Emissions Trading System Comparison Table, May 2013

Based on *The World's Carbon Markets: A Case Study Guide to Emissions Trading*, Environmental Defense Fund (EDF) and the International Emissions Trading Association (IETA)

Authors: Adam Peltz (EDF), Peter Sopher (EDF), and Alex Hanafi (EDF) **Point of Contact:** Daniel Francis (EDF) dfrancis@edf.org

Acknowledgements: Anthony Mansell (IETA) and Clayton Munnings (Resources for the Future). Clayton and Anthony made significant contributions authoring case studies upon which this table is based.

	Status	Emission reduction levels		Emissions regulations			Allowance Value		Cost Containment					International Components		
		Overall Goal	Reduction timetables	Economic sectors covered	Thresholds	Gases covered And Point of obligation	Allowance value distribution	Credit for early action	Compliance periods	Offset sources and quality requirements	Offset limits	Banking and Borrowing	Additional features	Linking of emissions trading systems	Competitiveness and emissions leakage	REDD support
EU	Started 2005 Phases: I: 2005-07 II: 2008-12 III: 2013-20 IV: 2021-onward	The EU ETS target for capped installations is 21% below 2005 levels by 2020. EU emissions reduction target: 20% below 1990 levels by 2020; 80-95% below 1990 levels by 2050	2013: 1.974 MtCO2 2014: 1.937 MtCO2 2015: 1.901 MtCO2 2016: 1.865 MtCO2 2017: 1.829 MtCO2 2018: 1.792 MtCO2 2019: 1.756 MtCO2 2020: 1.720 MtCO2	Covered installations are grouped in the following sectors: power combustion (by far the largest emitting sector), oil refining, coke and steel, cement and lime, glass, bricks and ceramics, pulp and paper, and miscellaneous. Approximately 40% (43% in Phase III) of total emissions covered, totaling 11,500 installations, 5,000 companies, and 30 countries.	Installations that emit below sector-specific thresholds can opt out of the program.	Phases I and II: CO_2 Phase III: CO_2 and industrial gases, such as PFCs from aluminum and N_2O from Nitric Acid Point of obligation: point of emissions, downstream	During Phase I and II, allowances were primarily freely allocated. Starting in 2013, at least half of allowances are auctioned. Auctioned allowances are scheduled to gradually increase and could reach 100% by 2027. All allowances for the power sector are auctioned, as of 2013. Sectors at risk of leakage given free allowances with ambitious benchmarks	N/A	Annual	Projects recognized under the KP's Joint Implementation or Clean Development Mechanism programs; but post-2012, only CDM credits from LDCs (aside from those already in the pipeline) are recognized, CERs from industrial gas projects are not allowed, and ERUs and CERs from large-scale hydropower are subject to conditions.	50% of EU-wide required aggregate abatement for the period 2008-2020 relative to 2005 levels. In Phase II, CERs and ERUs were allowed to combine to comprise up to 13.4% of the total EU ETS cap.	Banking is permitted within and between compliance phases. Borrowing is not technically allowed, but there is effectively year-ahead borrowing within trading periods.	For price management reasons, the European Commission has proposed backloading a number of allowances during Phase III.	Yes, with any country or administrative entity that has established a compatible mandatory absolute cap and trade system whose design elements would not undermine the integrity of the EU ETS. Has already finalized or planned links with outside jurisdictions, including Norway and Australia.	Formula determines exposure to leakage; leakage-prone sectors granted free allowances based on benchmark calculations	No
Australia	Carbon Pricing Mechanism (CPM) began in July 2012. Trading is scheduled to begin in July 2015.	5% below 2000 levels by 2020. 80% below 2000 levels by 2050.	5% below 2000 levels by 2020, unconditionally. 15-25% below 2000 levels by 2020 conditioned on international agreement benchmarks.	Stationary energy, industrial processes, fugitive emissions, non-legacy waste, commercial transport. Excluded: some parts of the transport sector. Agriculture is not capped, but it is a source of offsets through *Carbon Farming Initiative*. ETS coverage of capped sectors is about 60% of Australia's GHG emissions. Including other sectors that have an equivalent price, this percentage increases to about 67%.	Generally, any facility generating over 25ktCO2e/yr. Exception: landfill emissions are covered for sources above 10,000 tCO2e/yr.	CO2, CH4, N2O, and PFCs from aluminum smelting. Other synthetic GHGs are excluded from CPM but will have an equivalent carbon price imposed using already existing national regulations. Point of Obligation: downstream for most sectors. Beginning in 2013, upstream for LPG and LNG with provisions.	Emissions-intensive, trade-exposed (EITEs) activities receive free allocation of permits based on output for three years at two levels: 94.5% free allocation for high carbon intensity activities; 66% free allocation for medium-intensity activities. Both rates decrease by 1.3 % per year, and will be reviewed in 2014-15. The percentage of allowances to be auctioned in the Australian ETS has yet to be specified.	N/A.	Annual	Domestic offsetting from 2012 through *Carbon Farming Initiative* (up to 5% of entity's obligation) during the CPM. No limits are in place after July 2015. International offsetting permitted from the start of the flexible price period in July 2015 (with a price ceiling through 2018). Kyoto CERs and ERUs permitted. Broad ministerial discretion to allow non-Kyoto units after 2015.	Until 2020, covered entities must meet at least half of their annual obligations with domestic permits rather than international permits. 12.5% of an entity's compliance obligation can be fulfilled using CERs and ERUs.	No banking or borrowing during the fixed price period (until 2015), and unlimited banking after. After the fixed price period, borrowing limited to 5% of current year emissions liability	During CPM, companies purchase allowances directly from the government for AUD $23 (increasing year-on-year with inflation). During 2015-2018, the government will set a price ceiling at AUD $20 above the international price (the EUA price), rising 5% annually. After July 2018, this price ceiling will be removed.	There is a one-way linkage, in which Australian ETS participants may purchase EU ETS allowances for compliance, beginning in July 2015. A two-way linkage is scheduled for no later than July 2018. Favorably disposed towards linking with New Zealand, possibly in 2015.	See Allowance Value Distribution. Also, coal-fired power receives $5.5 billion transitional assistance in free permits. $300m Steel Transformation Plan and $1.3bn Coal Sector Jobs Package.	Minister has discretion to allow REDD credits into scheme post-2015. Domestic forest growers may earn carbon credits through increasing carbon stored in the landscape.
California	Started 2013 Phases: I: 2013-14 II: 2015-17 III: 2018-20	AB 32 requires CA to return to 1990 levels of GHG emissions by 2020	2013: 2% below 2012 2014: 2% below 2013 2015-2020: 3% decline annually. Initial budget of 162.8 MMTCO2e in 2013, increases to 394.5 MMTCO2e in 2015 with new sectors, and decreases to 334.2 MMTCO2e by 2020	Phasing in sectors from 2013 (generation emissions from first deliverers of electricity; and process emissions for a range of large industrial sources, including refiners of petroleum and natural gas) to 2015 (suppliers of natural gas, distillate fuel oil, and liquefied petroleum gas). Covers 85% of CA emissions by 2015	Covers facilities generating over 25ktCO2e/yr.	Gases: CO2, CH4, N2O, HFCs, PFCs, SF6, NO3. Point of obligation: sector-specific	Allocation rules are sector-specific. Industrial facilities: free allocation for approximately 90% of emissions initially, switching to free allocation/ auction model in 2015 with allocation determined by leakage risk. Electric distribution utilities: free distribution with value of allowances going to ratepayers, set at ~90% of average emissions. First Auction Nov. 2012	Early action offsets are allowed, subject to validation criteria and limits.	Three compliance periods: 2013-2014, 2015-2017, 2018-2020	Initially, four protocols approved by responsible agency: US forest projects, urban forests, livestock, and destruction of ozone-depleting substances. California is open to developing international offset protocols, but all protocols so far do not include jurisdictions outside of the US, Canada, and Mexico.	Up to 8% of a facility's compliance obligation. International sector-based offsets may comprise up to a quarter of all offsets (2% of overall compliance) in Phase I, and half of all offsets (4% of overall compliance) in Phase II and III.	Banking is permitted with holding limits but no expiry. Borrowing is not permitted; however, a three year compliance period provides additional flexibility in obtaining allowances to meet obligations.	Auctions will have a price floor; Between 1% and 7% of allowances will be set aside in a price containment reserve	Provisions in the regulations allow linking with external ETSs after a full rulemaking process and an independent review by the Governor. The formation of a link with Quebec is at an advanced stage.	Industrial assistance package based on industry's leakage risk (high, medium, low) provides free allowances on a sliding scale	2% of the overall CA ETS compliance obligation, rising to 4% beginning in 2015, may be met with international sectoral offsets. Among other actions, CA has signed an MOU with Chiapas, MX and Acre, BR to work towards the establishment of REDD offset programs.
New Zealand	Started 2008 Covered sectors will gradually phase in from 2008 to 2015.	10-20% below 1990 levels by 2020. 50% below 1990 levels by 2050	2008-12: Reduce average annual GHG emissions to 1990 level (equivalent to KP commitment). 10%-20% below 1990 levels by 2020 provided there is a global agreement.	Forestry entered in 2008; Stationary energy, liquid fossil fuels and industrial process [various triggers] (from 2010); waste (all landfill operators), synthetic GHGs (from 2013); agriculture inclusion originally scheduled for 2015, but this has been delayed indefinitely pending a 2015 review.	Sector-specific	Covers six gases (CO2, CH4, N2O, HFCs, PFCs, and SF6). In addition, HFCs and PFCs from imported motor vehicles and other goods are covered by a levy instead of the ETS. Point of obligation is sector-specific and generally upstream. Uniquely, in the NZ ETS, the point of allocation differs from the point of obligation.	To 2015, fixed price of NZD $25 per unit with a 2-for-1 surrender obligation (for an effective price of NZD $12.50). Free allocation is allowed for the following sectors: forestry, agriculture, industrial activity, and fishing. For industrial and agricultural sectors, intensity-based allocation. Free output-based allocations for emissions intensive trade-exposed activities at 90% or 60% of industry average, with a 1.3% annual decay rate. To reflect decrease in asset value: free allocation to owners of fishing quotas (as at 2010) and free allocations per hectare to holders of pre-1990 forest land. The government has proposed to introduce auctioning starting in 2013.	N/A	Annual	KP offsets, including AAUs, ERUs, RMUs and CERs. Domestic forestry can generate (and sell) NZUs to reflect increased carbon stock in forested land.	No limit for use of approved domestic and international offsets. No nuclear or forestry CERs. HFC-23 and N2O CERs banned from 24 December 2011. In December 2012, banned Eastern European ERUs from projects destroying HFC-23 and N20 from adipic acid plants.	Unlimited banking, but no borrowing	NZ has a 2025 target for 90% renewable energy. Transitional period with cost containments will run until 2015. Due to output-based industrial allocation, NZ Government will purchase offsets to meet int'l obligations if necessary to preserve domestic cap.	System encourages linkages. Links with Australia heavily pursued.	Intensity-based allocation of NZUs to protect firms at risk of losing competitive leverage. All agricultural and some industrial activities are considered energy-intensive trade-exposed (EITE).	No, but RMU offsets are permitted. Domestic forestry can generate tradable NZUs by increasing forest carbon stock.

Quebec	Started 2013 Phases: I: 2013-14 II: 2015-17 III: 2018-20	20% below 1990 levels by 2020.	Initial budget of 23.2 MMTCO2e in 2013, increases to 65.3 MMTCO2e in 2015 with new sectors, and decreases to 54.74 MMTCO2e by 2020	Phasing in sectors from 2013 (major industries and electricity generation) to 2015 (fuel providers). After 2015, approximately 85% of Quebec's emissions will be covered.	Covers facilities generating over 25ktCO2e/yr, totaling approximately 80 facilities in the first compliance period	Covers CO2, CH4, N2O, HFCs, PFCs, SF6, and NF3. Point of obligation: generally downstream, except upstream for fuel distribution.	Most allowances allocated without charge in the first compliance period based on historical emissions but adjusted for output. More allowance will be auctioned in later compliance periods.	Yes, for verifiable and additional GHG reductions between Jan. 1, 2008 and Jan. 1, 2012	Three compliance periods: 2013-2014, 2015-2017, 2018-2020	Offset protocols include: Agricultural Methane Destruction; Small Landfill Site Methane Destruction; and Ozone Depleting Substance (ODS) Destruction.	Up to 8% of a facility's compliance obligation. There are no international offset protocols.	Banking is permitted with holding limits. Borrowing is not permitted.	Auctions will have a price floor; the price containment reserve will holds 1% of capped allowances in Phase I, 4% in Phase II, 7% in Phase III, and 4% for 2021 and beyond.	Part of the Western Climate Initiative, and pursuing a link with California.	Disproportionate free allowance allocations are granted to covered facilities that belong to industries with competitiveness concerns.	No international offset provisions of any kind have been adopted to-date. Committed to following WCI recommendations which endorse a sectoral approach to international offsets.
Mexico	General Law on Climate Change (LGCC), enacted June 2012, creates the option to develop a domestic ETS in Mexico, but there is as yet no certainty that such a system will be established.	Non-binding target of 30% below BAU by 2020; 50% below 2000 levels by 2050. Source 35% of electricity generation from clean energy by 2024.	N/A	Emissions reporting required for power generation and use, transport, agriculture, stockbreeding, forestry and other land uses, solid waste and industrial processes.	N/A	TBD	TBD	TBD	N/A	Law authorizes for international emissions trading. As of August 2012 Mexico's expected annual average CERs from registered CDM projects was almost 13 million, 2.0% of global CERs.	TBD	TBD	Law authorizes creation of nationally and internationally funded climate fund to pay for mitigation and adaptation.	Environment Ministry is authorized to establish emissions market that can include international emissions trading.	Targets are non-binding.	The state of Chiapas has signed a MOU with California and Acre (Brazil) on establishing a REDD offsets program. The LGCC recognizes state authority to implement REDD+ programs. Actions have been made at the federal level as well.
China	Two provinces (Hubei and Guangdong) as well as five cities (Beijing, Tianjin, Shanghai, Chongqing, and Shenzhen) are currently considering emissions trading legislation as part of a national carbon trading pilot program. National ETS targeted to begin 2016-2020.	Carbon intensity reduction target of 17% from 2010 levels by 2015 and 40-45% below 2005 levels by 2020. By 2020, increase the ratio of non-fossil fuel energy to primary energy consumption to 15%.	N/A	Pilot schemes differ. Regarding a potential national ETS, NDRC states, "the covered sectors should reach certain emissions volume and have significant potentials for emissions reductions; otherwise, it is hard to achieve the objective to cut greenhouse gas emissions through [a] market mechanism."	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
RGGI	Started 2009 Phases/compliance periods are every 3 years: I: 2009-11 II: 2012-14 III: 2015-17…	Carbon dioxide emissions from the power sector will be reduced 10% below 2014 levels by 2018.	2012 cap: 165 million short tons; 2009-2014: cap stabilizes emissions; 2015-2018: cap reduces 2.5% annually for total reduction of 10% below 2014 levels by 2018.	Covers fossil fuel-fired power plants.	Plant producing >25MW (168 total) in CT, DE, MA, MD, ME, NH, NY, RI, VT (and formerly an additional 40 in NJ)	CO2 only Point of Obligation: Downstream (at installation level)	About 90% of allowances are auctioned. The reserve price as of July 2012 was $1.93/allowance.	Credit allowed for qualified emissions reductions made from 2006-2008 over baseline emissions from 2003-2005. Such credits are awarded directly to source, are not included in the auction, and are in addition to the cap.	Three years (First period 1/1/09-12/31/11, Second period began on 1/1/12-and extends through 12/31/14,). May be extended to four years if stage two price trigger is met.	Five project categories for three GHGs: (1) Landfill methane; (2) sulfur hexafluoride (SF6) in the electric power sector; (3) afforestation CO_2 sequestration; (4) CO_2 emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency in the building sector; (5) CH_4 emissions from agricultural manure management operations.	Up to 3.3% of total emissions reductions can come from offsets. If price reaches USD $7 in 2005 dollars, offsets can be 5% of total reductions. If price reaches USD $10 in 2005 dollars offsets can be 10% of total reduction and international offsets units, such as CERs, may be accepted.	Banking with no restrictions is allowed. Borrowing is not included in the model rule, but it was allowed through Early Reduction Allowances.	For several states, when retail customers purchase voluntary renewable energy credits, allowances are retired on behalf of those purchases.	N/A	RGGI has developed a suite of policy options for states to implement to minimize leakage, including monitoring, energy efficiency, and improving energy codes	Offsets allowed for certified afforestation projects within the RGGI states, or within any U.S. state or jurisdiction that has signed an MOU with the RGGI states.
Brazil	Brazil's December 2009 National Climate Change Plan (NCCP) mentions "financial mechanisms that are national in scope and referring to mitigation and adaptation to climate change" in Article 6, XI. The NCCP also calls for the creation of the Brazilian Emissions Reduction Market. There has been ETS activity in sub-national jurisdictions, namely the states of Rio de Janeiro, Sao Paulo, and Acre.	36.1%-38.9% below BAU by 2020 (6%-10% below 2005 levels) voluntary targets. State-level targets also exist. Brazil, largely as a result of its Plan for Prevention and Control of Amazon deforestation and Amazon states' programs, has reduced emissions 2.2 billion tCO2e since 2006, making it the world's leader in emissions reductions.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	According to February 2013 data, Brazil hosts 269 CDM projects, or 4.1% of the world's total. Behind China (53.1%) and India (18.3%), Brazil hosts the third most CDM projects. CERs are traded on commodities and futures exchanges authorized by the Brazilian Securities and Exchange Commission (CVM).	N/A	N/A	The major Brazilian environmental exchanges are Bolsa Verde do Rio de Janeiro (BVRio) and the BMF/Bovespa environmental assets exchange.	In 2010, the Brazilian state of Acre signed a memorandum of understanding (MOU) with the states of California, USA and Chiapas, Mexico to work towards establishing sectoral offset programs for REDD. The three states have created the REDD Offsets Working Group (ROW).	N/A	Brazil has made strides towards developing REDD on both the national and the state level. Brazil has enormous potential to reduce GHG emissions by reducing deforestation (300-500 million tons of CO2 offsets per year by 2020). Brazil's goals: eliminate net loss of forests by 2015; double forest coverage from 5.5 million ha to 11 million by 2020.

Korea	Starting 2015 Phases: I: 2015-17 II: 2018-20 III: 2021-26	30% below BAU by 2020, equivalent to 4% below 2005 levels. 2020 BAU is estimated to be 836MTCO2e; thirty percent of which is 244 MTCO2e.	N/A	Capped emitters are determined by thresholds; companies that annually discharge over 125,000 tCO2e and/or workplaces that annually emit over 25,000 tCO2e are required to submit allowances for each ton of CO2e that they produce. 490 emitters, totaling 60% of national emissions, are covered.	Covers firms >125KTCO2e over a three year average and installations >25KTCO2e (450 emitters and 60% of national emissions).	Gases: CO2, CH4, N2O, HFC, PFC, and SF6 Point of Obligation: Downstream	Phase I: 100% free allocation. Phase II: up to 97% free allocation and at least 3% auctioning. Phase III: up to 90% free allocation and at least 10% auctioning. Companies in emissions-intensive trade-exposed sectors will receive 100% of allowances free of cost.	Yes, early reduction results will be credited—in the form of additional allowances—up to 3% of total emission volume during Phase I of the ETS.	Annual	Domestic offsets will be limited to 10% of allowance obligations. Offsets from international sources will be excluded from Phase I and II. Post-2020, international units will be allowed to meet up to 10% of an entity's surrender obligations and the volume must not exceed the number of domestic offsets used	10% of allowance obligations.	Banking: allowed (between years and phases) within one year of the following compliance period. Borrowing: forbidden between phases, but permitted within a trading phases for up to 10% of emissions.	The government has the power to hold an early auction(s) for up to 25% of reserve permits in order to contain prices. An allowance reserve will be built to both contain prices and distribute to new entrants.	The government has expressed interest in linking its ETS with the EU ETS, the Australian ETS, and others.	Government sets cap and free allowances rates taking international competitiveness into account	None stated
Kazakhstan	Started 2013 Phases: I: 2013 (pilot) II: Either 2014-20, or these years will be split Phase II (2014-2015) and Phase III (2016-2020)	7% below 1990 levels by 2020. 15% below 1992 levels by 2025. 25% or 65 MtCO2e below 1992 levels by 2050	N/A	Oil and gas production; The power sector; Mining and metallurgy; Chemical industry; Agriculture (inclusion currently being debated); and Transport (inclusion currently being debated). 178 companies, which emit 147 MtCO2e (55% of Kazakhstan's GHG output and 77% of CO2 emissions), are covered.	Major emitters (companies that emit >20KtCO2e/yr). Subjects of Administrative Regulation (SARs, <20KtCo2e).	Gases: Only CO2 in Phase I; Other gases may be added in future periods. Point of Obligation: Downstream, company-level. After Phase I, companies are obligated to report third-party verified data at the installation level.	Phase I: 100% free allocation based on 2010 emission levels. Phase II: allocation approach is under development, but might include auctioning.	Penalties will not be imposed on companies that fail to surrender sufficient allowances during Phase I. However, there are penalties for not submitting the required documents and reports.	Annual	The following sectors are preferred for domestic offsets: mining and metallurgy; agriculture; housing and communal services; forestry; prevention of land degradation; renewables; processing of municipal and industrial waste; transport; and energy-efficient construction. Trading of ERUs between Kazakhstan and foreign companies, and trading of AAUs on the international markets, subject to Kazakhstan's future inclusion in Annex B	TBD	Banking: not allowed between Phase I and II. Borrowing: not allowed in Phase I	Kazakhstan's Kyoto status precludes it from KP flexibility mechanisms. Because it is an Annex I county, it cannot generate CERs, and because it is not an Annex B country, it cannot generate AAUs or ERUs.	Using the EU ETS as a model, Kazakhstan hopes to link with the EU ETS or a Japan ETS in the future. Potential for regional cooperation with Russian and Ukraine	TBD	TBD
Alberta	Started 2007 (emissions intensity targets rather than absolute)	Reduce covered facilities' annual emissions intensity 12% below a baseline using 2003-2005 averages.	For each covered facility: 2% emissions intensity reduction starting in fourth year of commercial operation, then ramp up 2% per year until 12% is reached.	All industrial facilities, including: chemical and fertilizer manufacturers; coal mines; forest product producers; gas plants; mineral processors; oil sand miners, upgraders, and extractors; petroleum refiners; pipeline transportation; power plants; and waste management.	Covered firms must have emitted > 100,000 tCO2e in 2003 or a subsequent year.	CO2, CH4, N2O, HFCs, PFCs, and SF6	For facilities that reduce net emissions intensity below their limits, the resulting credits, called 'emissions performance credits,' may be kept or sold		Annual	Alberta-based reduction; Reduction must occur after January 1, 2002; Reduction must be real, demonstrable, quantifiable, and measurable; Reduction must derive from voluntary action.	Unlimited usage of offsets for compliance	Reductions below target levels banked indefinitely; Credit buyers must use credit in year of purchase; No restrictions on banking of offsets	Facilities have option to pay CAD $15/tCO2e for excess emissions instead of reducing emissions or purchasing credits or offsets. This fee functions as a price ceiling.	No interest in linking	Nothing beyond cost-containment mechanisms	No
UK	Active 2002-2006 before joining EU ETS in 2007 (there was overlap between the UK ETS and the EU ETS for 2005 and 2006, and the EU ETS, which was mandatory, to precedence over the UK ETS, which was voluntary). Climate Change Agreements (CCAs) still active.	34 voluntary participants undertook targets that averaged 12% below baselines (1998-2000 emissions). This amounted to 12 MtCO2e reductions during 2002-2006, 0.43% of total UK emissions.	N/A	34 firms came from across sectors, rather than from one single sector. The CCAs are more broadly representative of the UK economy, with 54 sectors and 6,000 firms currently covered by an agreement.		CO2, CH4, N2O, HFCs, PFCs, and SF6	Reverse-auction format using descending-clock mechanism for direct participants (not open to CCAs); Direct participants received free allowances based on a standard formula; CCAs generate allowances by overachieving relative to intensity targets		Annual	None	None	Banking between compliance years was allowed, but borrowing was not	Future abatement costs could be managed through the forward banking of allowances accrued in future years to smooth the price of compliance	Coexisted with EU ETS in 2005 and 2006. There was no official linkage, but the UK ETS was voluntary while the EU ETS was mandatory, so the EU ETS took precedence.	Direct participants compliant to the UK ETS received a government subsidy. CCA-compliant firms were eligible for an 80% discount on the UK Climate Change Levy (CCL)	No
Norway	Active since 2005. Linked bilaterally with EU ETS in 2009. Full integration with EU ETS in 2013 (start of Phase III)	-30% relative to 1990 levels by 2020 (-40% w/ int'l agreement); -100% by 2050; KP: 1% above 1990 levels for 2008-2012, a target the country achieved.		Energy production; refining of mineral oil; coke production; production & processing of iron & steel; productions of cement, lime, glass, glass fibre, and ceramic products; and production of paper, board, and pulp from timber or other fibrous materials. Combustion from biomass, hazardous waste, or municipal waste is excluded. Close to 80% of covered emissions derive from fossil fuel combustions, to which petroleum was added in 2008 and is now responsible for 60% of all covered emissions.	Thresholds: Same as EU ETS In Phase II, the Norwegian ETS covered more than 100 entities and about 40% of the country's projected emissions.	Phase I (2005-2007): only CO2 Phase II (2008-2012): CO2 and N2O Phase III (2013-2020): maybe non-CO2 emissions from aluminum and ferroalloys	Auctions: Almost 50% in Phase II and 100% in Phase III Free allocation: 95% in Phase I; 39% in Phase II, and none for offshore oil and gas production, which comprises 64% of Phase II capped emissions; land-based producers received free allowances based on specified criteria; ~50% of N2O emissions from industrial processes in Phase II were freely distributed.		Annual	CERs and ERUs allowed in Phase II. Offsets from nuclear activity, sinks, and large-scale hydro power plants are not permitted. In 2013, Norway committed to not purchasing offsets from wind and hydro projects.	In Phase II, up to 3 MtCO2e, or 20% of total allowances, may derive from ERUs and CERs. Installation max is 13% of surrendered allowances from previous year	No banking btw Phase I and II; unlimited banking btw Phase II and III, and between years in Phase I. Borrowing not technically allowed, but there is effectively year-ahead borrowing within trading periods.		In Phase I, the Norwegian ETS included a one-way linkage with the EU ETS. Since 2009, the Norwegian ETS has been linked to the EU ETS with a few mutually accepted adaptations. Full integration of the two systems took place at the beginning of Phase III.	An allowance reserve functions to contain costs and manage volatility, as does banking	Independent of its ETS, Norway has proactively funded REDD development
Switzerland	Started Jan 1, 2008 as complement to national CO2 tax.	-20% (-30% under certain conditions) relative to 1990 levels by 2020		Sectors with companies covered by the ETS include: ceramics, paper, plastics, aluminum, glass, chemistry, metal-working and engineering, foodstuffs and lime, foundries, printers, and haymakers As of July 2011, about 950 companies had se caps and about 430 of these companies participated in the Swiss ETS. For 2010, the total cap was 3.42 MtCO2, covering about 7% of Swiss emissions.	Must emit >0.25 MtCO2e/year to qualify as direct participant	Gases: CO2 only Point of Obligation: Downstream	Free distribution: Participants received a cap for 2010 that must be met each year 2008-2012; bottom-up approach for distributing allowances amongst firms; small-to-medium size entities (SMEs) are not allocated allowances, but may purchase allowances if they exceed their targets For 2013-2020, allocation will entail both free distribution and auctions.		Annual	ERUs, CERs, and RMUs valid; tCERs and lCERs allowed but cannot be banked for future commitment periods; AAUs permitted from countries with comparable ETS program	Companies may submit int'l offsets to meet up to 8% of their emissions targets	Banking and borrowing allowed within Phase I (2008-12); no banking limits for Swiss AAUs to next commitment period; Limit for banked CERs and ERUs is 2.5% of banked AAUs; Cannot bank RMUs, tCERS, and lCERs for next commitment period.	Swiss ETS participants join voluntarily to avoid an otherwise mandatory CO2 tax. The tax value functions as a price ceiling for Swiss ETS allowance prices	The Swiss and EU have initiated linkage discussions, and it is likely that the link will become effective in 2014		No

Tokyo	Mandatory system active since April 2010; Voluntary program 2002-2009 Phases: I: fiscal 2010-fiscal 2014 II: fiscal 2015-fiscal 2019	-25% CO2 reduction relative to 2000 levels by 2020; -50% below 2000 levels by 2050; ETS: Phase I goal is -6% relative to 2000 levels; Phase II (2015-2019) goal is -17% relative to 2000 levels	Covered facilities must submit five-year reduction plans and annual progress reports	ETS covers 40% of the industrial and commercial sectors' CO2 emissions, which equates to 20%, or 13 MtCO2, of all Tokyo CO2 emissions. Almost 1,400 facilities are covered, and office buildings comprise 80% of all covered facilities	Buildings or facilities that emit >1,500 kL crude oil equivalent per year	CO2 is the only gas covered in Phase I, but other gases may be added in the future. Energy-related CO2 accounts for 95% of Tokyo GHG emissions Point of Obligation: Downstream	In Phase I, allowances distributed freely. Allocation is determined by a grandfathering method that is based on past emissions. Tokyo ETS does not distribute allowances ex-ante. Tradable credits are given after an individual facility overachieves its target.		Every five years (compliance periods align with Phases)	Offset credits from uncapped small and medium enterprises within Tokyo, and from renewable energy certificates nationwide	Unlimited usage of offsets originating from Tokyo; Japanese (non-Tokyo) offsets limited to one-third of a company's obligations; Kyoto offsets allowed if high allowance prices in Tokyo	Unlimited banking is allowed between compliance periods, but borrowing is not allowed		Tokyo supports linkage with neighboring prefectures; Linkage with other ETSs, such as the EU ETS, will be difficult because the Tokyo ETS focuses on energy-intensive industries; Tokyo is not eager to link to int'l systems b/c it fears an influx of low-price allowances	Further measures to contain prices implemented at discretion of the Tokyo Governor	No
Japan	Proposed national ETS delayed Dec 2010; Japanese Voluntary ETS (JVETS) active since 2005 (part of Experimental ETS since 2008); Experimental ETS since 2008	Japan: -25% by 2020; -30% by 2030; -80% by 2050 Proposed ETS: -18% GHG emissions relative to BAU by 2020 (84 MtCO2 reduction)		Proposed ETS: Primarily industry, business, and energy conversion JVETS: non-Voluntary Action Plan (VAP) participants from nonferrous metal industry, ceramic, steel, machine and other manufacturing, chemical, pulp and paper, food and drink, textile, and some non-industrial sectors Experimental ETS: As of Feb 2009, 528 firms and organizations deriving from the steel, automobile manufacturing, cement, electricity, and oil refining sectors. ~70% of industrial sector participated.	Proposed ETS: required entities that exceeded thresholds to hold an allowance for every unit of CO2 generated	Proposed ETS: CO2 at first, and perhaps others to follow (CO2 responsible for 95% of Japanese emissions). Point of Obligation: downstream (firm level) JVETS: participants account for less than 1% of country's industrial sector's CO2 emissions in 2007	Proposed ETS: Mostly free allocation; sectors receive allowances based on reduction potential JVETS: Participants adopt targets and purchase credits if emissions exceed targets Experimental ETS: Participants set emissions targets that are either absolute or intensity-based, then purchase allowances if they exceed these targets		Proposed ETS: Annual commitment periods (and two Phases: 2013-2015 and 2016-2020) JVETS: First four phases occurred 2005-2010 Experimental ETS: began Oct 2008 and trial period ends in 2012	Japan: In Nov 2008 introduced J-VER, a system that credits domestic projects that function as sinks Proposed ETS: would have included offsets from domestic sources, as well as Kyoto approved international offsets. JVETS: CDM credits, known as j-CERs, are allowed	JVETS: Usage of j-CERs is unlimited, as long as these credits are not the primary means for achieving pledged targets	Proposed ETS: Banking was allowed, but certain details TBD; Borrowing rules also TBD JVETS: Banking is allowed, but borrowing is not allowed		One program Japan is developing is the Bilateral Offsets Crediting Mechanism (BOCM). For BOCM, Japan provides low-carbon technologies, products, and services to designated partner countries, which these partner countries then use to create GHG reductions. These emissions reductions may then be credited to Japan as offset credits that – pending the government's verdict on the future of offsets in Japan – could be used to achieve Japan's emissions reduction targets.	JVETS: To incentivize entities to participate, until April 2009 the Japanese gov subsidized one-third of the cost of GHG reduction measures.	No
India	Performance Achieve Trade (PAT), which uses intensity-based emissions targets, first phase in progress (2012-2015); Pilot ETS (for particulates, not CO2) required for three states Tamil Nadu, Gujarat, and Maharashtra; Renewable energy credit (REC) trading since Nov 2010 for 21 of 28 states	India: 20-25% emissions intensity reduction relative to 2005 levels by 2020 PAT: reduce 26 million tCO2 and 6.6 million toe during the three-year roll-out phase (2012-2015) REC: 10% renewable energy generation by 2015	REC Renewable Energy Targets: 2010—5% (848.3 BU) 2011—6% (906.31 BU) 2012—7% (968.65 BU) 2013—8% (1,017.09 BU) 2014—9% (1,067.94 BU) 2015—10% (1,121.34 BU)	PAT (8 sectors): Power thermal, iron and steel, cement, fertilizers, textiles, aluminum, pulp and paper, and chlor-alkai. REC: covered renewable energy types include solar, wind, small-scale hydro (capacity below 25MW), biomass-based power, biofuels, and municipal waste based power Pilot ETS: The pilot systems for the three states will cover 1,000 industries	Pilot ETS: State Pollution Control Boards (SPCBs) determine eligibility criteria for industries. State-specific thresholds for all three states (Tamil Nadu, Gujarat, and Maharashstra)	Pilot ETS: particulates	PAT: Facilities that exceed intensity targets sell credits, and vice versa REC: State Regulatory Commissions (SERCs) set targets for power companies to purchase a certain percentage of their total power from renewable sources. To comply with their RPS or profit from an overabundance of RECs, covered entities my trade RECs either within or across states.	PAT: To create liquidity and price discovery before the market is launched, some Energy Saving Certificates (ESCerts) will be auctioned ex-ante, other ESCerts will be freely allocated to companies, and individual facility targets will be set	PAT: Three-year compliance periods	India: India is the second largest supplier of CDM credits, behind China.		PAT: Rules regarding banking across commitment periods will need to be set		Behind China, India is the world's second largest supplier of CERs. As of 2010, India had issued 18.8% of the 420 million CERs that had been issued around the globe. Moreover, India had the second largest number of projects—509 of the 2,238 total projects—registered with the CDM Executive Board (CDM-EB)		No