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# Tracking Emissions and Mitigation Actions

## Evaluation of MRV Systems in China, Germany, Italy, and the United States

### Why is MRV Important?

Measurement, reporting and verification (MRV) of greenhouse gas emissions and mitigation actions help countries achieve their climate goals. Good tracking systems support effective policy by giving policymakers and stakeholders feedback on progress towards goals, on the performance of policies, and on emerging challenges and opportunities for improvement. Weak MRV can undermine policy objectives, lead to waste of public resources, and diminish public confidence. As nations take on increasingly ambitious mitigation goals, good MRV becomes even more important.

Although different terms are used across domestic and international policy discussions, this paper defines “MRV system” broadly, to encompass all institutions or official processes through which countries measure, report, and verify emissions and mitigation actions. While institutions vary across different political, social and economic systems, all countries are pursuing mitigation goals, and all can benefit from effective MRV systems.

### CPI’s Analysis and Evaluation Framework

Our work on MRV aims to demystify the topic and provide information to support domestic and international policy-making. In two published reports, we describe existing national MRV systems in China, Germany, Italy, and the United States, and assess their effectiveness using a common framework. Future work will analyze emerging needs in these four countries and provide recommendations for future action.

Our framework assesses the extent to which MRV systems meet six core criteria for effectiveness: transparency, comparability, reliability, usefulness, timeliness, and completeness. Systems with these characteristics are better placed to track progress towards goals and inform policymaking, regardless of the particular national context and across a wide range of mitigation policies and measures. We judged the extent to which each country’s MRV systems meet these criteria based on the presence of a set of specific, observable indicators.

The evaluation yields insights on shared challenges, opportunities, and areas for collaboration, both within and among countries.

### Key Findings to Date

- Existing MRV systems allow countries to determine if they are meeting emissions reduction targets, but for the most part do not allow them to identify the most effective and resource-efficient policies. All four countries in our study are struggling with tracking the impact of their climate policies comprehensively and consistently, whereas systems to track emissions are generally better-established.
- It is very difficult to track the mitigation impacts and costs of varied climate policies in a rigorous, comparable manner. However, improvements on this front would be very useful to policymakers who must make decisions about allocating limited public resources.
- Mitigation action tracking systems are stronger for international policies and major, mandatory domestic policies.
- Some tracking systems are well-integrated with policymaking and are able to effectively inform policy design and target-setting. MRV systems can best serve this purpose if they include an impartial review process, timely reporting, and a clear mechanism for data to feed back into the policymaking process.



CLIMATE  
POLICY  
INITIATIVE

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# MRV in China

## Key Findings

- China is strengthening its institutional capacity to produce consistent, reliable GHG inventories; until recently this capacity was very limited.
- Climate change progress reports provide a comprehensive view of mitigation actions, although they provide little information on data sources and methodologies.
- China's most important mitigation actions relate to its energy-saving targets, and China has an extensive system to track energy usage; reporting is less comprehensive for non-energy activities.
- China's MRV systems lack transparent expert and public review of data and methods.

## MRV Systems

EMISSIONS	MITIGATION ACTIONS
<p><b>GREENHOUSE GAS INVENTORY</b></p> <p>First inventory covered 1994 emissions of three major GHGs; published in 2004. Second inventory will cover 2005 emissions of all six major GHGs; scheduled to be published in 2012.</p>	<p><b>NATIONAL COMMUNICATIONS TO UNFCCC</b></p> <p>List of climate mitigation activities. First report prepared in 2004; included some quantitative estimates of impact on energy saved, but not mitigation impact. Second is in preparation.</p>
	<p><b>STATISTICS INDICATORS, MONITORING, AND EXAMINATION (SME) SYSTEM</b></p> <p>Extensive reporting on energy production and consumption. Comprehensive energy reports are prepared by bureaus of statistics at the provincial level.</p>
	<p><b>CHINA'S POLICIES AND ACTIONS FOR ADDRESSING CLIMATE CHANGE - THE PROGRESS REPORT</b></p> <p>China's most direct effort to track and evaluate its GHG mitigation actions. The reports summarize mitigation actions and provide qualitative and quantitative data on mitigation impact.</p>

## Evaluation Matrix

EMISSIONS	MITIGATION ACTIONS
SOMEWHAT TRANSPARENT	NOT VERY TRANSPARENT
SOMEWHAT COMPARABLE	SOMEWHAT COMPARABLE
SOMEWHAT RELIABLE	SOMEWHAT RELIABLE
FAIRLY USEFUL	FAIRLY USEFUL
NOT VERY TIMELY	FAIRLY TIMELY
SOMEWHAT COMPLETE	FAIRLY COMPLETE

See full report for details.

# MRV in Germany

## Key Findings

- Germany's domestic system to track emissions and mitigation actions is primarily driven by the implementation of international and European Union obligations.
- The German system for tracking emissions has reached a high level of sophistication and performs well across the six evaluation criteria.
- There are well-developed systems to track some major individual mitigation actions, particularly renewable energy support policies and mitigation actions related to EU directives. Germany's efforts to track its mitigation efforts as a whole suffer from a lack of institutional coordination, which has limited the availability of comprehensive national reporting.

## MRV Systems

EMISSIONS

GREENHOUSE GAS INVENTORY

Annual estimate of emissions of six major GHGs. Uses rigorous methods for data analysis, extensively documented and reviewed. Cross-checked with data from the EU Emissions Trading System.

NATIONAL COMMUNICATIONS TO UNFCCC

Primarily pre-implementation modeling of sectoral mitigation action impacts. Produced every 4-5 years.

MITIGATION ACTIONS

EU MONITORING MECHANISM

Description of policy, pre-implementation mitigation estimates, projections of aggregate impact of mitigation actions. Every 2 years.

INTEGRATED ENERGY AND CLIMATE PROGRAM (IEKP)

Implementation analysis and comparison with pre-implementation estimates of costs and mitigation impacts of a suite of climate and energy policies. One-time report issued in 2011; future reporting TBD.

INDIVIDUAL POLICY TRACKING SYSTEMS

Frequent reporting on renewables policies; less frequent data collection and monitoring for some other mitigation actions

## Evaluation Matrix

EMISSIONS	MITIGATION ACTIONS
VERY TRANSPARENT	SOMEWHAT TRANSPARENT
VERY COMPARABLE	SOMEWHAT COMPARABLE
VERY RELIABLE	FAIRLY RELIABLE
VERY USEFUL	FAIRLY USEFUL
VERY TIMELY	FAIRLY TIMELY
VERY COMPLETE	FAIRLY COMPLETE

See full report for details.

# MRV in Italy

## Key Findings

- Italy's GHG emissions inventory is very comprehensive; strong institutional expertise underpins reliability and cross-organisation coordination aids comparability of results
- National systems for MRV of individual mitigation actions appear to be reliable, although they often do not use consistent methodologies to estimate the impact of individual policies. Methods are harmonized to international standards only when required by supranational legislation.
- Italy has begun to measure and report on its energy efficiency and renewable energy policy portfolios in a more integrated and consistent way, although this reporting does not include estimates of mitigation impact.

## MRV Systems

EMISSIONS	System	Description
	GREENHOUSE GAS INVENTORY	Annual estimate of emissions of six major GHGs. Uses rigorous methods for data analysis, extensively documented and reviewed. Cross-checked with data from the EU Emissions Trading System.
	NATIONAL COMMUNICATIONS TO UNFCCC	Description of policy, pre-implementation mitigation estimates. Produced every 4-5 years.
MITIGATION ACTIONS	EU MONITORING MECHANISM	Description of policy, pre-implementation mitigation estimates, projections of aggregate impact of mitigation actions. Every 2 years.
	NATIONAL TRACKING OF ENERGY EFFICIENCY AND RENEWABLE ENERGY	Annual reporting on progress toward targets for energy savings and renewable energy deployment. Some pre-implementation estimates of mitigation impact.
	INDIVIDUAL POLICY TRACKING SYSTEMS	Reporting schedule and content are defined in individual policies; agencies provide mitigation estimates where possible.

## Evaluation Matrix

EMISSIONS	MITIGATION ACTIONS
VERY TRANSPARENT	SOMEWHAT TRANSPARENT
VERY COMPARABLE	SOMEWHAT COMPARABLE
FAIRLY RELIABLE	SOMEWHAT RELIABLE
FAIRLY USEFUL	FAIRLY USEFUL
VERY TIMELY	FAIRLY TIMELY
VERY COMPLETE	FAIRLY COMPLETE

See full report for details.

# MRV in the United States

## Key Findings

- The United States' systems to track GHG emissions are very strong; they are able to effectively inform domestic and international stakeholders and support future policymaking.
- At the level of individual policies, there are some well-developed systems to track compliance and gather program data, and federal oversight mechanisms help ensure accountability.
- However, tracking systems for mitigation actions as a whole do not allow policymakers to identify the most effective and efficient policies. There is no unified method for estimating and reporting the impact of mitigation actions, making it difficult to determine which policies are working best.

## MRV Systems

	EMISSIONS	
	GREENHOUSE GAS INVENTORY (NATIONAL)	Annual estimate of emissions of six major GHGs. Uses rigorous methods for data analysis, extensively documented and reviewed.
	GREENHOUSE GAS REPORTING RULE (FACILITY-LEVEL)	Annual reporting on emissions from large facilities. Data published online in detail, with user-friendly data viewer.
	MITIGATION ACTIONS	
	NATIONAL COMMUNICATIONS TO UNFCCC	Description of policy, mitigation estimates. Produced every 4-5 years as required by UNFCCC.
	POLICY-LEVEL REPORTING	Usually annual reporting; content usually includes spending and program activities, not necessarily mitigation impact.
	FEDERAL OVERSIGHT PROCESSES	Ad hoc reviews, usually not focused on mitigation.

## Evaluation Matrix

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	VERY USEFUL	SOMEWHAT USEFUL
	VERY TIMELY	FAIRLY TIMELY
	VERY COMPLETE	FAIRLY COMPLETE

See full report for details.

## Contact

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## CPI Publications on MRV

Tracking Emissions and Mitigation Actions: Current Practice in China, Germany, Italy, and the United States (February 2012): Describes national MRV systems for GHG emissions and mitigation actions.

Tracking Emissions and Mitigation Actions: Evaluation of MRV Systems in China, Germany, Italy, and the United States (May 2012): Evaluates national MRV systems against a common set of effectiveness criteria.

Tracking Emissions and Mitigation Actions: Meeting Emerging MRV Challenges in China, Germany, Italy, and the United States (forthcoming).

## About CPI

Climate Policy Initiative (CPI) is a policy effectiveness analysis and advisory organization whose mission is to assess, diagnose, and support the efforts of key governments around the world to achieve low-carbon growth.

CPI is headquartered in San Francisco and has offices around the world, which are affiliated with distinguished research institutions. Offices include: CPI Beijing, affiliated with the School of Public Policy and Management at Tsinghua University; CPI Berlin, affiliated with the Department for Energy, Transportation, and the Environment at DIW Berlin; CPI Rio, affiliated with Pontifical Catholic University of Rio (PUC-Rio); and CPI Venice, affiliated with Fondazione Eni Enrico Mattei (FEEM). CPI is an independent, not-for-profit organization that receives long-term funding from George Soros.