

Adjusted Pollutant Fees and Cap and Trade compared for phosphorus and nitrogen

The following table compares the approach proposed by the Foundation, a form of pollutant control fee, with a form of Cap and Trade proposed by the Swedish Naturvårdsverket. (rapport6345 • mars 2010) This comparison is designed to provide practical insights into how pollution can be priced, based on the following general process:



This analysis was carried out by members of the Board of The Swedish Sustainable Economy Foundation during June- July, 2013 and is entirely based on the Board's perception of the mechanisms and the reading of the report 6345.

Some general conclusions can be drawn about pricing pollution from the exercise:

- 1) If pollution is priced, and a fee is taken, where do the collected fees go?
- 2) Controlling the pollutant early in its path through the economy is probably cheaper for society as a whole than administering emission permit and controlling their sale.
- 3) Mechanisms that treat classes of pollutants differently are likely to have a higher degree of efficacy.
- 4) Clarity is needed, when looking into price mechanisms, to understand both the nature of the pollutant (including levels of toxicity) and also the intended effects of the mechanism. For example; Cap and Trade aims to limit emissions. Flexible Control Mechanisms aim to control the pollutant in a way that allows a technological transition whilst retaining economic stability.

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<p>General approach How is the approach characterized – for example “End of Pipe”, “Systems Approach”, “Natural Step?”</p>	<p>Pollution is viewed where a substance ends up for too long in too large amounts in the wrong place and cannot be put to good use in the economic system.</p>	<p>“Polluter pays” “End of pipe”</p>	<p>Apart from substances that are not found in nature and are toxic, FF sees emissions as “congestion in nature” The more “congestion”, the higher the “congestion” charge should be. FF classes pollutants depending on their toxicity and availability and sees the behaviour of the societal system as a whole as the challenge.</p>
<p>Examples</p>	<p>Similar to flex fees is city congestion charges. These are flexible depending on the time of day, and the collected monies are returned to the city to be invested in public transport.</p>	<p>The carbon emission Cap and Trade mechanism.</p>	
<p>Perspective on eco-system services</p>	<p>Eco-system services depend on the maturity level of the eco-system. FF sees the cost of the eco-system service discovered by the cost to not lower maturity. (E.g in the case of phosphorus it is the cost to not emit to public watercourse.)</p>	<p>Eco-system services are not addressed in the COWI report.</p>	
<p>Identification of emissions How are emissions pinpointed for measures? What analysis methods are used? How are the behavior and performance of technical systems pinpointed for application of measures?</p>	<p>Looks at both costs to bring substance into the societal infrastructure as well as emission effects Upstream as far as possible Analysis of overall input and emission of pollutant, to find entry points. Impact on businesses and availability of substitutes.</p>	<p>Recipient capacity (Accumulated substances not taken into account directly.) Points of emission Analyses specific actor behavior and recipient burden</p>	<p>Long term effects are uncertain for recipient capacity analysis and accumulation. The FF approach takes a total pollutant control view. Points of emission are far more than points of import, making FF potentially more effective as there are fewer physical places to regulate.</p>

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<p>Examples in practice Where is the approach used today?</p>	<p>Congestion charges for traffic in cities are a kind of flexible fee. The Swedish carbon tax on fuel.</p> <p>Option market : trading in interest rate changes</p>	<p>Carbon trading, CDM,</p>	<p>A less common type of options trading as there is no physical deliverable involved (most options are in commodities like oil, pork bellies, etc.)</p>

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<p>Valuation of problem Which factors are weighed in the beginning?</p> <p>Is a triple bottom line approach used? Economy, Environment, Social.</p> <p>Are other factors introduced like fossil fuel dependency, Climate change?</p>	<p>Economic stability Long term economic damage to ecosystem Consumer behaviour</p> <p>Yes, triple bottom line</p> <p>Yes, capital erosion from for example investment in machinery that only uses one type of finite resource</p>	<p>Only ecosystem focus</p> <p>No</p> <p>No other factors considered</p>	<p>When sources are exhausted alternative systems should be available without disruptions. This is the aim of FF.</p> <p>Flex fees is multi functional: reduce emissions, guarantee supply of raw materials safeguard infrastructure whilst ensuring smooth transition to alternatives.</p>
<p>Decision on emission levels What kind of thinking is behind the decision to establish permitted emission behaviour?</p>	<p>The market should be proficient at finding the optimum phase out time given the political statement that abatement shall take place. Note that there is no decision on quotas although there may be decisions (in a situation like national interest rates) about limits and restrictions.</p>	<p>The NVV proposal has emissions capped at a level below what the recipient can take and up to acceptable levels a tradeable fraction</p>	<p>In FF the fee is adjusted if no progress is shown with keeping to the decided framework .</p> <p>A residual level of allowed emission can be determined. The actual decision making body is similar in the case of FF and C&T</p>
<p>Time aspects How are short-term costs weighed against the long-term societal cost of emission? Is some future discounting method used?</p>	<p>The only limiting factor is the time taken for companies to adapt, within the framework of likely depletion. It is better to have adapted before the resource runs out. Some limit for allowable emissions to start with.</p>	<p>Recipient's ability to provide the ecosystem services of absorption.</p>	<p>With C&T decision cycles are long as the tradeable levels are only adjusted yearly at maximum. Fast adjustment is an essential part of the design of FF.</p>
<p>Cost of administration</p>	<p>Cost will be in same order of magnitude as cost for any tax levied at upstream extraction or introduction. Additional cost for monitoring of market and administering adjustments.</p>	<p>Permit issue administration. Auctions. Cost of running the emissions trading market and approval of emission rights. Fines for exceeding emissions.</p>	<p>NB end of pipe entails more entities</p> <p>Options market in FF scenario is set up by independent actors using existing option trading products</p>

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<p>Mechanism of levying fee How is the point of levy – in the commercial chain – identified? What criteria are used?</p>	High up as possible in supply chain, fee levied on importers. Practical, low cost. Based on the customs class the product is given.	Accreditation system required to sell permits to emitters	
<p>Psychology What is the approach to making the fee socially acceptable?</p> <p>What mechanisms are used to monitor public opinion?</p>	<p>1) Based on no-one accepting pollution undermining long-term prosperity 2) Redistribution mechanism</p> <p>Not given</p>	<p>1) OK with pollution, but must be limited 2) Money used for Clean-up costs</p> <p>Not given</p>	<p>An economic calculation lies behind the C&T – trade of between nature and economy Flex fee can be used for Clean up. (Alternatives based on policy)</p>
<p>Choice of factors to monitor What factors are monitored, how are these identified? How are market behaviour and technical behaviour monitored?</p> <p>What formulae and other analyses are applied to the data gathered?</p> <p>What kind of decisions are made based on the data?</p> <p>Who makes the decisions, how often?</p>	<p>Market behaviour, depends on class of pollutant. Fee income, total sales/extraction, weak signals from market and research indications. Strong signals: futures market, technology sales and investment.</p> <p>Decisions are how much to change fee.</p> <p>The issuing authority</p>	<p>Trading price Number of permits sold and % of allowed emission</p> <p>Reduction of permits how much to lower the cap.</p> <p>To change price of permit and amount</p> <p>The issuing authority</p>	<p>Decision making has same responsibilities in both cases.</p> <p>Decision making is by similar body in both cases.</p>

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<p>Redistribution of fee What principles underlie redistribution?</p>	As much back to taxpayer as possible, some to politicians to create special projects	To be spent on clean-up.	<p>In the case of P and N investigations show that commercially available technology could create the zero emission society.</p> <p>Cap and trade and FF stimulates new recycling technology</p> <p>The prospect of paying customers stimulates investments in new companies and technologies better than the promise of grants, even though grants have their uses to kick start markets, for example.</p> <p>Speed of technical adaptation can be seen from FF but not from C&T.</p>
<p>Financial instruments market</p>	A flexible fee, will likely stimulate various insurance instruments to appear, including a futures market	The mechanism allows permit holders to trade emissions rights on the markets the authority permits.	<p>FF does not include the authority involvement in futures market. The permit trading platform is an essential feature of CT. Is the futures market an essential part of the proposal for flexible fees?</p> <p>The short answer is no. The introduction of a flexible fee on any particular substance is expected to stimulate various insurance and hedging strategies from the market. It is hard to predict what will happen in any particular case. If the fee is sufficiently high, the market will react in some way. (A parallel to this is where citizens get fed up with high parking fines and club together to form a scheme to create a fine pool.”)</p> <p>One function of the futures market is to provide clear signals about how the levels of fee are encouraging the societal system to adapt to ceasing externalisation.</p>
<p>Fee adjustment</p>	Fees are adjusted at regular intervals using market signals and technical information	The numbers of permits are reduced base on phase-out plan. Prices for permits are based on clean up costs.	<p>How do authorities weigh the level of fee to set against emissions targets and ambitions is often asked.</p> <p>The information from the Futures market is only one feedback. Depending on what is being taxed, there will be many sources of information to go on that can be used by the authority. Again, the authority will have a framework given to it by government or similar directive.</p> <p>Balancing fast abatement with economic growth would likely be the main focus of the authority's task.</p> <p>TSSEF sees difficulties determining clean up costs. FF uses price discovery. Information from FF gives better decision basis.</p>
Risks and Scenarios	RISKS	Some Cap and Trade schemes with CDM CT	FF requires deeper analysis.

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<p>Which risks are foreseen with the construction, introduction, operation and development of the mechanism – for the dimensions of project risk, budget risk, technical risk, social risk.</p> <p>What preparedness is there in the mechanism or its operation to manage unforeseen changes like price rises, economic downturns, etc</p> <p>Are scenarios considered as part of the fee introduction process?</p>	<p>Cost of implementation</p> <p>Finding suitable levy point</p> <p>Effect on prices and consumer sentiment</p> <p>Flexible setting of fee can deal with unexpected rise or fall in material prices.</p> <p>Yes, but the overall reliance is on market.</p>	<p>CT has come under criticism for lack of regulatory stringency and lack of monitoring of actual effects</p> <p>Cap and trade is not subject to market scenarios according to NVV document.</p>	<p>Risk of not doing anything must be weighed in risk analysis. Cap and trade can handle risks if adjusted regularly.</p>

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<p>Effects on economic development Producers' and others' existing investments in infrastructure. To what extent will the fee drive reduction or increase in the value of existing infrastructure?</p>	Where infrastructure is threatened, fees will increase only at the speed that market can adapt.	Agricultural land can fall in value as a result of Cap and Trade if consumer prices are pressed.	
<p>Effects on consumers To what extent will the mechanism affect consumers?</p>	Will raise food prices but may not raise relative cost as redistribution puts more money in pockets.	Raise food prices or reduce land value.	Organically grown food will become relatively cheaper with FF.
<p>Effects on Food producers</p>	Inputs of chemical fertiliser will be more expensive. Hopefully the cost will be sent on to the food wholesaler and then to the consumer-	Food producers will be those who have to buy permits if they cannot control emissions.	Depending on EU subsidy structure it may be more or less effective to transition to organic farming under the various mechanisms.
<p>Political effect</p>	Food grown with imported phosphorus and nitrogen fertiliser will become more expensive. Organically grown will be relatively less expensive	Food prices affected regardless of method as there is no redistribution consumers are not compensated	
<p>Effects on technology development What are the likely influences on new technology development? Which drivers will come</p>	As the fee drives recycling, all technology to both limit emissions and recycle will be favoured	Will drive cleanup technology development initially, but also technology that limits emissions.	CT has shown to curtail acid rain and congestion charges have reduced traffic so we assume both mechanisms work

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into force for which technologies?			
<p>Effects on technical infrastructure</p> <p>In what way, and to what extent will the mechanism introduction drive societal technological infrastructure develop.</p>	<p>Recycling will be relatively cheaper. Cleaning costs will be thereby driven down. Investment, long term will be geared to the phase-out plan</p>	<p>Where emissions are acceptable, there will be no drive to change behaviour even if the aggregate load is above desired.</p>	
<p>Perceived benefits of mechanisms</p>	<p>The dynamic nature of the instrument harnesses market forces. The systems view ensures economic growth and abatement find an optimum path.</p>	<p>Clear levels of permitted emissions help business planning.</p>	<p>Many perceptions of both mechanisms lack reliable empirical evidence. However, perceived benefits may affect decision making even though the mechanism may not work in the particular context.</p>