

The interaction and integration of TWC with other instruments

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Summary of findings of WP3 (+ WP4.4) of the Eurowhitecert study

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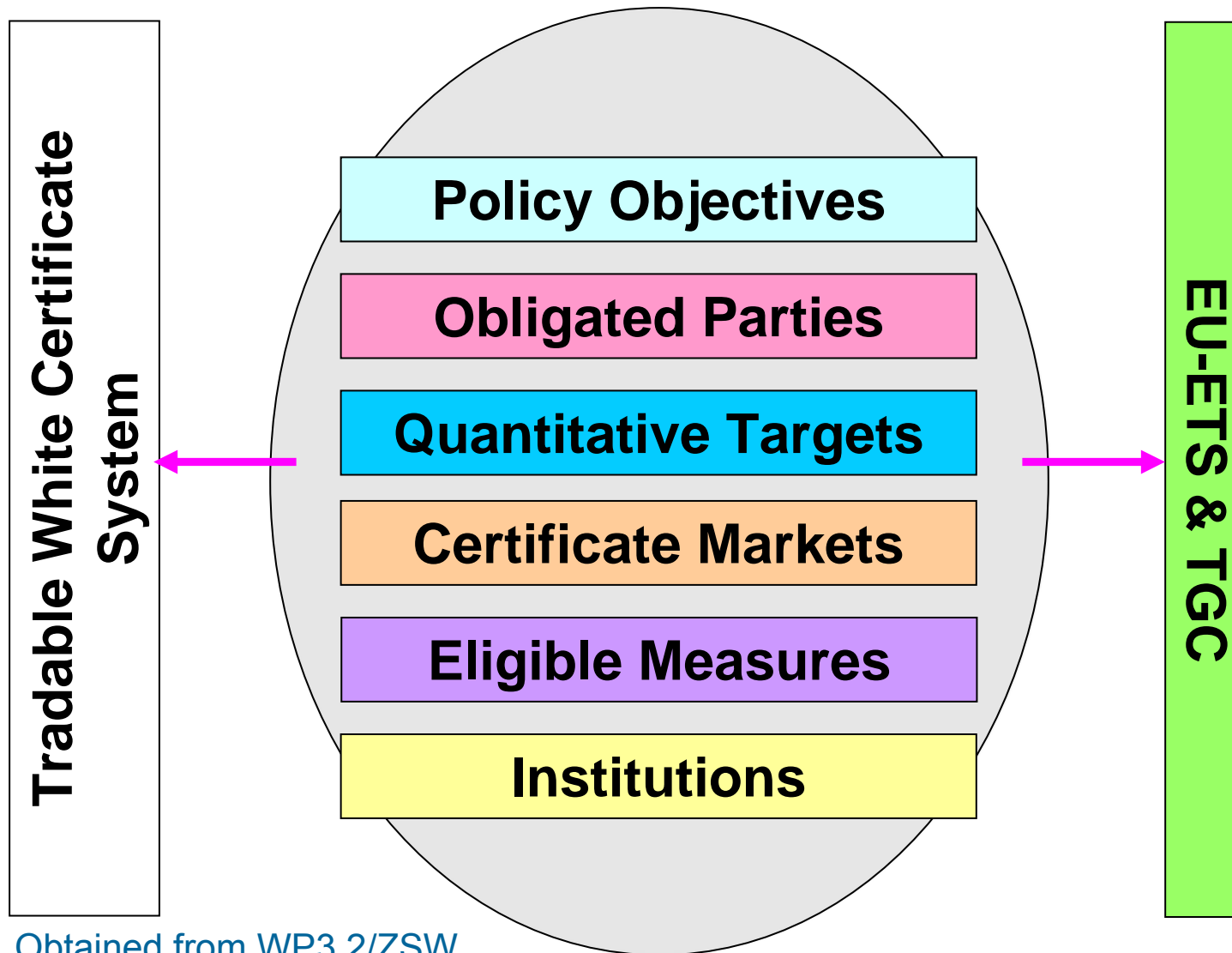
Intelligent Energy  Europe

- Interaction effects with emission trade, notably EU-ETS
 - Interaction effects with tradable green certificates (TGC)
 - Interaction effects with other instruments for energy saving (with focus on taxes in WP4.4)
 - What are the options for and implications of integration of TWC and other schemes
 - Through merging of systems
 - Through some kind of linking (from weak to strong)
 - The significance of transaction cost in TWC systems
-
- In WP3 the analysis remained mainly at the conceptual level or at best qualitative indications with respect to existing policies were made
 - In WP4.4 a numerical application was carried out regarding TWC vs. taxes

- ***Don't*** analyse interaction between TWC and another instrument purely in isolation from 3rd instruments
- *All instruments together*, in conjunction with energy market conditions, create the initial conditions to which TWC effects are added
- The (mal)functioning of energy markets affects the effectiveness of TWC (or whatever) and affects the distribution of costs and benefits of TWC (or whatever)
- Don't forget that instruments often have various objectives, hence *linking/merging may require compromises that are compromising* some objectives

VATT *TWC and certificate systems* www.vatt.fi

- levels of interaction scanned in WP3



Obtained from WP3.2/ZSW

TWC and EU-ETS

- summary of interaction 1

- **Policy objectives:** *largely complementary; TWC often implies emission reduction, but energy saving is not equal to emission reduction;*
secondary objectives can be disjunct (e.g. fuel poverty alleviation)
- **Obligated parties:** *TWC means that vertically integrated energy companies get an imposed extension of their EU-ETS strategy options (other EU-ETS players not)*
- **Quantitative targets:** *additional end-use energy saving due to TWC implies that EU-ETS energy sector targets are easier to reach, but not equally for every energy company; depending on cost implications TWC may involve a recapture of the national burden sharing within EU-ETS and beyond EU-ETS*
- **Certificate markets:** *for a start it is wise to keep TWC and EU-ETS separate; total integration is not recommendable, but one-way fungibility (TWC → ETS) in a set-aside system embedded in EU-ETS might be an option*

TWC and EU-ETS

- summary of interaction 2

- **Eligible measures:** *application areas are entirely separate (supply vs. demand side);
however, if interaction is accounted for in target setting in one or both systems or if some link is created, a transparent, fair and robust system of emission impact benchmarking of energy savings is needed
for integrated building solutions*
- **Institutions:** *the institutional set-up for EU-ETS can be partly extended to serve also TWC, such as for:*
 - *target setting by sector and company*
 - *the issuing of certificates*
 - *trade registry (own platform, but similar rules and technical framework)*
 - *monitoring and compliance (even though needs specialisation with own competences)*



TWC and green certificates www.vatt.fi

- summary of interaction 1

- **Policy objectives:** *both contribute to emission reduction, but TWC impact less certain*
TWC is conducive for green certificate systems with relative targets
similar (secondary) localised policy objectives
- **Obligated parties:** *since TWC affects green certificate prices in relative target systems, attribution of TWC targets by company may need to account for green certificate obligations of the involved energy companies*
- **Quantitative targets:** *coordination of target setting necessary in case of relative targets in TGC*
- **Certificate markets:** *keep TWC and TGC separate; linkage should already work well via energy market and co-ordinated target setting; integration may also put the integrity of TWC at risk -> therefore new buildings with integrated designs for saving energy and maximum use of renewables outside TWC*



TWC and green certificates www.vatt.fi

- summary of interaction 2

- **Eligible measures:** *application areas are largely separate (supply vs. demand side);*
*however in case of joint energy saving – renewable energy solutions in the existing building stock a pre-specified set of technologies could be subject to choice to claim under the TGC **or** the TWC scheme*
- **Institutions:** *the institutional set-up for TGC can be partly extended to serve also TWC, such as for:*
 - *target setting by sector and company*
 - *the issuing of certificates*
 - *trade registry (own platform, but similar rules and technical framework)*
 - *monitoring and compliance (even though needs specialisation with own competences)*

NB! Note the similar remarks for EU-ETS



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- approach in the comparison

Steps per instrument

Instrument	Features	Interaction	Recommendations
Instrument name	Objectives and targets	Competing: existing instrument diminishes potential for WhC or WhC renders the instrument marginal Complementary: WhC addresses energy efficiency not reached by the existing instrument or WhC adds to the effect of the instrument Catalyst: joint existence implies a mutual reinforcement of their effectiveness Indifferent: the instruments have virtually no interaction	Recommendations to alleviate negative effects and to promote positive effects.
	Institutional structure		
	Eligible sectors and measures		
	Conditions (% tax or subsidy, minimum and maximum amounts, criteria for eligibility)		
	Budget involved (government funding, revenue from tax, etc.)		



TWC and other instruments *www.vatt.fi*

- overview 1

- Taxes on energy carriers
 - Low transaction cost (TC), but (much) less effective outside (heavy) industry
- Income tax deductions (households, companies)
 - Medium to high TC (for receiver), effectiveness depends on many features e.g. income level, prone to free riding
- Energy saving investment subsidies
 - Medium to high TC (for both sides), prone to free riding
- Support for green loans; interest support
 - Low to medium TC, depends on willingness of banks, needs to be fairly strict on 'green' content but within these limits cost-efficient & fairly effective
- Support for energy audits
 - Low / Medium TC, essential support measure in TWC system



TWC and other instruments *www.vatt.fi* **- overview 2**

- Voluntary agreements
 - Swaps some aspects of TC for other ones (as TWC does), trade-off: efficiency ↔ effectiveness ↔ coverage
- Education (e.g. eco-driving)
 - High (implicit) acquisition cost, otherwise modest TC, all-in-all eco-driving appears quite cost-effective
- Performance standards / labeling
 - High TC cost (at supply side & regulator), especially if to maintain meaningful and cost-effective standards



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- the use in various countries

		Taxes					Voluntary agreements					
Country	General	Industry	Households	Services	Buildings	Transport	General	Industry	Households	Services	Buildings	Transport
Finland	x	1	1	1		1		1		1	1	1
France			1 (heating)			1		1				
Germany	x	1	1	1		1		1				
Hungary		1		1								
Sweden	x	1	1	1		2		1				
UK		1		1		1		1				
		Subsidies					Tax deductions					
Country	General	Industry	Households	Services	Buildings	Transport	General	Industry	Households	Services	Buildings	Transport
Finland		2	3(buildings)			3				1		
France			3			2				1		
Germany												
Hungary		1 (SME)		2	1							
Sweden					1					1		
UK								1			1	
		Standards					Information					
Country	General	Industry	Households	Services	Buildings	Transport	General	Industry	Households	Services	Buildings	Transport
Finland			1		1		x	1	1 (labels)	1		2
France			1		1		x		1 (labels)			
Germany			1		1		x		1 (labels)		1	
Hungary			1		1(voluntar)				1 (labels)			
Sweden		1(voluntar)	1		1		x	1	1 (labels)			
UK			1		1		x	1	1 (labels)		1	1
		Soft loans					<p>A cross indicates a general measure</p> <p>A number indicates the amount of the different forms of the measure available for each sector</p> <p>1 means the measure has high impact</p> <p>Free energy surveys available in the UK for businesses</p> <p>Guarantee funds in France (FOGIME) and Hungary (HEECP)</p>					
Country	General	Industry	Households	Services	Buildings	Transport						
Finland												
France		1										
Germany					3							
Hungary		2		2	1							
Sweden												
UK		1 (SME)		1 (SME)								

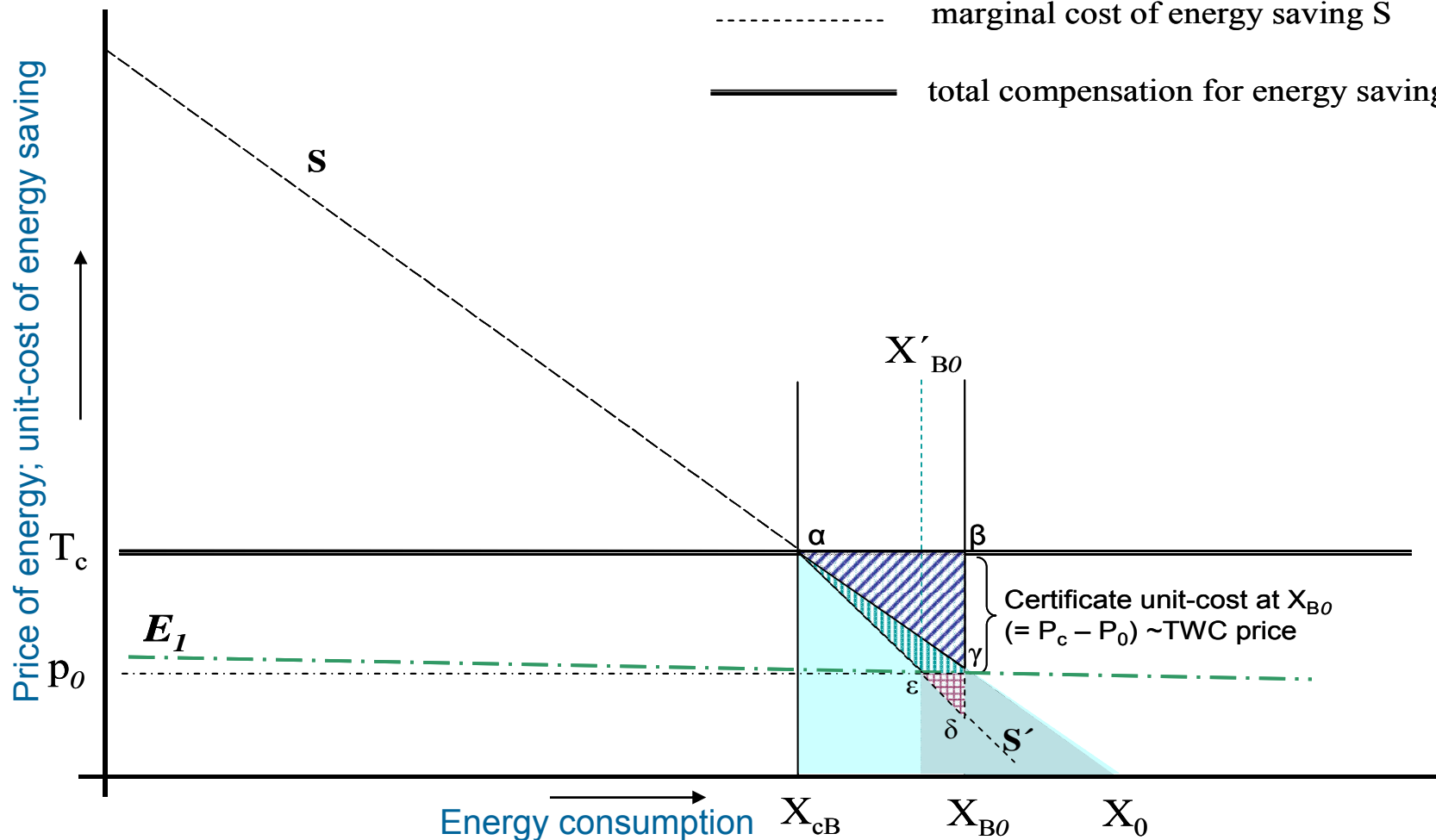


TWC and other instruments *www.vatt.fi* **- summary of the effects**

- Energy taxes:
 - competing (high tax) / complementary (low tax)
- Subsidies & tax deductions:
 - Conflicting – **except for energy audits (market enhancing effect)**
- Interest support for green loans:
 - Complementary (assuming moderate levels)
- Performance standards:
 - Complementary for minimum standards keeping the worst products from the market
 - Easily conflicting for ambitious standards
- Voluntary agreements:
 - Complementary w.r.t. creating clear common market conditions and for information exchange etc.
 - Competing in case of targets
- Education:
 - Indifferent / complementary

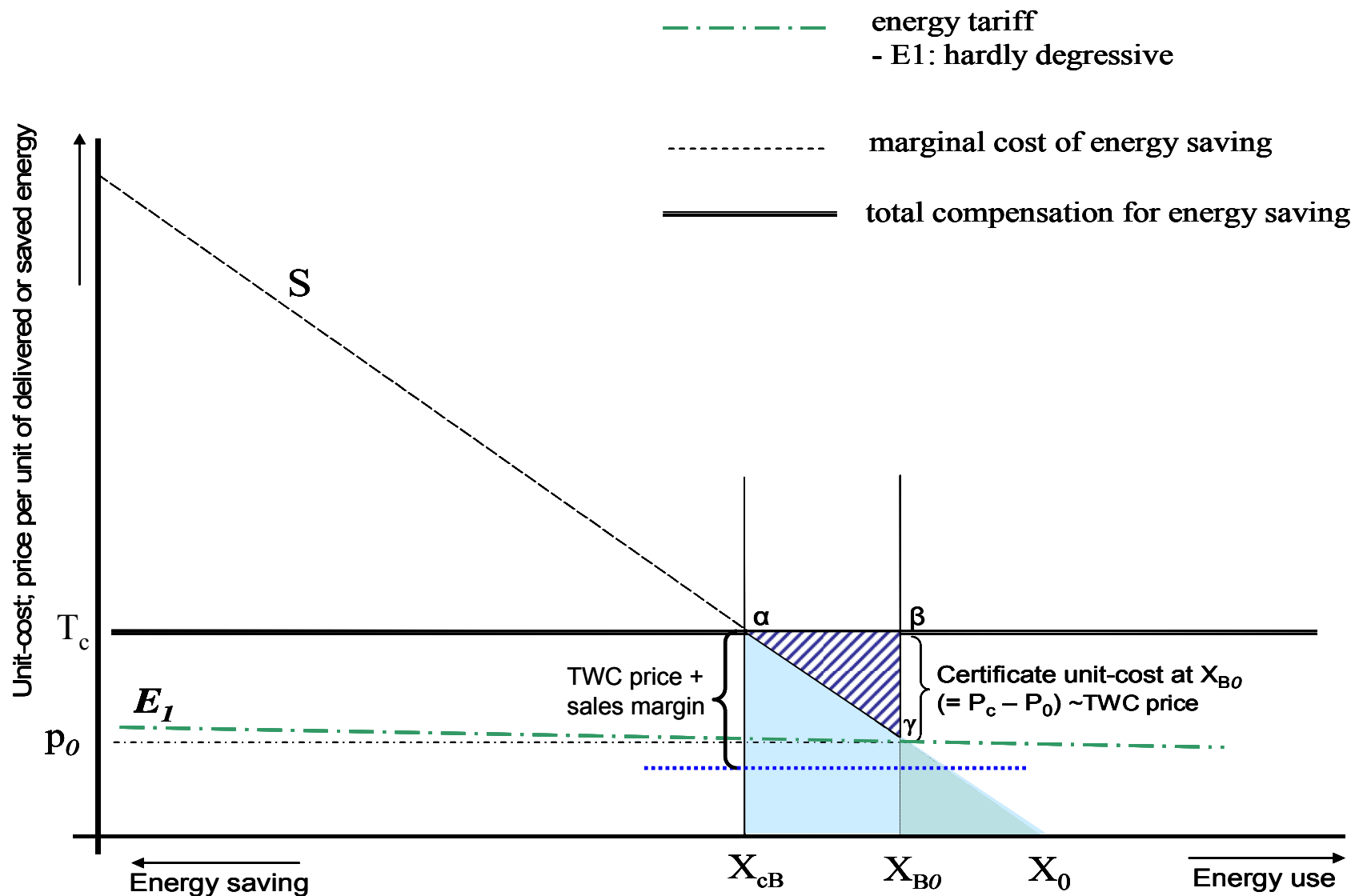
- basics and some market imperfection

- energy tariff
 - E1: hardly degressive
 - E2: strongly degressive
- marginal cost of energy saving S
- total compensation for energy saving Tc

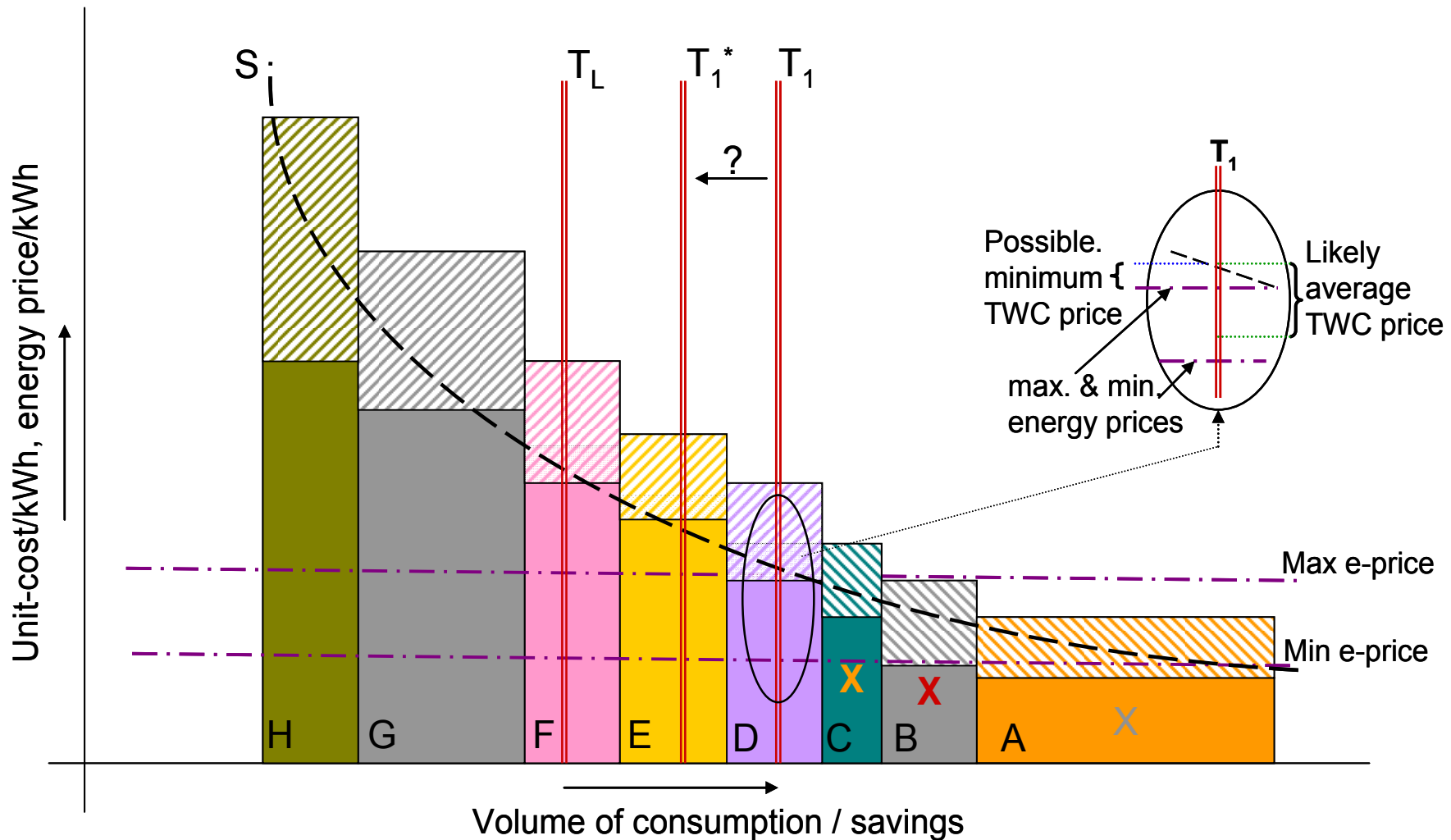


Price formation for TWC

- differentiation between parties



- more real world variation and uncertainty



The price of a white certificate depends on:

- The overall energy saving target imposed
 - In later commitment periods the progress in exhaustion of cheap potential will raise TWC price levels
- The prices of the energy carriers, which will be saved
- The shape of the curve of the marginal cost of energy saving (the envelope of all sectors)
 - Learning and R&D affect the shape of the marginal cost curve
- The transparency of the TWC market
- Possible changes in other policies affecting the TWC market (e.g. EU ETS; tax policies)
- Economic & demographic development
 - development of energy demand & deviations from forecast demand

Considering the rising pressures of greenhouse gas abatement policies, and depending on the structure of unit-cost of saving and of end-use prices, a TWC system will become sooner or later an economically efficient alternative for more and more countries.

At the moment it cannot be assumed that this favourable position is already reached by many Member States.

For countries that have so far levied little or no energy taxes, and especially if they are also running public budget deficits and/or have still fairly high unemployment rates, the introduction of an energy tax (with wholly or partly reduction of labour income tax as compensation) may be preferable over a TWC system.

On the other hand various Member States may wish to introduce a TWC system on other grounds than just purely macro-economic ones



TWC or Energy Tax ?

- example Finland and the Netherlands

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Costs in mln. Euro for 6 years commitment period

	TWC system				Energy tax			
	NL avg.	NL min.	FIN avg.	FIN min.	FIN more tax	FIN now	NL more tax	NL now
potential in GWh/year / tax base in TWh/year	1182	1182	433	433	106*	106	247*	247
target (% of pot.)	85 %	85 %	85 %	85 %	100 %	70%	100 %	100%
TWCprice/ tax in €/MWh	28	17	50	38	9,5 / 11,5	6	26,3 / 29,8	20,5
TOTAL net outlays year 1–6	536	357	398	329	24 ~90		36 ~132	
Net costs (+) or benefits (-) left with the end-user	-518	-518	-72	-72	26		-313	
Net cost for the entire period	18	-161	326	257	50 ~ 116		-277 ~ - 181	

- The best options for energetic **AND** economic efficiency gains from TWC are in sectors where neither taxes nor (pure) VA's work well, e.g. existing buildings, SME's, ...
- the introduction of white certificates tends to:
 - reduce the need for publicly funded subsidies;
 - reduce the revenues from energy taxes (assuming TWC's higher effectiveness);
 - reduce the sales of the obligated parties, but... the impact on profit is case dependent;
 - increase the administrative cost of obligated parties, but some may find compensation in the power market

- Initially TWC is better run separately from TGC and EU-ETS, possibly in later stages some one way fungible link with EU-ETS could be considered
- DSM and TWC have significant synergy
- TWC is preferably applied to the same territory in which a common power market is operating (e.g. Nordic TWC)
- The establishment of multi-country TWC areas faces various harmonisation challenges regarding:
 - the existing energy policy instrument portfolio
 - verification, certification, etc. practices
 - possible mismatches in economic law (e.g. accounting rules)
 - significant marginal cost level differences may lead to concentration of flows to particular countries
 - funding of TWC at national level by the entire customer base has minute price effects, however in case of international system there is some risk for uneven sharing of costs