American Carbon Registry, Climate Action Reserve) CARB notified.
Project verification	Third-party verification conducted by an accredited Validation and Verification Body (VVB) to determine compliance with the methodology and number of units recommended to be issued to the project by the registry	**California.** Audits conducted by CARB-approved VVB and reviewed by registry (Verra, ACR, CAR). **Quebec.** Audits conducted by ISO-accredited VVB
Random audits	Random audits to verify that the project is following the approved methodologies and that the reported emissions reductions are accurate.	**Australia.** CER uses a risk-based approach (focusing audit resources on high-risk projects e.g., technically complex, large scale, risky geographic location, etc.,) to select projects for audit. **Verra:** Annual random audits of up to 5% of its offset projects to verify data.

Penalties for violations	Penalties and sanctions for non-compliance with carbon market regulations, such as revoking carbon credits that are found to be invalid.	**California, Australia, Verra, Gold Standard.** Suspension or revocation of project's registration/invalidation of carbon credits.
Whistleblower mechanisms	Mechanisms in place for project developers, auditors, or other stakeholders involved in the program to report suspected non-compliance or fraudulent activities	**California.** Whistleblowing mechanism (via hotline, website, email, or mail) to investigate over-crediting or double counting of offsets (beyond 5% buffer) after issuance.
Audit of validation and verification body (VVB) quality	Cross-checking mechanisms to detect any potential errors, inconsistencies, or fraudulent activities in the MRV process of a VVB.	**California:** CARB conducts audits of VVB work through annual desk audits and field audits of a sample of offset projects to verify the accuracy and completeness of the VVB's verification work. **Canada:** Project reports verified by an accredited third-party verification body would then be reviewed by departmental officials prior to the issuance of offset credits by the Minister.
Transparent record-keeping mechanisms	Capture of information on transactions after issuance such as sale and retirement, to ensure full transparency and traceability to relevant market participants.	**Australia:** Australian National Registry of Emission Units (ANREU) serves as registry for transaction information. **Switzerland:** Emissions Trading Registry is an online accounting system that ensures the issuance, holding, transfer, acquisition, cancellation, and surrender of units.

As a supplement to assessing this component, the Carbon Initiative for Development's (Ci-Dev) Standardized Crediting Framework[1] is recommended as a detailed and best practice guide for countries seeking to establish their own crediting framework and by extension, the necessary MRV mechanisms. It is the aim of this initiative to improve transparency of national crediting decision-making, reduce transaction costs, and shorten time to generate the emissions reductions.

In addition, the Digital Monitoring, Reporting, and Verification Systems and Their Application in Future Carbon Markets[2] is recommended as a reference for the merits, guidelines, tools, and lessons learned for the use of digital monitoring, reporting and verification (D-MRV) systems for a country's carbon markets. This reference will also describe the resources needed, as well as the enabling policy and regulatory environment

for such systems to be implemented.

Footnote 1: Standardized Crediting Framework

Footnote 2: Digital Monitoring, Reporting, and Verification Systems and Their Application in Future Carbon Markets

Related Content

- **Strategic Guidance for Country System Assessments (Download PDF version)**
- **Guidance for Countries in Assessing ERC Projects (Download PDF version)**
- **World Bank Emissions Reduction Program: Mobilizing ERC Finance (Download PDF version)**

Additional Resources

- Role of Supreme Auditing Institutions
- Role of Legislative Bodies
- Role of Independent Regulators

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