

White Certificates Trading, Green Certificates Trading, Emission Trading – Which One to Choose?

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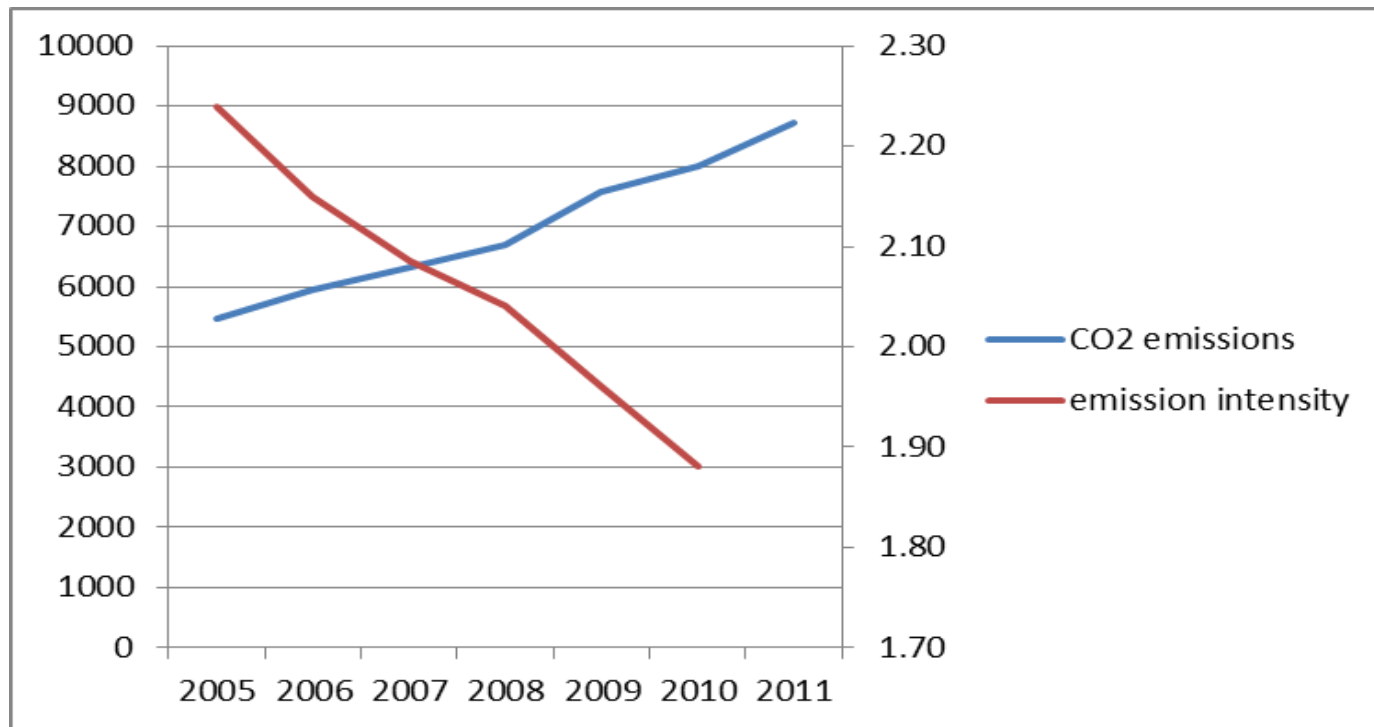
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Structure of the Presentation

- **Context:** Chinese government's commitment to energy efficiency, renewable energy, and emission reduction targets
- **Trading Schemes:** Energy Efficiency (EE) Trading, Renewable Energy (RE) Trading, and Emission Trading under pilot or consideration at the same time
- **International Experience:** Three trading schemes can interact without conflict, but need to target at different obliged parties
- **Preliminary recommendations for China:** avoid overlaps and strengthen coordination

A Tale of Two Chinas

- Dramatic decline in emission intensity: avoid 1.5 billion tons CO₂
- The largest GHG emitter: 29% of global emissions, far exceeding the second place (United States 16%), per capita emissions of 7.2 tons, on par with EU



China: Committed to Energy Efficiency, Renewable Energy, and Emission Reduction Targets

National level targets:

- Carbon intensity reduction: 40-45% 2005-2020 and 17% during 12th FYP
- Energy intensity reduction: 20% during 11th FYP and 16% during 12th FYP
- Non-fossil fuels: 15% in primary energy by 2020

Municipal level initiatives:

- Pilot low-carbon cities in 42 cities/provinces
- Pilot carbon cap and trade in 5 cities/2 provinces

China: EE, RE, and Emission Trading under consideration and pilot

- **Three different agencies in charge of EE, RE, and carbon targets:**
 - NDRC Climate Change Dept.: carbon
 - NDRC Resource Conservation Dept.: EE
 - National Energy Administration: RE
- **Pilot emission trading: in 5 cities and 2 provinces**
 - Coverage: large industries, power generation, heating, buildings
 - Challenges: lack of legal basis, penalty for non-compliance, cost pass-through not allowed, lack of MRV, and no linkage between the pilots
 - Bank engagement: Partnership for Market Readiness

China: EE, RE, and Emission Trading under consideration and pilot (continued)

- **EE Trading:** under consideration
 - among 17,000 priority enterprises, who have mandatory EE targets during 12th FYP (accounting for 2/3 of China's energy consumption)
 - Bank's engagement: China EE Financing Program (CHEEF) and Energy Savings Measurement & Verification
- **RE Quota:** Planned RE quota
 - share of electricity consumption in each province;
 - share of total electricity sales in each of the three major grid companies
 - Bank's engagement: China RE Scale-Up Program (CRESP)
- **Potential overlaps:** the pilot ETS and EE program target at the same energy-intensive industries, with uncoordinated targets

Study Objectives: International Experience

- **Three key topics:**
 - Rationale for co-existence of EE, RE, and carbon targets
 - Rationale for co-existence of EE, RE, and carbon trading schemes
 - Coordination and interactions between co-existing EE, RE, and carbon trading schemes

Study Scope: UK, Italy, CA, and India

Region	Energy saving system	Carbon trading System	Renewable Energy System
UK	Energy Efficiency Commitment / Carbon Emission Reduction Target Climate Change Agreements	EU Emissions Trading System	Renewables Obligation
Italy	Titoli di efficienza energetica	EU Emissions Trading System	
California	Energy Efficiency Obligation	Cap-and-Trade Program	Renewable Portfolio Standard
India	Perform, Achieve, Trade		Renewable Energy Certificates

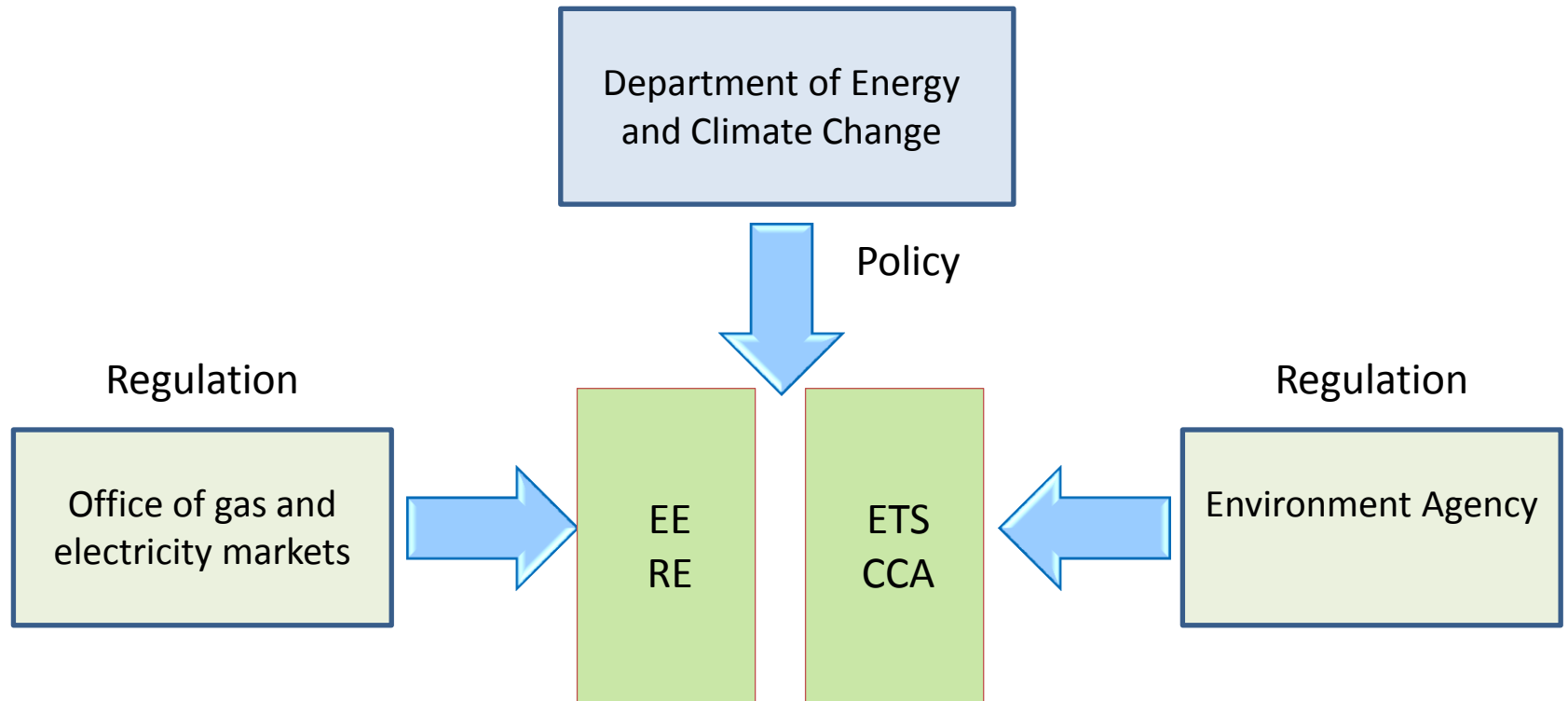
Rationale for co-existence of multiple targets

- **Multiple targets are common**, e.g. EU 2020 targets: 20% improvement in energy efficiency, 20% energy from renewable energy, and 20% reduction in carbon emissions from 1990 level by 2020.
- **Energy policies have multiple objectives**, more than just emission reduction
 - Energy security (reducing energy supply and pricing vulnerability)
 - Reduction in costs of energy
 - Increasing access and affordability for the poor
 - Local and global environmental benefits
- **Primary focus of energy policy varies across countries**
 - Energy efficiency has been prioritised in California and India
 - Emission reduction is the primary objective for EU, and RE and EE policies contribute to carbon reduction objective, and broader energy policy objectives

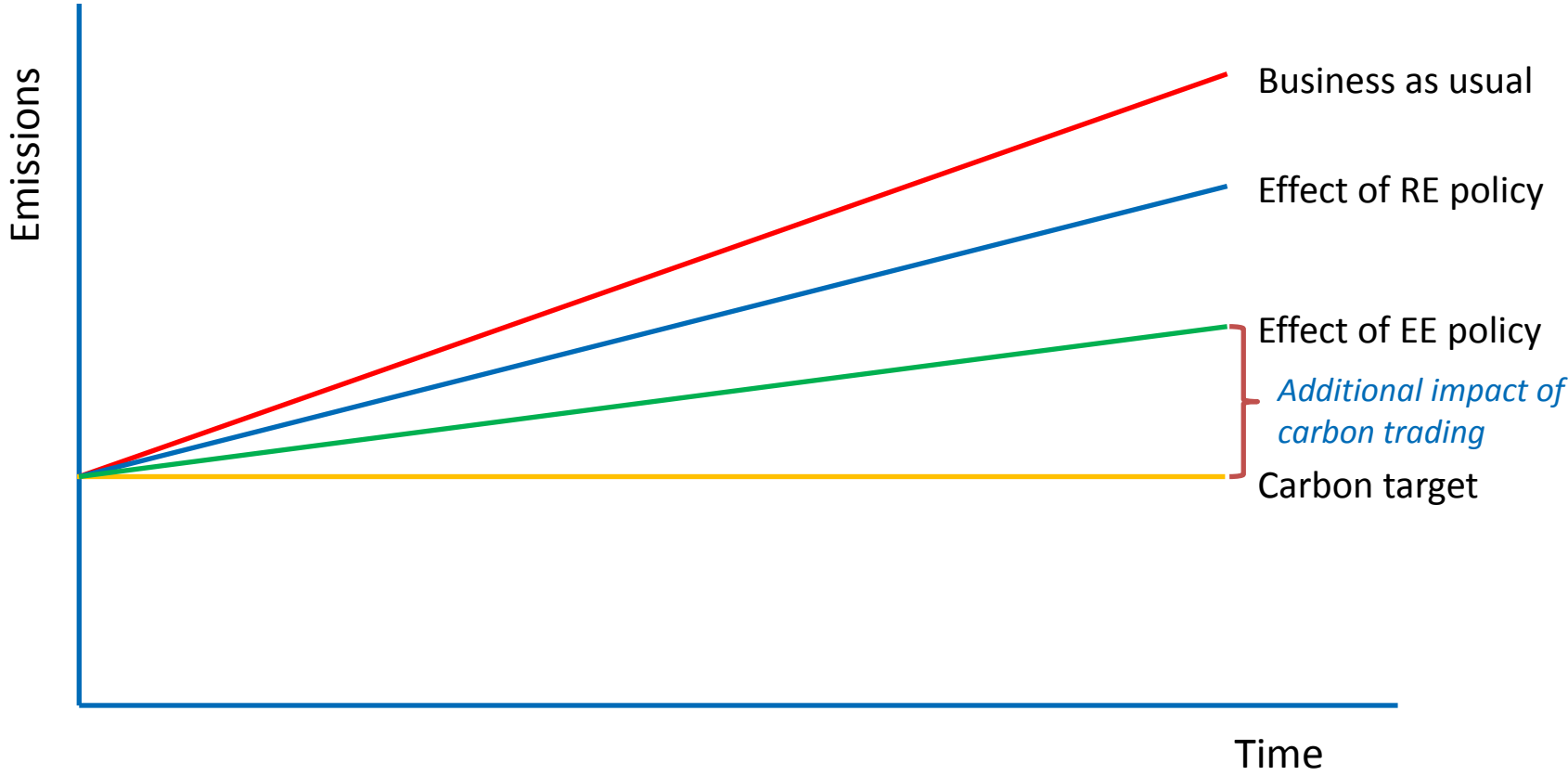
Rationale for co-existence of multiple trading schemes

- **Multiple policy objectives** led to multiple trading schemes
- **ETS will not tap all the energy efficiency potentials.** White certificate trading complements ETS in areas outside ETS coverage, and have other benefits (e.g. energy security, reduction of energy bills, avoiding investment in energy system expansion)
- **Carbon pricing alone cannot necessarily provide enough incentive for the deployment of RE.** Green certificates incentivise more expensive renewables to help reduce costs of new technologies, create jobs, and diversify energy supply
- **Policy resilience:** if one fails to meet the target, the others may compensate, reducing the risk

UK institutional arrangements



Coordinated target setting (illustrative)



UK Experience

Energy efficiency systems

UK	Energy Efficiency Commitment (EEC) and subsequently Carbon Emission Reduction Target (CERT)	Climate Change Agreements
Rationale	Energy efficiency then carbon reduction	Energy efficiency of intensive trade exposed industries
Introduced	2002	2001
Point of regulation / obligated party	Energy suppliers, depending on customer numbers	Industrial consumers
Sector with targets	Electricity and gas, mostly domestic	Industrial consumers – electricity and primary fuels
Method to deliver scheme	Obligation on suppliers Tradable certificates/obligations	Mostly energy intensity targets. Reduction in carbon tax rate
Target	% historical energy supply (target changed to carbon emissions under CERT)	Reduction against baseline

UK Experience (Continued)

Carbon trading and renewable certificates

UK	EU Emissions Trading System (EU ETS)	Renewables Obligation
Rationale	Emissions reduction and wider energy policy aims	Cost effective renewable development, stimulate market and industry
Introduced	2005	2002
Point of regulation / obligated party	Direct emitters	Electricity suppliers
Sector with targets	Large Industry and Carbon Intensive Energy Production	Electricity suppliers (all electricity consumption)
Method to deliver scheme	Financial burden imposed by cap for every tCO ₂ emitted	Tradable certificates and buyout fund
Target	Emission reduction against baseline	% of electricity supplied

California Experience

California	Energy Efficiency obligation (EEO)	Renewable Portfolio Standard (RPS)	Cap and Trade Program (CTP)
Rationale	Reducing energy bills and avoiding investment in energy system expansion (cost-effectiveness)	Sustainability and diversification	Climate protection
Introduced	Early 1970s	2003	2013
Point of regulation / obligated party	Investor owned utilities - electricity and natural gas	Retail energy sellers - electricity	Sources at least 25,000 tCO ₂ e/year
Sector with targets	All except transport but most residential and commercial	Electricity	Phase 1 (2013-2014): Elec. gen. + industry Phase 2 (2015-onwards): Elec. gen. + industry + distributors of transport fuel, natural gas and other fuel
Method to deliver scheme	Annual obligation of x% reduction in retail consumption + utility programs	Annual obligation of x% of retail energy sales must be RE	Annual allocations and off-set credits available
Target	Avoided consumption, Societal cost-effectiveness, Reduced per capita consumption.	Renewable share of energy generation.	Avoided carbon emissions. Reduction relative to 1990 in 2050

India Experience

India	Energy Efficiency obligation (EEO)	Renewable Portfolio Standard (RPS)
Rationale	Energy efficiency of industry	Realise cost effective renewable opportunities
Introduced	March 2012	March 2011
Point of regulation / obligated party	'Designated Consumers (DC)' of large energy intensive industries	Electricity distributors/ suppliers <ul style="list-style-type: none"> • Distribution Licensees • Captive Consumers • Open Access users
Sector with targets	'Designated Consumers (DC)' of large energy intensive industries	State electricity consumption – included households, industries
Method to deliver scheme	Specific Energy Consumption (SEC) reduction target to be achieved by March 2015. Certificate trading	Renewable purchase Obligation (RPO) - % of renewable energy obligated for distribution utility in each State
Target	Savings 6.6million toe at the end of 1st PAT Cycle (by 2014-15)	15% of the country's electricity with renewable energy sources by 2020

Trading systems can interact without conflict

Technical issues

Scope and coverage (energy, sectors)

Baselines and targets (level of target, type of target, how targets determined)

Allocation mechanisms

Monitoring, Reporting and Verification

Eligible technologies

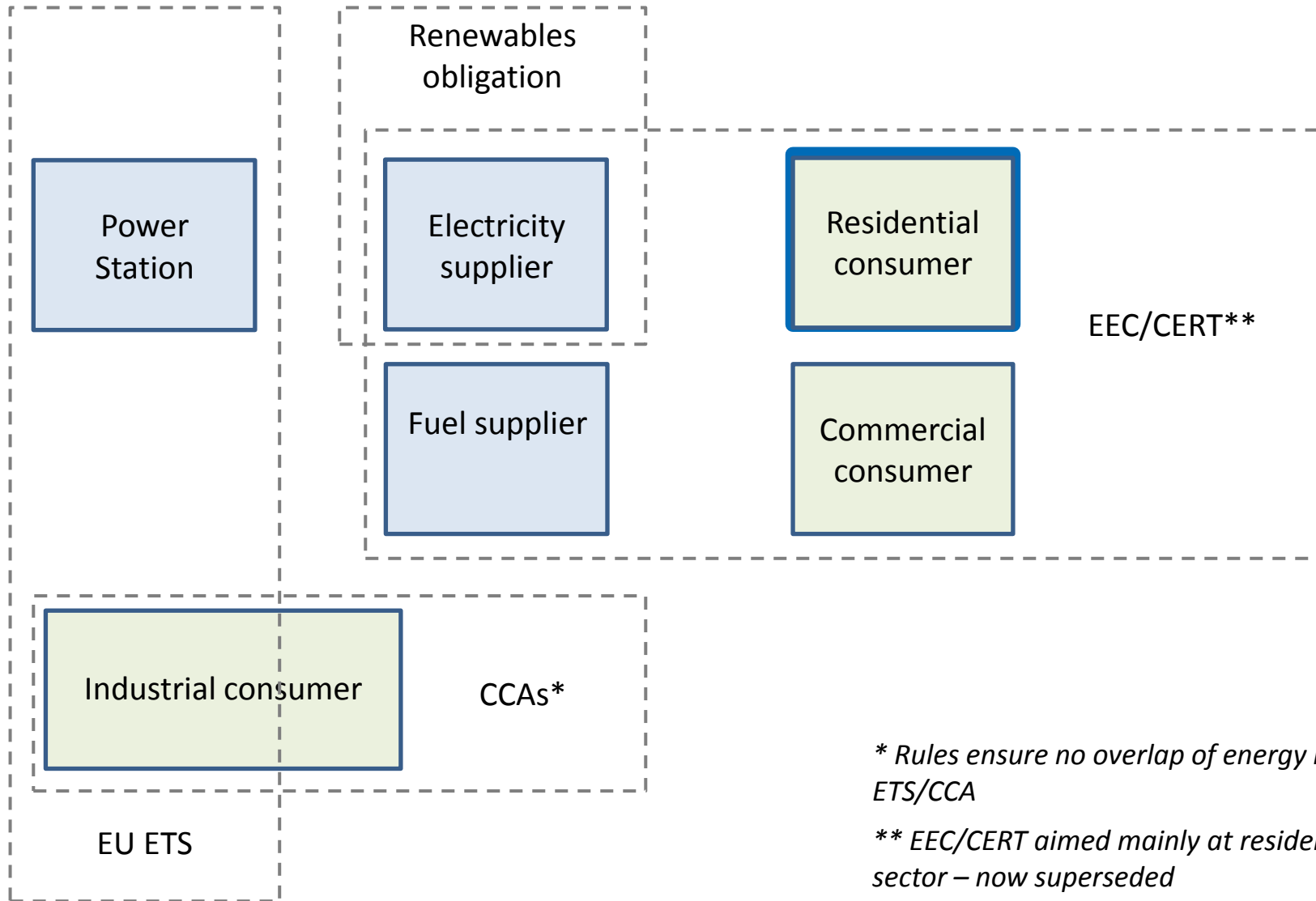
Institutional arrangements

linkage

Coverage of obligated parties

- Carbon trading systems normally focus on industrial sectors and power generation
- Renewable Energy Certificate systems focus on the electricity supply sector
- Energy savings – two approaches
 - Supplier obligation - focus on smaller energy users, especially the residential sector
 - For example, UK, EEC/CERT aimed at residential energy users, especially fuel poverty
 - Italy TEE allowed projects from all sectors, most savings came from the residential sector
 - Californian EEO also allows savings in all sectors. Savings across all sectors
 - Systems focus on energy intensive industry – user obligation
 - UK CCAs and PAT. Eligibility rules cover specific sectors

Target at different obliged parties: UK example

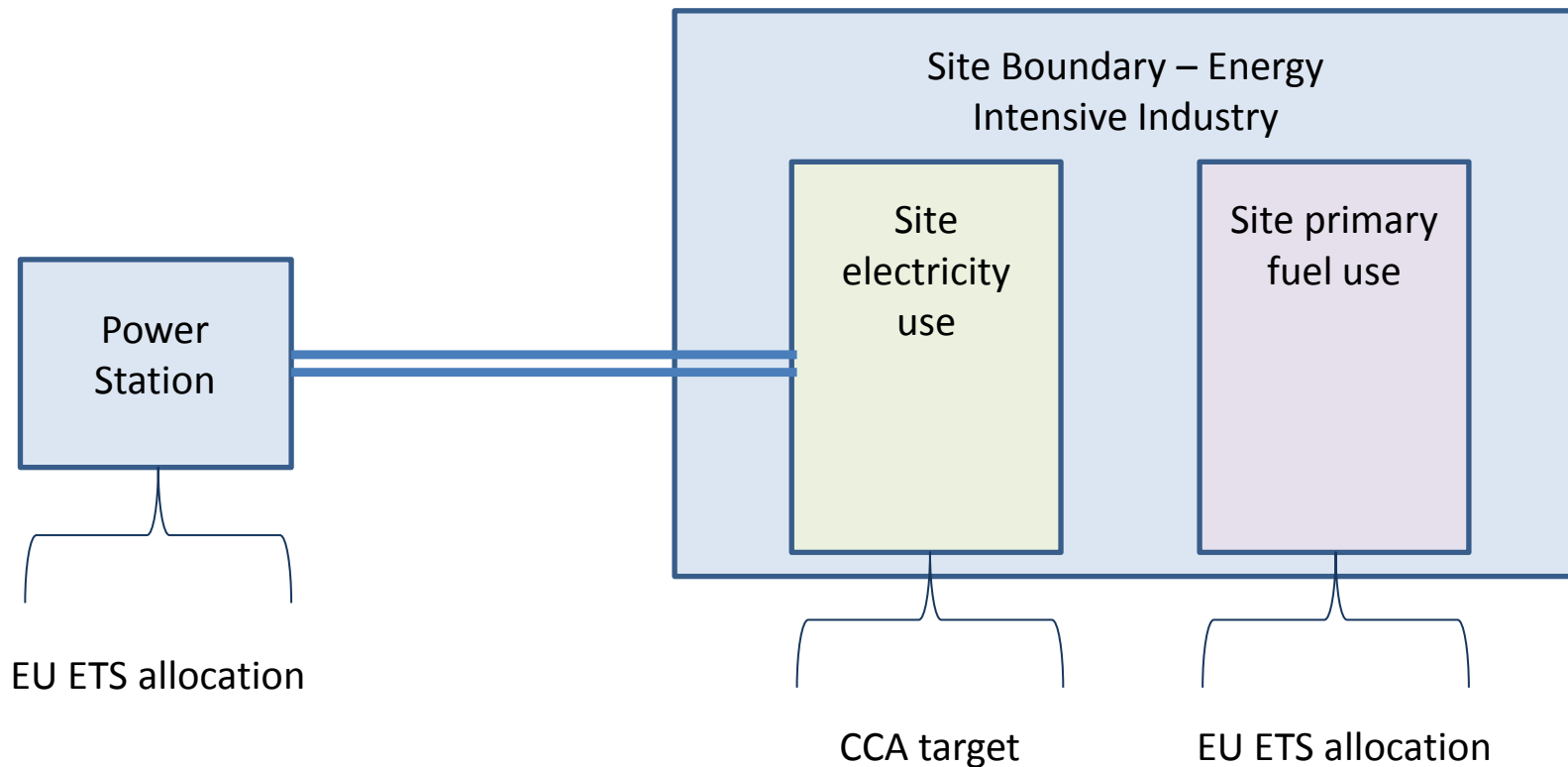


** Rules ensure no overlap of energy in EU ETS/CCA*

*** EEC/CERT aimed mainly at residential sector – now superseded*

When covering the same obliged parties, target at primary energy vs. electricity

In the UK Climate Change Agreements and EU ETS cover some of the same installations



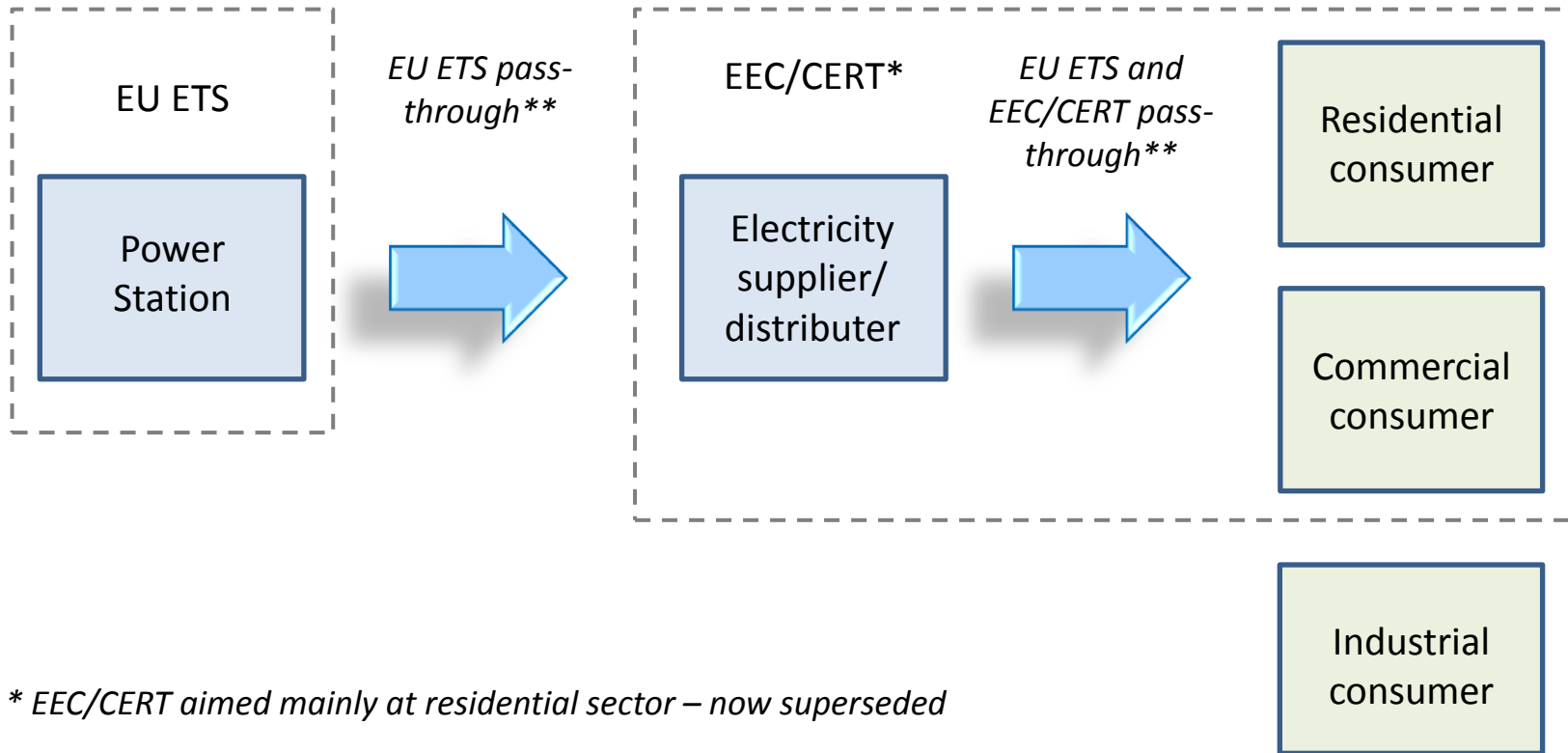
Interaction between electricity supply and demand and cost pass-through

Electricity generation and supply covered by multiple systems (Italy, California and the UK). Consequences:

- Demand reduction policies reduce electricity generation – affect performance against carbon cap, therefore, setting carbon cap needs to take account of the energy saving target
- In all developed countries, the incremental costs are passed through to consumers, additional price signal for energy saving
- If pass-through then consumers pay twice under the carbon cap and trade and EE system

Consumers pay twice: UK example

In the UK electricity generation is covered by EU ETS and EEC/CERT includes electricity savings measures



* EEC/CERT aimed mainly at residential sector – now superseded

**Element of pass-through to residential, commercial and industrial tariffs depends on market

Monitoring, Reporting and Verification

- EU Emissions Trading System
 - Enterprise (installation) level
 - Mandatory third party verification

- White certificates in the UK and CA
 - Programme of projects level
 - Energy data audits and sampling

- EE trading in India: Perform, Achieve, Trade
 - Enterprise (installation) level
 - Mandatory third party verification

Penalty for non-compliance

Scheme	Example Non Compliance Regimes
White Certificates	<p>CERT scheme maximum non-compliance penalty 10% of obligated entity's annual turnover, with obligations not being carried to a further year.</p> <p>India PAT - 20,000 USD plus further penalty for the number of units short of the target.</p>
Carbon Cap and Trade Scheme	<p>EU ETS €100 per tCO₂e - obligations carry to the next year.</p> <p>CTP in California is charged per unit as in the EU ETS - four times the cost of auctioned units in that year.</p>
Green Certificates	<p>Renewables Obligation in UK - penalties as proportion of obligated suppliers turnover. Some discretion applied.</p> <p>The India, California and the UK - option to buy-out obligations - alternative to obtaining certificates.</p>

- Penalties can be more than per MWh/tCO₂ shortfall – e.g. enterprise turnover
- Make good provision common

Preliminary Recommendations for China

- **Rationale for co-existence of multiple targets**
 - **Energy conservation is one of the highest priorities for the government** - contributes to energy security, resource conservation, environmental sustainability, energy affordability, green growth, and competitiveness objectives
 - **The main driver for RE policy in China is to build a world class RE manufacturing industry**, improve energy security, and diversity energy mix to address the severe local air pollution
 - **Chinese government is committed to climate change mitigation.** Since more than 80% GHG emissions in China come from energy, achieving the EE and RE target will help the achievement of the carbon intensity reduction target

Preliminary Recommendations for China

- **Coordination of multiple trading schemes**

- **The key conditions for EE trading seem relatively mature:** mandatory EE target in 12th FYP, and envisioned total energy consumption cap in 13th FYP, accredited 3rd party verifiers, mandatory energy reporting and online monitoring platform
- **Option 1: a phased approach to sequence trading schemes**



- **Option 2:** pilot EE trading in provinces not covered by the pilot ETS
- **Option 3:** separate coverage of primary energy and electricity

Next Steps

- **Key building blocks:**

- Shift from energy/emission intensity targets to total energy/emission cap
- Set up an institutional framework with an overarching coordination policy making body
- Avoid overlaps on the same obliged parties
- Allow cost pass-through to consumers
- Pass laws for non-compliance penalty
- Establish MRV systems
- Link trading between provinces

- **Lessons Learned:**

- Institutional coordination at the top policy level
- Each trading scheme targets at different obliged parties, sectors, or energy to avoid conflict and overlap