



Carbon Tax – a Good Idea for Developing Countries?

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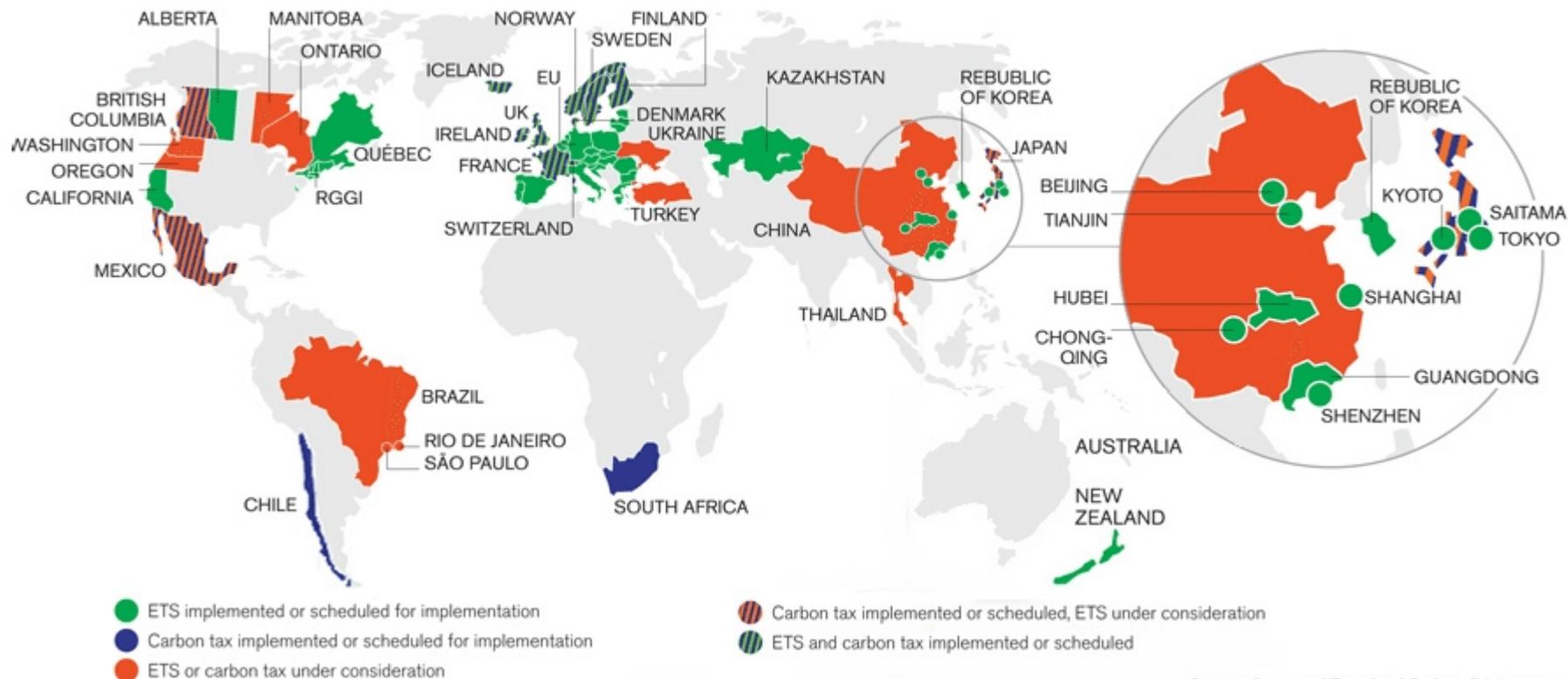
Global Outlook

Why is a carbon tax important now?

- **The Paris Climate Agreement**
 - Cost-effective tools are needed to deliver
 - Enhanced role of Finance Ministries in the UNFCCC climate conferences
 - Developing countries are facing huge challenges
 - Increased revenues are essential
 - Outside technical support and funding
 - National taxation? Carbon taxation?
- **Sweden has had a carbon tax since 1991**
 - What lessons can be learned?



Locations of Existing, Emerging & Considered Carbon Pricing Instruments





Global Outlook

Why a carbon tax can work well across the globe

- Low administrative costs
 - is simple to administer, can be added to existing fuel tax system
 - sets a price on fossil carbon – national conditions will determine the choices made by households and firms.
- Taxation point can be chosen up-stream – few tax payers
- Start with low tax rates; step-by-step approach
- Revenues can be used to
 - enable options to fossil fuel use (e.g. public transport, substitutes to fossil heating, such as district heating or cooling systems using household waste as a resource)
 - address distributional consequences (e.g. poor households)

Swedish Energy and Carbon Taxation

A long history that started in 1924

- **Taxation of energy – two components**
 - Energy tax on fuels (1924 gasoline; 1937 diesel; 1957 heating oil and coal; 1985 natural gas; 2013 biofuels blended in gasoline and diesel) and electricity (1951)
 - Carbon tax on fossil fuels (1991)
- **Two levels of carbon tax**, per tonne fossil CO₂
 - High for motor fuels and heating fuels in households and service
 - Low for heating fuels in industry – raised step by step
- **No carbon tax on installations covered by EU ETS (EU Emissions Trading Scheme)** , Large part of heavy industry, heat and power installations)
- **Carbon tax** has since 1991 been the key driver behind Sweden's success in cutting emissions

Swedish Energy and Carbon Tax Revenues

A brief overview

	Revenues Billion €(\$) ¹ 2016
A. Energy tax	4.66 (5.24)
- <i>electricity</i>	2.24 (2.51)
- <i>gasoline</i>	1.25 (1.40)
- <i>other fossil fuels than gasoline</i>	1.18 (1.32)
B. Carbon tax	2.47 (2.78)
- <i>gasoline</i>	0.85 (0.95)
- <i>other fossil fuels than gasoline</i>	1.62 (1.82)
Total (A+B)	7.13 (8.02)

¹ Prognosis.

Exchange rates 1 € = 9.593 SEK; 1 \$ = 8.54 SEK is used throughout this presentation

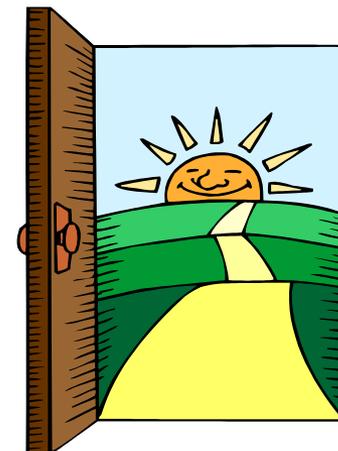
- Energy and Carbon Taxes – share of GDP in 2016: **1.6 %**
- Energy and Carbon Taxes – share of total national tax revenues in 2016: **3.6 %**



Reasons for Taxing Energy in Sweden

Increased focus on environmental taxes

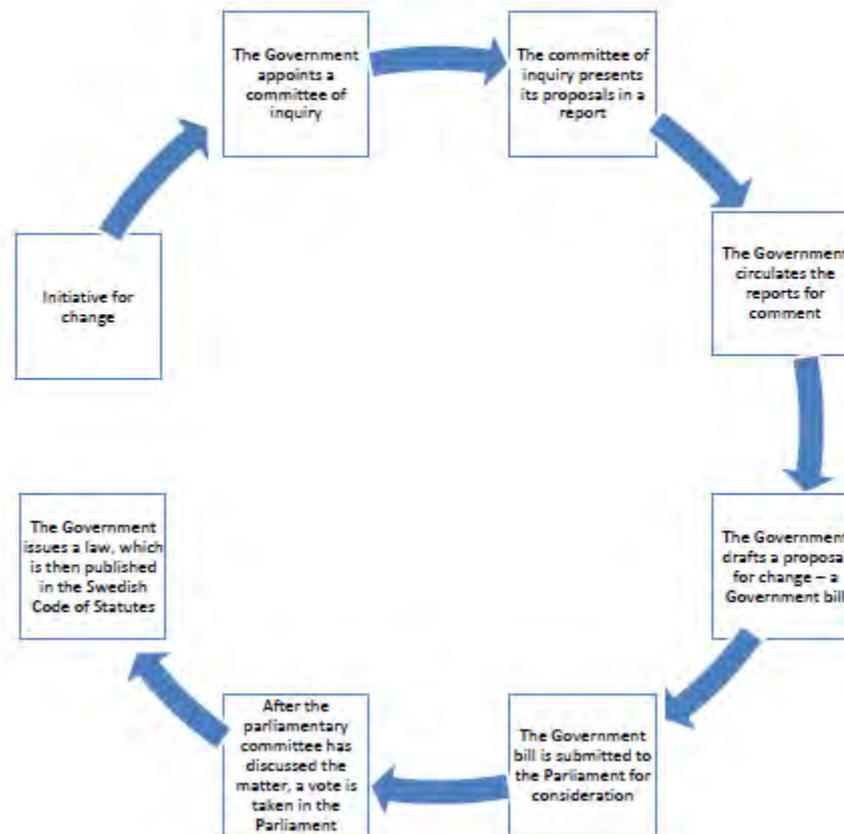
- **Until 1980's:** Primarily fiscal purposes
 - generally low tax levels
- **1990's and onwards:** Environmental issues given high priority by Government and citizens
 - increased focus on environmental taxes
 - increased tax levels, step-by-step
 - focus on increased carbon tax share of taxation of energy (“carbon tax heavy”)
- **Now:**
 - Energy tax: fiscal and energy efficiency
 - Carbon tax: climate



How Environmental Tax Laws are Decided in Sweden

- **All political parties in broad consensus on basic structure**
- **Involve stake holders**
 - Committee of inquiry, incl. business representatives and various experts
 - Public consultation of proposals
- **Close cooperation within Government Offices**
 - Main responsibility: Ministry of Finance
 - Close cooperation with Ministries of Environment, Agriculture, Transport and Industry

The process leading to a new law





Green Taxes 1991 and Onwards

1990/1991 tax reform

- Reduced and simplified labour taxes (- 6 billion €)
- Value Added Tax introduced on energy (+ 1.6 billion €)
- Carbon tax introduced at a low levels combined with approx. 50% cuts in energy tax rates (+ 0.3 billion €)
- Certain investment state aid measures

In Sweden no earmarking of revenues but it may be a solution in other national contexts.

Since 1991

- 2001-2006 Green tax shift 1.6 billion €; raised environmental taxes, cuts in income taxes (focus on low incomes).
- 2007-2013 Increased environmental taxes (+0.6 billion €), significant cuts in labour taxes (- 8,6 billion €).
- 2014 and onwards
 - Increases in taxes on pesticides and natural gravel as well as energy tax on transport fuels
 - Phasing out carbon tax reductions
 - New tax on chemicals in electronic products
 - Public inquiries in different environmental tax areas (e.g. vehicle taxation, road distance tax)

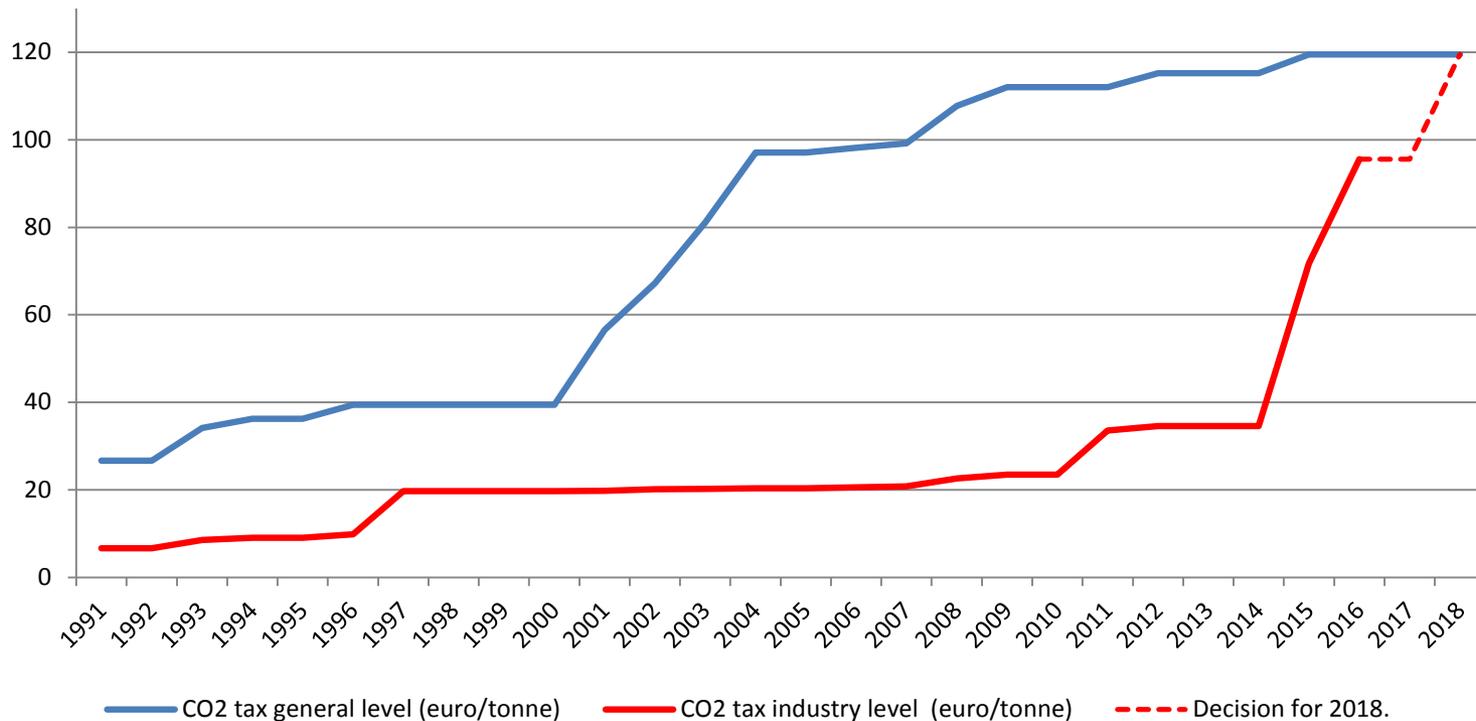
Development of the Swedish Carbon Tax

- **Two levels of carbon tax, per tonne CO₂**
 - *High* for motor fuels and heating fuels in households and service: 26 € (29 \$) in 1991; 117 € (131 \$) in 2016
 - *Low* for heating fuels in industry: 6 € (7 \$) in 1991; in 2016 outside EU ETS 93 € (105 \$), no carbon tax within EU ETS industry)
 - Lower tax level has been the prerequisite for the high level
- **Towards one single price on carbon**
 - Step-by step raising the lower level for industry outside EU ETS; lower level fully abolished in 2018.
 - Heavy industry mainly within EU ETS – another economic instrument which puts a price on carbon.

Development of the Swedish Carbon Tax

General level and industry level

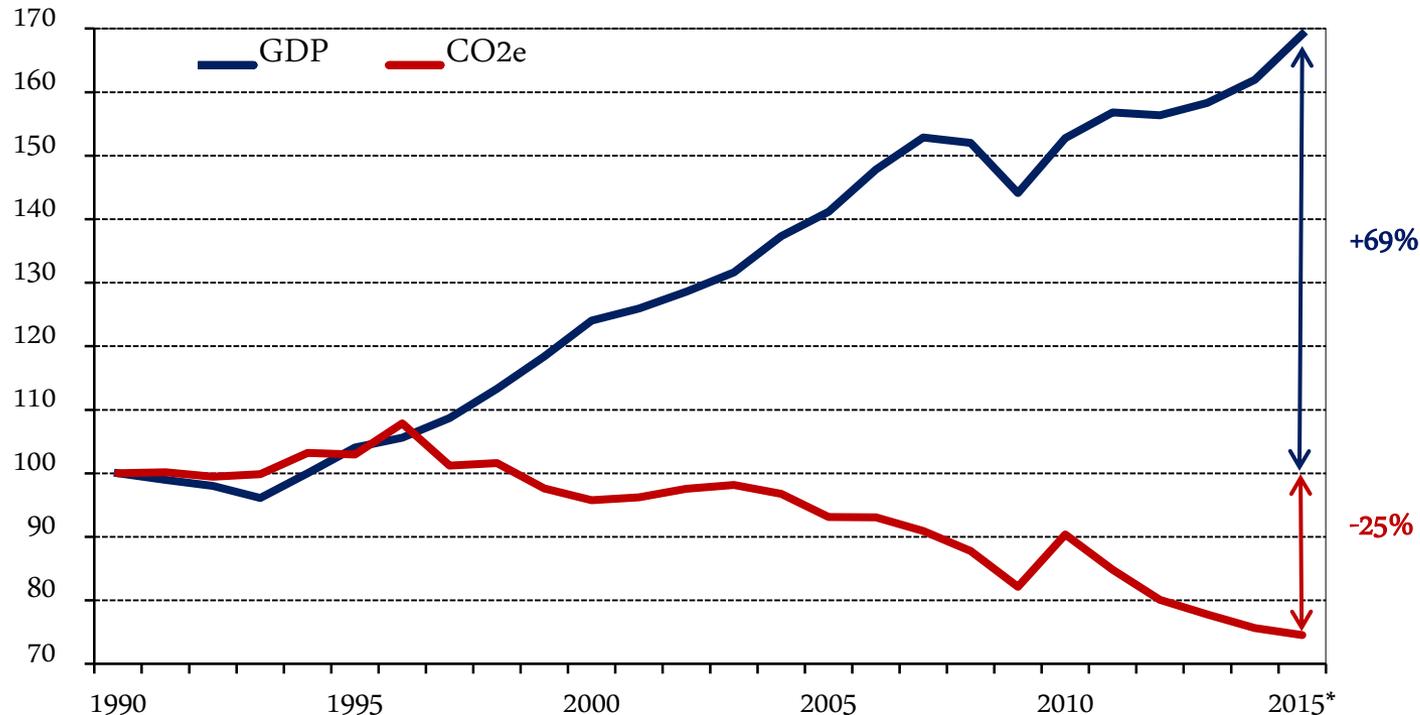
Carbon tax levels
€ per tonne



NOTE: from 2008 industry outside EU Emissions Trading Scheme (EU ETS)

Real GDP and Domestic CO₂e Emissions¹ in Sweden, 1990–2015

Index (1990=100)



¹ In accordance with Sweden's National Inventory Report, submitted under the UNFCCC and the Kyoto Protocol. CO₂ = approx. 80 % of total CO₂e emissions. Preliminary data for 2015.

Sources: Swedish Environmental Protection Agency, Statistics Sweden



Distributional Effects

Households



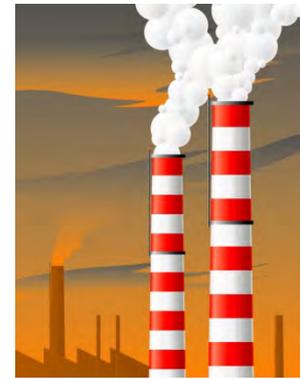
- **Heating fuels:** The carbon tax has led to the phasing out of fossil heating fuels used by households.
 - Fossil heating fuel use has since 1990 dropped by 85 % and now represents 2 % of Sweden's total greenhouse gas emissions.
 - Replaced by district heating, wood pellets burners and heat pumps
 - Temporary aid schemes for conversion to renewable heating
- **Motor fuels:**
 - Major challenge remains for a fossil free transport sector
 - Public transport
 - An average household paid approx. 450 € in energy and carbon taxes on motor fuels in 2015 (2 % of total tax paid)
- **General welfare state**
 - Social transfers
 - Increased basic income tax reductions for low and middle income households.





Distributional Effects

Business



- **Industry within EU Emission Trading Scheme (ETS):** Generally energy intensive.
 - No carbon tax from 2011, lower energy tax.
- **Industry outside EU ETS:** Generally less energy intensive.
 - Step-wise increase to general tax level 2011 - 2018.
 - In general low costs for energy and high costs for labour and capital.
- Large shares of the SE industry's use of energy consist of **bio fuels** (36 %, mainly paper and pulp) and **electricity** (32 %) in 2014.
 - No tax on solid bio fuels and residues ; low energy tax on electricity for industry.
 - Steady decline in specific energy use (amount of energy used per monetary unit of value added).
- **District heating** is a significant provider of **space heating for service sector** (offices, shops etc.): **80 % in 2014**. 74 % of in-input is household waste and forestry waste.

What Does the Public Think?

- **What make households and firms adapt?**

Swedes do not love to pay tax, but

- General environmental concerns, both from households and firms
- Start at low tax levels, raise gradually
- Ensure that feasible options are available (bio fuels, district heating, public transport, housing isolation etc.)
- “Polluter Pays” = “Money Talks”
- 20 years of carbon taxation show good environmental effects = Pollution from fossil fuels is not essential to economic success.

..... the carbon tax is generally accepted.





Easy to Administer

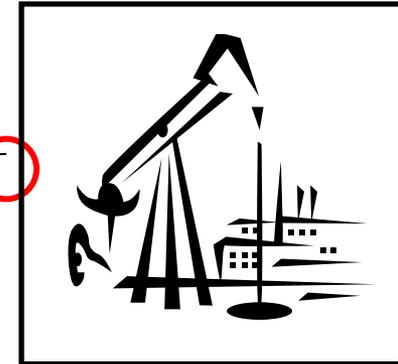
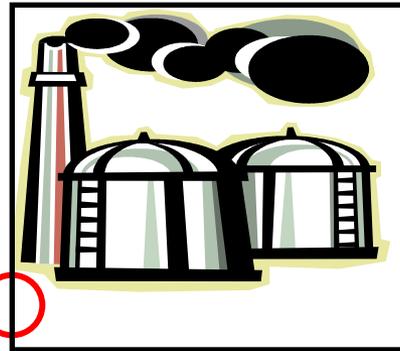
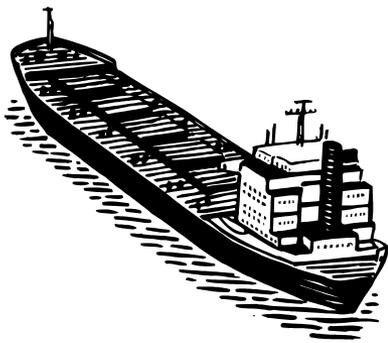
- In the tax law, carbon tax rates are expressed in normal trade units (**weight or volume**)
- State legislators use average **CO₂ emission factors** for different fuels to calculate tax rates
 - Internationally acknowledged emission factors
 - No need to measure at point of emissions to air
- **Tax payers** are distributors or large consumers
- The carbon tax is **administered in the same way as the energy tax on fuels**
- **Low administrative costs** for tax authorities and business
 - Administrative costs for Swedish Tax Administration is 0.1 % of total revenues for energy and carbon taxes.

General principle: Fuels shall be taxed at the time of production (incl. extraction) or importation.

Taxation Points for Taxes on Fossil Fuels

Extreme up-stream alternative¹

 = Taxation point. Tax payer would typically be a mine owner, an oil driller or importer of oil or other fuels.



Pros and cons:

- + Could facilitate tax control
- + Less number of tax payers, easier tax administration
- Negative liquidity effects on business, due to that tax is to be paid before fuels are sold
- Difficult to differentiate tax between refined oil products
- Difficult to differentiate tax between areas of use

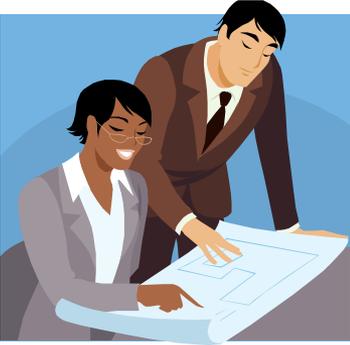
¹ For discussion; would not be possible in Sweden due to general EU provisions



The Road Forward

- **yes, a carbon tax is a good idea!**
 - reduced emissions can be combined with long-term economic development and prosperity
 - low administrative costs; emission trading schemes more complicated and costly
 - raises revenues, which can be used to make options available
 - step-by-step approach give time for households and firms to adapt
 - involve stake holders in discussions; cooperation within Government offices
- **global action**
 - We know how to price carbon by a carbon tax. Sweden and others can share experiences, but exact design need to take account of national conditions
 - By leading the way we hope to make more countries follow suit. Let us all work to make that happen!

Thank you for your attention!
Questions?



Annex

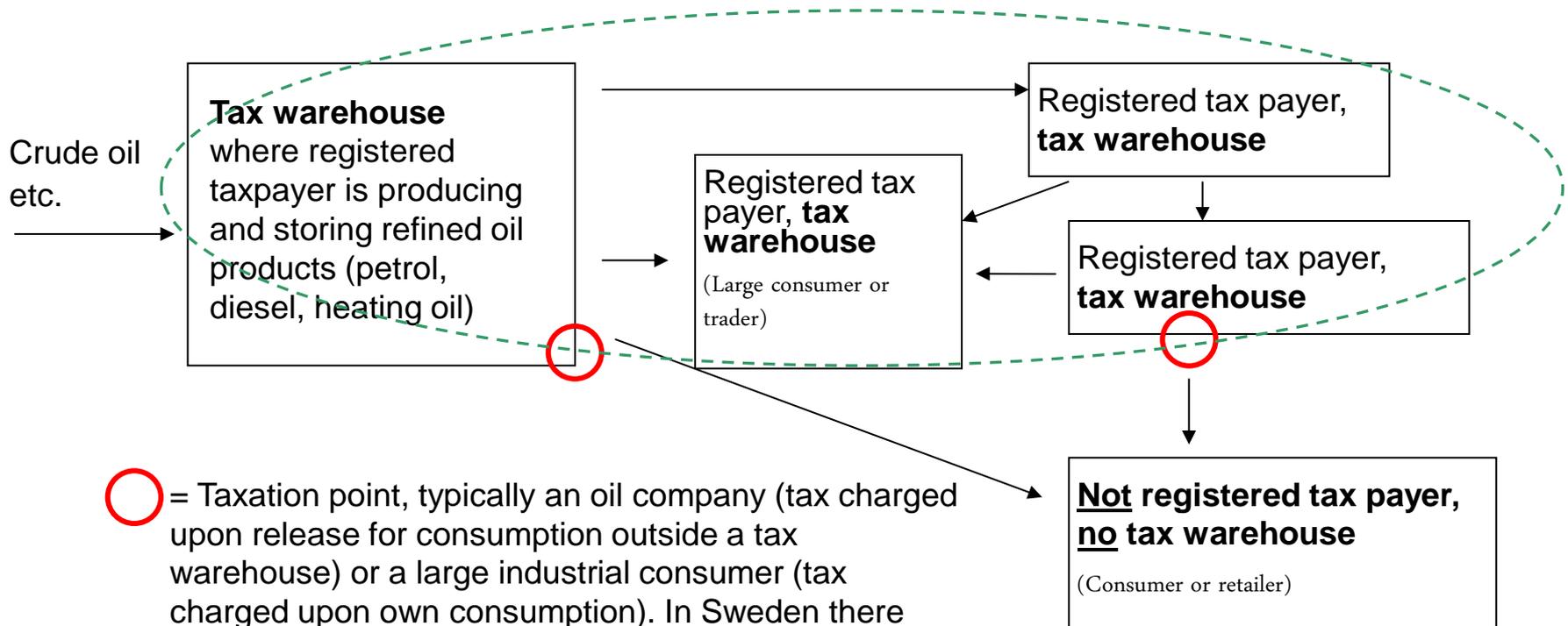
Additional information on Swedish tax administration



Taxation Points for Taxes on Fuels in Sweden (mandatory EU rules)

General principle: Fuels shall be taxed at the time of production (incl. extraction) or import.

Major exception: Tax suspension regime



○ = Taxation point, typically an oil company (tax charged upon release for consumption outside a tax warehouse) or a large industrial consumer (tax charged upon own consumption). In Sweden there are roughly 300 registered tax payers.

○ = Tax suspension regime (products can be handled without tax being charged), enables taxation closer to consumption.



Calculations in Tax Declaration

Example (gasoline, 2016 Swedish tax rates)

	Page 1: Quantities, liters	Page 2: Tax calculations, SEK		
		Energy tax	Carbon tax	Total tax
	A	$B=A*3.72$	$C=A*2.59$	$D=B+C$
Deliveries to non tax payers	500 000	1 860 000	1 295 000	3 155 000
Own consumption	10 000	37 200	25 900	63 100
Deductions (tax exempted areas)				
- export	-5 000	-18 600	-12 950	-31 550
- non-fuel use	-15 000	-55 800	-38 850	-94 650
Tax to pay		1 822 800	1 269 100	3 091 900



Who Face the Tax Burden?

Example gasoline – Swedish context

- **Tax payer: Oil distribution company A**
 - Tax is paid when gasoline leaves A's tax warehouse
- **Gas station receives gasoline after tax is paid**
- **Households and firms buy taxed gasoline**
- **Swedish gasoline retail price of ~13.36 SEK(1,39 €/liter (5.92 \$/gallon) consists of (2015):**
 - Gross margin (12 %)
 - Product cost (22 %)
 - Taxes: Carbon, energy and value added taxes (66 %)
- **Who face the tax burden?**
 - 3 million owners of gasoline driven cars (*via higher gas prices*)
 - oil production and distribution companies (*via lower profit or lower wages*)
 - owners of gas stations (*via lower profit or lower wages*)