MRV REQUIREMENTS IN EMISSION TRADING SYSTEMS WORLDWIDE

MRV Workshop - Bonn June 3, 2014

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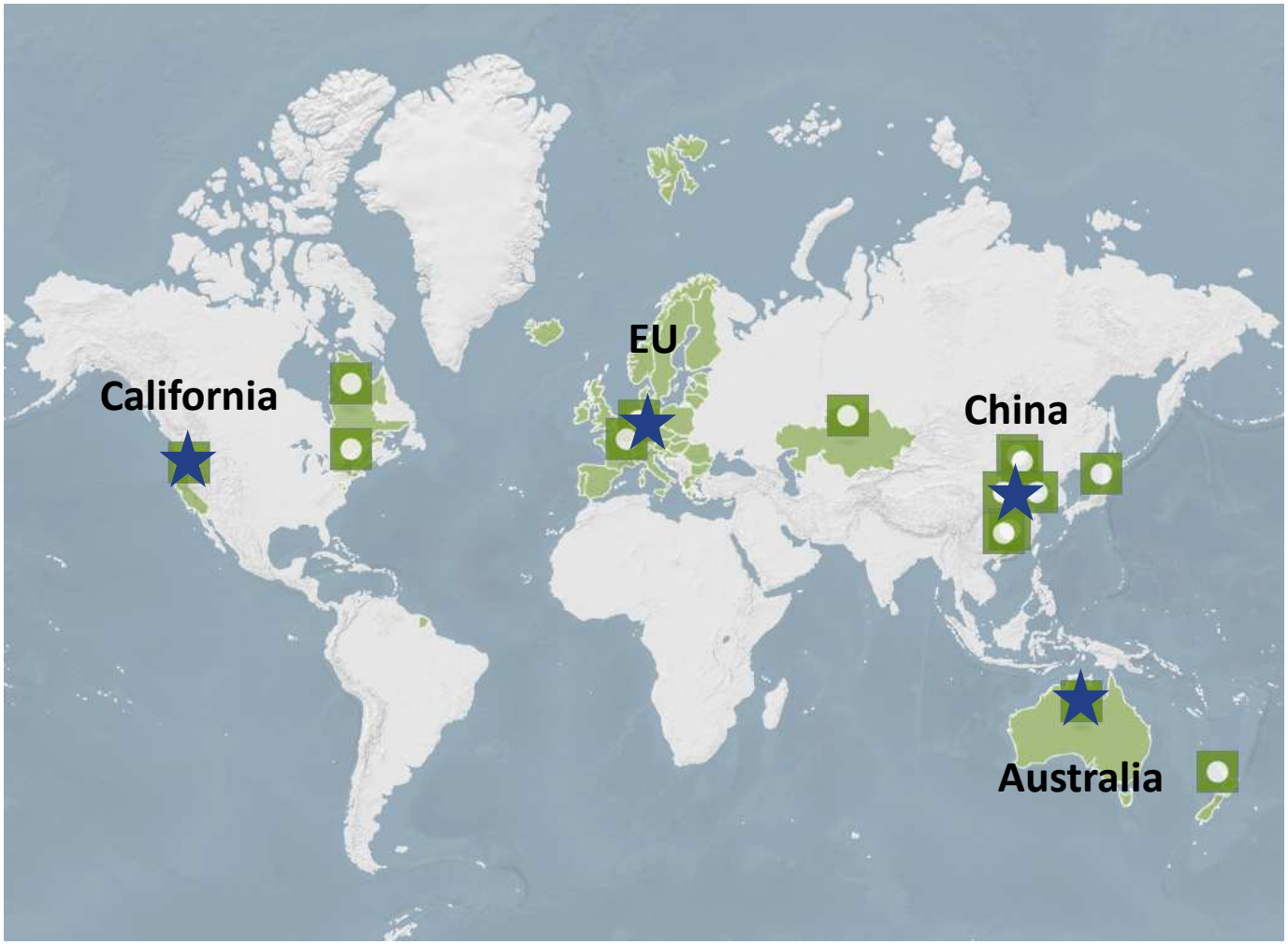
ETS worldwide



map from ICAP (icapcarbonaction.com)

Main features

	Sectors	Gases	Number of entities	% emissions covered	Since	Trading period	Allocation mode
EU	Energy Industry Aviation	CO_2 N_2O PFC	11 500	45%	2005	2005-2007 2008-2012 2013-2020	Free / Auctioning
Australia	Energy Industry Transport Waste	CO_2 CH_4 N_2O PFC	360	50%	2012	2012-2015	None (carbon tax with fixed price)
China - Shenzen	Energy Industry	CO_2	830	38%	2013	2013-2015	Free
California	Energy Imported electricity Industry	CO_2, CH_4, N_2O, HFC, PFC, SF_6, NF_3	350	36%	2013	2013-2014 2015-2017 2018-2020	Free / Auctioning

Uncertainties requirements

E_{GHG} = activity data x emission factors

	activity data	emission factors
EU ETS	Overall uncertainty must be below 2.5-10% if a direct measurement approach is used	Uncertainty must be below 1.5-15%, depending on the size of the source	Use of specified default factors or mandatory analyses depending on the size of the source
Waste Australia	Uncertainties must be minimized and reported at 95% confidence level		
Imp. Elec. California	Relevant requirements of where electricity is produced (e.g. US EPA GHG reporting rule)	Overall uncertainty of electricity meters at facility level must be lower than 5%	
China Shenzhen	None		Use of default factors always allowed

Incentive to reduce uncertainty

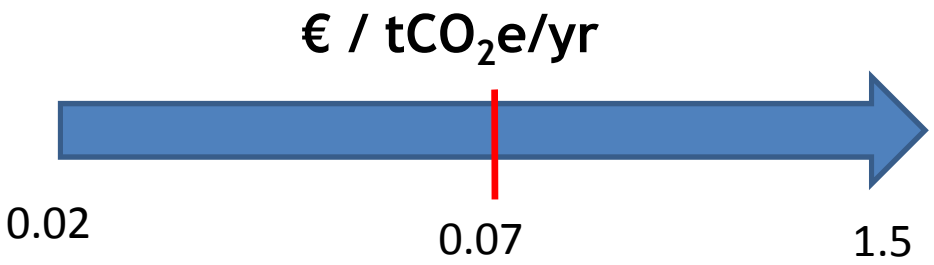
- ✓ **EU ETS :** A principle of "continuous improvement" is embedded in the MRR. Regulation aims for the highest achievable accuracy / precision, unless this is technically not feasible or incurs unreasonable costs
- ✓ **Waste – Australia :** Incentive to upgrade methodology when methane capture is higher than 75%
- ✓ **Imported electricity – California :** If the source is cleaner than the default emission factor for unspecified sources, there is an incentive to upgrade to "specified source“ and use site specific EF

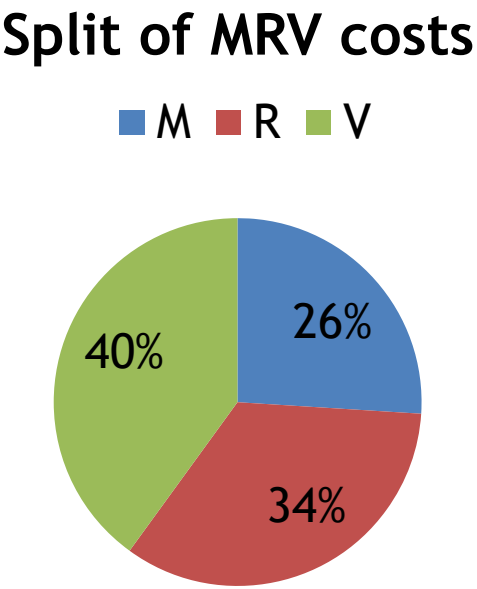
  To the reverse, there is an incentive to maintain a high uncertainty "unspecified" status if the source is dirtier than the default emission factor
- ✓ **China – Shenzhen :** None yet specified. To the contrary, the use of uncertain default factors is always allowed, and therefore likely to be largely used since it is cheaper both per se and because it fits well with the existing reporting on energy use

Requirements vs. emissions : materiality

	Inclusion threshold	Related to monitoring	Related to verification
EU ETS	V	V	V
	various criteria (eg. thermal input >20 MW)	More stringent requirements for larger installations and source streams	2% (large installations) 5% (small installations) of facility-level emissions
Waste Australian CPM	V	X	V
	25 ktCO2e/yr (10 ktCO2e/yr in the vicinity of an already included landfill)		only systematic for facilities >125 ktCO2e/yr
Imported electricity Californian ETS	V	X	V
	25 ktCO2e/yr for specified sources		5% of facility-level emissions
China Shenzhen	V	X	X
	5 ktCO2e/yr (direct and indirect emissions)		

Costs for EU ETS





Costs for EU ETS

- Administrative costs are insignificant compared to directs costs
- Costs decrease sharply with amount of verified emissions
- MRV, and in particular monitoring, is much more costly in some specific sectors such as refining and cement production

Cost-requirements-emissions ultimate tradeoff ?

EU-ETS

Principle of unreasonable costs

- lower **requirements** when the **costs** are proven too high in regard to the benefit
- calculation of the benefit take **emissions at stake** into account (therefore unreasonable costs are easier to demonstrate for smaller source of emissions)

US GHG Reporting rule

Let's play with the inclusion threshold

- 25 kt to 10 kt CO_2e/yr : costs +35%, emissions coverage +1%
- 25 kt to 100 kt CO_2e/yr : costs -23%, emissions coverage -2.5%

How about direct measurement?

- systematic : uncertainty -65%, costs x10
- targeted : uncertainty -50%, costs x2

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THANK YOU FOR YOUR ATTENTION

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