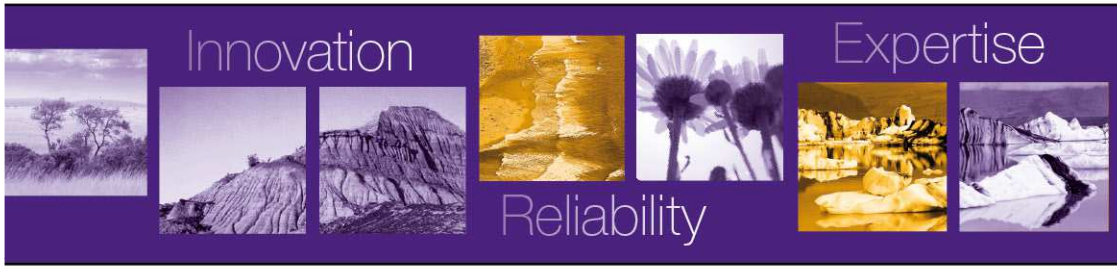
Reliability

Innovation



Expertise

cdc climat research | Caisse des Dépôts GROUP

Accounting for carbon: monitoring, reporting and verifying emissions in practice

Valentin Bellassen, Nicolas Stephan, Marion Afriat, Emilie Alberola, Ally Barker, Jean-Pierre Chang, Caspar Chiquet, Ian Cochran, Mariana Deheza, Chris Dimopoulos, Claudine Foucherot, Guillaume Jacquier, Romain Morel, Rod Robinson, Igor Shishlov

eit Knowledge & Innovation Community Climate-KIC

afd Agence Française de Développement

unifa

Liberté • Égalité • Fraternité République Française

Ministère de l'Agriculture de l'Agroalimentaire et de la Forêt

Ministère de l'Écologie, du Développement durable et de l'Énergie

cdc climat research | Caisse des Dépôts GROUP

south pole carbon

CITEPA

NPL

Innovation Expertise Reliability

cdc climat research

Caisse des Dépôts GROUP

Jurisdictional scale

- Characteristics: all emissions within a jurisdiction are monitored, no matter who is responsible for them
- Trend setter
  - National GHG inventories (UNFCCC / Kyoto Protocol)
- Variants
  - Sub-national inventories (GHG Protocol / Covenant of mayors / Bilan Carbone Territorial)
  - REDD+ (VCS / UNFCCC-Warsaw decisions)

Three types of carbon pricing mechanisms

Site/company scale

- Characteristics: only emissions from a specified entity are monitored, tend to be mandatory
- Trend setter
  - EU ETS
- Variants
  - Australian CPM
  - Californian ETS
  - Shenzhen ETS
  - Company-level footpring (CDP / Grenelle I & II)

Project scale (offsets)

- Characteristics: size and number of entities whose emissions are monitored are variable, voluntarily implemented
- Trend setter
  - Clean Development Mechanism
- Case studies across offset standards
  - Agricultural N_2O
  - Reforestation
  - Improved forest management
  - Fugitive CH_4 in refineries

Key questions across CPMs and scales

- Five recurring questions
  - What are the MRV requirements and costs?
  - Is a flexible trade-off between requirements and costs allowed?
  - Is requirements stringency adapted to the amount of emissions at stake (materiality)?
  - What balance between comparability and information relevance?
- Examples of system-specific questions
  - Electricity imports (California)
  - Waste sector (Australia)
  - Company-level aggregation and double counting (China)

Monitoring requirements

- Monitoring requirements on uncertainty are seldom comprehensive

None

Qualitative (eg. key categories should use a country-specific emission factor)

Quantitative, covering a few sources of uncertainty (eg. sampling error shall be no greater than 10%)

Quantitative, covering most sources of uncertainty (eg. total uncertainty shall be no greater than 2.5-10%)

		Standard or regulation	Uncertainty requirements
Jurisdiction	National inventories	UNFCCC	
	Sub-national intentories	GHG Protocol / Covenant of mayors / Bilan Carbone	
	Jurisdictional REDD+	VCS	
Site/company	EU ETS	MRR	
	Waste sector in the Australian CPM	NGER	
	Imported electricity in the Californian ETS	MRR	
	Shenzhen ETS	SZDB/Z 69	
	Company-level footprint	CDP/Grenelle I & II	
Offset project	Projects	CDM	
	Agricultural N_2O projects	CAR / VCS / ACR	
		JI	
	Reforestation projects	CDM	
	Forest management projects	VCS	
	Fugitive projects	CDM	

Verification requirements

- Site vs projects

	Standard or regulation	Verification requirements
National inventories	UNFCCC	
Sub-national intentories	GHG Protocol / Covenant of mayors / Bilan Carbone	
Jurisdictional REDD+	VCS	
EU ETS	MRR	
Waste sector in the Australian CPM	NGER	
Imported electricity in the Californian ETS	MRR	
Shenzhen ETS	SZDB/Z 69	
Company-level footprint	Grenelle I	
	Grenelle II	
	CDP	
Projects	CDM	
Agricultural N_2O projects	CAR / VCS / ACR	
	JI	
Reforestation projects	CDM	
Forest management projects	VCS	
Fugitive projects	CDM	

None

Focused on reporting procedures rather than reported figures

Variable frequency, accredited third party

Annual frequency, accredited third party

MRV costs

- MRV costs decrease with size/comprehensiveness of the perimeter

		Standard or regulation	Cost per entity (€ yr^{-1})	Cost per emission (€ tCO_2e^{-1})
Jurisdiction	National inventories	UNFCCC	800 000	45E-6
	Sub-national intentories	GHG Protocol / Covenant of mayors / Bilan Carbone Territorial	18 500	0,003
	Jurisdictional REDD+	VCS	145 000	0,40
Site/company	EU ETS	MRR	22 000	0,07
	Waste sector in the Australian CPM	NGER	5 020	0,10
	Imported electricity in the Californian ETS	MRR	73 000	0,14
	Shenzhen ETS	SZDB/Z 69	no data	no data
	Company-level footprint	CDP/Grenelle I & II	no data	no data
Offset project	Projects	CDM	55 000	0,57
	Agricultural N_2O projects	CAR ACR / JI		
	Reforestation projects	CDM	17 000	0,80
	Forest management projects	VCS	Likely similar to CDM reforestation projects	Likely similar to CDM reforestation projects
	Fugitive projects	CDM	167 000	0,22

Is a flexible trade-off between requirements and costs allowed?

Innovation Expertise Reliability

cdc climat research

Caisse des Dépôts GROUP

- Incentives to reduce uncertainty tend to be partial and indirect

None
Qualitative (eg. general principle of "continuous improvement")
Indirect (eg. through a conservative emission factor) **and quantitative, but covering only a few sources** of uncertainty.
Direct (eg. deduction factor) **and quantitative, covering most sources** of uncertainty.

		Standard or regulation	Incentives to reduce uncertainty
Jurisdiction	National inventories	UNFCCC	
	Sub-national intentories	GHG Protocol / Covenant of mayors / Bilan Carbone	
	Jurisdictional REDD+	VCS	
Site/company	EU ETS	MRR	
	Waste sector in the Australian CPM	NGER	
	Imported electricity in the Californian ETS	MRR	
	Shenzhen ETS	SZDB/Z 69	
	Company-level footprint	CDP/Grenelle I & II	
Offset project	Projects	CDM	
	Agricultural N_2O projects	CAR / VCS	
		ACR	
		JI	
	Reforestation projects	CDM	
	Forest management projects	VCS	
	Fugitive projects	CDM	

Is requirements stringency adapted to the amount of emissions at stake (materiality)?

Innovation Expertise Reliability

cdc climat research

Caisse des Dépôts GROUP

- "Materiality" is commonly practiced except at jurisdictional scale
- "Materiality" is outweighed by economies of scale

		Standard or regulation	Rules to adapt requirements stringency to the amount of emissions at stake
Jurisdiction	National inventories	UNFCCC	
	Sub-national intentories	GHG Protocol / Covenant of mayors / Bilan Carbone	
	Jurisdictional REDD+	VCS	
Site/company	EU ETS	MRR	
	Waste sector in the Australian CPM	NGER	
	Imported electricity in the Californian ETS	MRR	
	Shenzhen ETS	SZDB/Z 69	
		Grenelle I	
		Grenelle II	
	Company-level footprint	CDP	
Offset project	Projects	CDM	
	Agricultural N_2O projects	CAR	
		ACR / VCS / JI	
	Reforestation projects	CDM	
	Forest management projects	VCS	
	Fugitive projects	CDM	

More stringent requirements **for smaller sources**

No rules to adapt requirements stringency

Qualitative rules

Quantitative thresholds reducing stringency for smaller sources

What about « conservativeness »?

- Does not really exist at jurisdictional scale
- Does not exist in mandatory CPMs
  - In the EU ETS, not adding to the cost imbalance between small and large installations is a likely reason
  - In the Californian ETS, interstate commerce provisions are a likely reason for the un-conservative default emission factor
- Exists in offset projects, though the principle is not applied in a consistent and systematic manner

What balance between comparability and information relevance?

- Comparability trumps information relevance …

- … except where the constraints / financial stakes are weak:
  - Sub-national inventories
  - Company-level footprints
  - (too a lesser extent) national GHG inventories

To know more …

Accounting for Carbon: Monitoring, Reporting and Verifying Greenhouse Gas Emissions in Practice (upcoming)

Valentin Bellassen & Nicolas Stephan Eds.

CAMBRIDGE UNIVERSITY PRESS

valentin.bellassen@cdcclimat.com

nicolas.stephan@cdcclimat.com

Contributors: Valentin Bellassen, Nicolas Stephan, Marion Afriat, Emilie Alberola, Ally Barker, Jean-Pierre Chang, Caspar Chiquet, Ian Cochran, Mariana Deheza, Chris Dimopoulos, Claudine Foucherot, Guillaume Jacquier, Romain Morel, Rod Robinson, Igor Shishlov