



The Foundation for the Economics of Sustainability
"Designing Systems for a changing world"

30th April 2013

FEASTA Submission to Consultation on Heads of Climate Action and Low Carbon Development Bill

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1. Introduction

FEASTA, the Foundation for the Economics of Sustainability, welcomes the opportunity to participate in this consultation on climate change legislation.

This submission is structured as follows. First we address fossil fuel emissions for which we propose Cap and Share as a policy response. Then we discuss emissions from the biosphere due to anthropogenic activity which we propose should be addressed by means of a Carbon Maintenance Fee. Next, we discuss the transition to a sustainable economy including the role of climate change legislation in this transition. Finally we raise issues of Ireland's role in the international negotiations.

2. Cap and Share

FEASTA has developed, researched and promoted 'Cap and Share' as a mechanism to reduce fossil fuel emissions. In 2009 it was selected by the UK's Sustainable Development Commission as one of its 'Breakthrough ideas for the 21st Century.'¹ The following text is largely taken from the chapter 'Cap and Share: Simple is Beautiful' in FEASTA's 2010 book *Fleeing Vesuvius*.²

Cap & Share (C&S) is a system for limiting the carbon emissions from burning fossil fuels

¹SDC, 2009, Breakthrough Ideas for the 21st Century. London: Sustainable Development Commission. (www.sd-commission.org.uk)

²Matthews, L., 2010, Cap and Share: Simple is Beautiful, in Douthwaite, R. (ed.), 2010, *Fleeing Vesuvius*, FEASTA

(FEASTA, 2008); it is an alternative to carbon rations or carbon taxes. It could work on a global scale, or nationally for a single country's economy. We'll return to this later, but for the moment imagine a national scheme. As the name implies, there are two parts to C&S:

- Cap: The total carbon emissions are limited (capped) in a simple, no-nonsense way
- Share: The huge amounts of money involved are shared equally by the population

There is a trick to each of these. First the cap. This is set in line with scientific advice, at a level each year that will bring concentrations (of carbon dioxide in the atmosphere) down to a safe level. But how do we ensure this cap is met? The trick here is to go 'upstream'. This is often explained³ by the analogy of watering a lawn with a hosepipe connected to a lawn sprinkler, with lots of small holes spraying water everywhere. If you wanted to save water, you could try to block up all the holes one by one — but wouldn't it be simpler to turn off the tap a bit? It's the same with fossil fuels, where the sprinkler holes correspond to the millions of houses, factories and vehicles, each emitting carbon dioxide by burning these fuels. By controlling the supply of fossil fuels coming into the economy (corresponding to the tap) we automatically control the emissions that occur when those fossil fuels are burnt somewhere down the line. So instead of focusing on the emissions, we focus on the fossil fuels themselves. The primary fossil-fuel suppliers (e.g. oil companies) are required to acquire permits in order to introduce fossil fuels into the economy (by importing them or extracting them from the ground). A permit for, say, 1 tonne of carbon dioxide entitles the fossil-fuel supplier to introduce that amount of fossil fuel that will emit 1 tonne when burnt. The number of permits issued equates to the desired cap.

Next, the Share. Since the fossil fuel suppliers have to buy the permits, they will pass on this cost by increasing the fuel price. This flows through the economy (like a carbon tax), making carbon-intensive goods cost more. This sounds like bad news for the consumer. But the trick this time is to share out the money paid by the fossil-fuel suppliers, back to the people, which compensates for the price rises. There are two possible mechanisms for getting the money to the population. In one, the version called Cap & Dividend⁴ in the US and based on the Alaska Permanent Fund, permits are auctioned and the auction revenue distributed to the citizens on an equal per capita basis. Under 'classic' C&S each adult receives free of charge — say, monthly or annually — a certificate for his or her share. These certificates are then sold to the primary fossil-fuel suppliers (through market intermediaries such as banks) and become the permits. Under 'classic' C&S people thus receive certificates instead of money, so that if they should wish to, they can retain (and destroy) a portion of their certificates — and thus are able to reduce the country's carbon footprint by that amount.

That's Cap & Share in a nutshell.

To many people, however, the 'obvious' mechanism is not Cap & Share but either a carbon tax (discussed below) or a version of cap and trade applied 'downstream' where the emissions take place. Such a cap and trade system has two parts, as follows. The first applies to the fossil fuels we buy directly (petrol, gas, coal) and burn ourselves, causing emissions; these direct emissions account for half of our 'carbon footprint'. For these direct emissions, some form of personal carbon trading is envisaged, typically based on ideas of 'rationing' familiar from petrol and food rationing during the Second World War. Personal Carbon Allowances (PCAs) typically involve giving an equal allowance to each adult citizen, and each purchase of petrol, oil or gas is deducted from the allowance (typically using swipe card technology). The other half of our carbon footprint consists of indirect emissions, the 'embedded' emissions in goods and services, which arise when companies produce these goods and services on our behalf. These indirect emissions are controlled with an

³Barnes, Peter, 2008, *Climate Solutions*, White River Junction, Vermont: Chelsea Green.
(www.capanddividend.org)

⁴ibid.

Emissions Trading System (ETS) for companies, such as the European Union ETS. (The EU ETS is already up and running, and has had its teething problems; but its faults — lax caps through too many permits being issued, free allocation windfalls to large utility companies, partial coverage only of the economy, leaks through dubious CDM projects — are now widely accepted and these shortcomings are being addressed in the next phase).

Taken together, PCAs and an ETS-like arrangement for companies can constitute an economy-wide scheme; variants have names such as Domestic Tradable Quotas or Tradable Energy Quotas⁵. Under the scheme individuals or companies who use more than their allowance can buy extra from those who can make do on less, but the total amount in circulation is finite, set by the cap. This downstream approach is compared with Cap & Share's upstream approach in research commissioned by Comhar, the Irish sustainable development commission, and carried out by AEA Technology and Cambridge Econometrics⁶. C&S came out well from the comparison.

2.1 Benefits of Cap & Share

It is worth listing the benefits of C&S because they are so multi-faceted. Firstly, there are some obvious consequences of the way C&S works:

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|-------------|---|
| Effective | C&S delivers; it is not just an aspiration. Individual countries like the UK and blocs like the EU may have targets (and various institutional arrangements), but so far they have no mechanism to ensure that the targets are achieved. C&S guarantees a cap. |
| Fair | The framework clearly has at its root a simple, robust form of equity. This serves as a focal point for agreement, in the same way that one-person-one-vote serves as the basis for democracy. C&S is exactly as fair as rationing would be, or more so, given the inequity typically built in to the ETS half of such systems. |
| Simple | A typical country will have at most 100 or so fossil-fuel suppliers, so C&S is simple to operate and police. Meanwhile all other companies, and all individuals, are free to go about their lives without the need for swipe cards or carbon accounting, making their decisions based on price alone. Contrast this with the EU ETS, which has been described as 'more complicated than the German tax system.' |
| Fast | A result of this simplicity is that the system is easy to introduce very quickly — and we don't have the time to wait another decade before getting started. |
| Cheap | This is also a direct result of the simple, upstream nature of the cap. |
| Transparent | With scrutiny focused on the small number of fossil-fuel suppliers, there is much less scope for cheating than with a complex system like an ETS. |

Next, there is an important political point:

⁵Fleming, David, 2005, *Energy and the Common Purpose*. London: The Lean Economy Connection. (www.teqs.net)

⁶Comhar, 2008, *A Study in Personal Carbon Allocation: Cap and Share*, Dublin: Comhar. (www.comhar.ie)

Robust This arises from looking at the winners and losers under C&S. Although the payments to people compensate them for price rises, this is only true on average. If you have a lower carbon footprint than the national average, you will come out ahead: your payments from C&S will more than compensate for any price rises. People with higher than average carbon footprints will be worse off, but the skewed nature of income distributions means that there are many more winners than losers (for the same reason that there are more people on below-average incomes than above-average incomes). There is thus a natural constituency⁷ in favour of maintaining a tight cap, to counterbalance the vested interests that would push for a cap to be relaxed or abandoned. Indeed, C&S could be sold politically under the slogan ‘save the world — and get paid for it.’ This gives a certain robustness in the face of shocks and political events, necessary for a scheme that will need to survive for decades. (Consider, by contrast, carbon taxes. These are also simple, and a carbon tax is equivalent to an upstream cap if the tax level is set high enough. But the robustness incentives disappear if the money disappears into general taxation, and so taxes are unpopular. So it is much less likely that the tax level would be set high enough).

Next come some technical benefits of C&S:

Efficient Because permits are subject to supply and demand, and price signals then flow through the economy, C&S uses markets to guarantee that the cap is met with optimal economic efficiency.

Scalable C&S can operate at the level of a country, a bloc like the EU, or globally. This is discussed further in the ‘Global/International’ section below.

Flexible An upstream system can easily form part of hybrid schemes (see the next section).

And last but not least, C&S has some intangible, psychological benefits:

Positive People can relax slightly, knowing that this problem, at least, is being addressed. They no longer need to feel guilty; on the contrary, the people are part of the solution rather than part of the problem. (Even the ‘losers’ mentioned above have non-monetary compensations; for example, since everyone knows that the problem is being addressed, the rich can counter criticism from environmentalists by responding, ‘my emissions are all within the cap too, so stop criticising!’).

Empowering C&S has a lack of intrusiveness and micromanagement. People are free to get on with their lives, without any need to keep to an ‘allowance’. There is no hassle and no intrusive tracking of individual purchasing transactions. Better still, people are in control: they are controlling the system rather than the system controlling them. You

⁷McKibbin, Warwick J. & Wilcoxon, Peter J., 2007, A credible foundation for long-term international cooperation on climate change, In: Aldy, Joseph E. and Stavins, Robert N., eds., 2007, *Architectures for Agreement*. Cambridge: Cambridge University Press, pages 31-56.

have control over ‘your share of the country’s carbon footprint.’

Resonant C&S has an ‘all in this together’ feel to it, and resonates with many other movements concerned with equality⁸, justice and development issues; it also resonates with initiatives at a local community level, which need to have national and global frameworks in place if their work is not to be undermined.

To summarise, we have a combination of emotional appeal, psychology and hard cash.

Of course, C&S is not the answer to everything. A framework such as C&S is a complement to, not a substitute for, measures closer to home. On the ground, people will be making behavioural changes (improving home insulation, shopping more locally, etc.) for a variety of reasons. Some of these reasons will be financial, driven by the economic incentives provided by the framework. But technology standards can help here, as can tax regimes (e.g. support for renewables), education, and efforts to envisage and communicate a low-carbon future as a desirable one. It will not be sufficient to put the framework in place and ‘let people get on with it’. But it is the framework that ensures that the numerical target set by the cap is met.

2.2 Elaborations

The basic idea of C&S is capable of embracing a number of elaborations quite easily. All these have merits, although each eats into the basic simplicity so should be undertaken with care.

Equity C&S is based on simple equity between all adults. Now one can argue about whether or not this equity represents justice⁹, and arguments can be made for adjustments to simple equity — allocating extra to rural households, partial shares to children, etc. Everyone can claim to be a special case, but equity is the undoubted starting point, just as it would be for food rations in a lifeboat. Recognising that special-case pleading could go on indefinitely, in practice there will be a compromise between adjustments that target particular groups and the simple guideline of equity. One could argue that the details of the distribution are less important than the fact that the cap is in place: the Cap is more important than the Share. But equity is an important factor in rendering the scheme publicly and hence politically acceptable, thus allowing the introduction of the cap in the first place. It may be better to keep it simple and tackle special needs with explicit, separate arrangements.

Scale As mentioned above, C&S is scalable, applicable to a nation alone, or on a global scale. But instead we could introduce C&S just for personal direct emissions, or even just in a single sector (for example, an initial introduction for the transport sector only).

⁸Wilkinson, Richard & Pickett, Kate, 2009, *The Spirit Level*, London: Allen Lane

⁹Starkey, Richard, 2008, Allocating emissions rights: Are equal shares, fair shares? Working Paper 118. Manchester: The Tyndall Centre. (www.tyndall.ac.uk)

- Hybrids** As an upstream system, C&S also could adopt a ‘hybrid’ approach¹⁰ to dovetail with an existing ETS as a transitional measure¹¹. It is thus flexible enough to accommodate other ideas — within an underlying simple framework.
- Transitions** Hybrids are one way of introducing C&S ‘gently’ to allay fears and incorporate learning from other schemes. Other pathways are possible too. For example, a government initially reluctant to impose a cap might introduce a carbon tax levied upstream; but this can easily morph into an upstream permit system with ceiling prices (see below), and then (by raising the ceiling prices) into an upstream cap.
- Offsets** Although leakage through spurious offset ‘projects’ should be avoided, offsets might be allowed against sequestration, either capture at the point of combustion or direct sequestration of atmospheric carbon dioxide (by high-tech scrubbers, or low-tech methods like biochar).
- Extensions** C&S is presented here for carbon dioxide, but the same principle applies to other greenhouse gases (which would be hardly feasible for a downstream system). In fact any other common resource such as a fishery could be incorporated: it is easy to maintain a cap using permits, and distribute the share to the population. This has a deep resonance with emerging ‘commons thinking.’
- Funds** Some of the revenue could be kept back to fund collective projects to smoothe the transition to a low-carbon economy. There could also be a fund to help specific countries (or individuals) with adaptation. Some proposals in fact, such as Kyoto-2¹², commandeer all the funds for such purposes. However, hiving off a significant fraction of the revenue undermines the ‘robustness’ incentives, and there is again a strong argument for separate arrangements to tackle these issues. C&S would complement, not replace, parallel efforts to encourage R&D, set technology standards, aid with adaptation and so on.

2.3 International / Global

In an ideal world, C&S would operate as a global scheme, a single policy for the planet considered as a whole. A global scheme needs a global institution such as a Global Commons Trust, presumably run by the UN, to operate a worldwide system of permits (which in this case would apply to extraction of fossil fuels only, since there are no ‘imports’ from other planets), with the resulting revenue returned to the (world) population. Global schemes thus bypass nations, except perhaps as a vehicle for transmitting the funds to their populations.

An alternative approach is the international one, which seeks to add up and link together actions taken by sovereign nations. In this approach a global cap is apportioned using a formula agreed by

¹⁰Sorrell, Steve, 2008, Memorandum submitted to the Environmental Audit Committee, In: Environmental Audit Committee, 2008, Personal Carbon Trading. London: The Stationery Office, pages Ev 84-98. (www.parliament.uk)

¹¹Matthews, Laurence, 2008, Memorandum submitted to the Environmental Audit Committee. In: Environmental Audit Committee, 2008, Personal Carbon Trading. London: The Stationery Office, pages Ev 99-112. (www.parliament.uk)

¹²Tickell, Oliver, 2008, *Kyoto2*, London: Zed Books

all; each nation then operates its own scheme (such as national C&S). The apportionment formula is of course a thorny question: the formula might be based on Contraction & Convergence (C&C), promoted by the Global Commons Institute¹³ and accepted at various times by various national governments, and under which national shares of a global emissions budget start at the current shares of global emissions and converge over (perhaps a short) time to equal per capita shares. If countries sign up to the general principle of a global cap, it is quite possible that the actual pathway ends up resembling the framework proposed by Frankel¹⁴, which is an ingenious set of elaborations on C&C performing a tricky balancing act of incentives. Or, as soon as the world recognises the extent of the emergency, we may be into Greenhouse Development Rights territory¹⁵ — an approach that also explicitly addresses inequality within nations. The negotiations might get messy, but the rallying cry must be simple.

Global C&S is equivalent to C&S in each nation with national caps calculated on an equal per capita basis, so the eventual destination of many global and international frameworks would be the same. Global C&S is just C&C with immediate convergence, and with ‘the permits going to the people.’

Now, global frameworks would require global institutions (and probably other things like monetary reform). Many authors regard this overruling of national sovereignty as hopelessly unrealistic — although others see climate change as a catalyst for wider reform, perhaps ushering in some form of global democracy¹⁶. Global institutions would seem to be an obvious long-term goal, but many would see the problem as simply too urgent and complex: we should not attempt to tackle too many things at once. Advocates of this view would stick with an international system. Of course, even international systems need global elements too: greenhouse gas concentrations are global entities and the cap must be set accordingly. Whatever one feels about this, it seems certain that the current emergency caused by humanity bumping up against the finite limits of the planet will force a reassessment of many of the tacit — but clearly unrealistic — assumptions underlying ‘conventional’ economics, politics and much else.

Which leads us finally to asking, ‘what is realistic?’

2.4 A choice of realisms

There is no sign of Cap & Share being introduced by any nation, never mind as a global scheme, any time soon. Instead, government communication to the public concentrates on individual ‘small actions’: on doing one’s bit, with exhortations to switch off standby electrical equipment, use low energy light-bulbs, and calculate personal carbon footprints. There is a nagging tone and a strong implication that ‘people are the problem.’ This message fosters guilt, perpetuates ignorance and misconceptions (e.g. that climate change can be halted by recycling), and encourages the perception that climate change is not important (or else the government would be doing something serious about it).

It is easy to read into this a picture of governments scared of facing up to the truth and of telling that truth to the people. But there is some truth in government assertions that the public is as yet unwilling to curb its carbon emissions. Despite a blossoming Transition Towns movement which seeks to build local resilience ahead of climate change and peak oil, at the moment it appears that

¹³Meyer, Aubrey, 2000, *Contraction and Convergence*, Dartington: Green Books. (www.gci.org.uk)

¹⁴Frankel, Jeffrey, 2007, Formulas for quantitative emission targets. In: Aldy, Joseph E. and Stavins, Robert N., eds., 2007, *Architectures for Agreement*. Cambridge: Cambridge University Press, pages 31-56.

¹⁵Baer, P., Athanasiou, T. and Kartha, S., 2007, *The Right to Development in a Climate Constrained World: The Greenhouse Development Rights Framework*. Berlin: Heinrich Boll Foundation. (www.ecoequity.org)

¹⁶Holden, Barry, 2002, *Democracy and Global Warming*, London: Continuum

the majority of the population want to tackle climate change only if it isn't too much 'hassle,' and only if it doesn't cost too much money.

So, what can we 'realistically' hope for?

In the international arena, proposed international climate architectures¹⁷ lie on a rough spectrum from top-down formula-based plans aiming at universal participation by all nations, through to bottom-up arrangements of piecemeal actions taken by nations unilaterally. Let's call proponents of these schemes 'Builders' and 'Growers' respectively (with no disrespect intended to either group). A Builder wants to plan, and suggests building a tower; while a Grower wants to let things happen, and suggests planting trees. Growers, pointing to game theory, say that building a tower is 'unrealistic'. Builders, pointing to the urgent need to avert runaway climate change, say that waiting for a tree to grow is 'unrealistic'. These are clearly different uses of the word 'unrealistic'.

This Builder-Grower spectrum is correlated with another spectrum concerning transfers of wealth from rich countries to poor. Suggestions for allocation of the global 'pie' range from grandfathering (pegged to current emissions, that is, rich countries get more) through equal per capita allocations (everybody gets the same) to proposals 'beyond' equal per capita allocations that compensate for the legacy of historic emissions (rich countries get less). Planners' frameworks typically involve transfers of funds, whereas unlinked and unilateral actions (by default based on grandfathering) typically don't. Large transfers are dismissed by some in the developed world as utopian, unrealistic or unacceptable. But there is also hostility from developing countries to proposals that seem to limit their development, especially if these ignore 'ecological debt'¹⁸.

There is also a correlation with another spectrum concerning strength of caps. Should they be tight, quantity-based targets related to 'safe levels' of greenhouse gases; softer price-based targets balancing benefits and costs; or should targets be abandoned altogether in favour of encouraging unilateral 'efforts'? A Grower might say that a quantity-based target, or cap, is unrealistic as costs must be taken into account. A Builder might say that any cost-benefit analysis that tries to put a price on a stable climate is unrealistic. Which sort of 'unrealistic' do we choose?

Price-based policies often involve 'ceiling' prices. To guard against the price of permits rising unacceptably high, governments undertake to issue more permits and sell them at the ceiling price. (The government may also agree to buy permits at a 'floor' price, should the demand for permits fall 'too much' and undermine green investment). A ceiling price offers to convert a quantity-based policy, based on 'safe levels' of greenhouse gases, into a price-based one, balancing benefits and costs, when the going gets tough. Ceiling prices are often described as a 'safety valve'.

The safety valve metaphor conjures up the image of a steam engine or pressure cooker, where if the pressure builds up excessively it can be released before there is an explosion. By analogy the pent-up demand for permits might put excessive pressure on the permit price. (Even the phrase 'ceiling price' has a comforting ring of 'limiting the anguish' to it). Governments naturally seek the reassurance of a mechanism existing to release this (political) pressure, and this seems eminently sensible; after all, letting off steam is a benign image. Yet this image contains no hint of any external limits or constraints.

Consider instead the following story. Passengers are queuing at check-in at the airport; they are attending a coin-collecting convention and each wants to bring his coin collection along. Unfortunately there is a weight limit, and the passengers are unhappy about being refused their requests. The check-in supervisor nervously watches anger mounting, and worries that this might

¹⁷Aldy, Joseph E. and Stavins, Robert N., eds., 2007, *Architectures for Agreement*, Cambridge: Cambridge University Press.

¹⁸Simms, Andrew, 2005, *Ecological Debt*, London: Pluto Press, and Roberts, J. Timmons & Parks, Bradley C., 2007, *A Climate of Injustice*, Cambridge, Massachusetts: MIT Press.

explode unless the weight limit is relaxed. Yet now we can clearly see the problem with giving in to this pressure: the plane crashes on takeoff. In hindsight it would have been better to face up to the metaphorical explosion — of anger, of tantrums at not getting one's way — in order to avoid the literal explosion (at the end of the runway).

The analogy with the global climate is clear. Seemingly sophisticated arguments about 'stock-pollutants' notwithstanding, it is surely better to come to terms sooner rather than later with what a finite planet means. The view that it is naive to expect governments to agree to any scheme that does not have a ceiling price is offered as 'realism'. But there is a choice of realisms here.

As debate continues, the problem is increasingly urgent as scientists point to feedbacks and tipping points. To avert catastrophic climate change we will need a mobilisation of resources akin to that in wartime, and if this mobilisation is to be forthcoming, we need to realise and accept that we are all in the same boat — and a sinking one at that, despite claims from some that "it's not sinking at our end yet." It is in the self-interest of all that the boat does not sink. Yes, it is political realism to recognise that the temptation is to 'free-ride' — to leave the effort of doing something about it to someone else — but pointing to this situation and shrugging is a wholly inadequate response. This type of realism is only a starting point. A tougher — and necessary — biophysical realism insists that this situation is addressed robustly.

A global cap may be agreed by policymakers, but should be based on science (for example as recommended by the IPCC); that is, it should be based on what is required to stop runaway climate change, not merely 'what is politically feasible' or 'the extent of popular or political support'. In one sense it is tautological to say that the extent of popular support will set the cap, but the onus must be to change this support to align with scientific necessity. An emergency demands a scale of response commensurate with the gravity of the situation.

It is too easy to regard an acceptance of current political realities as pragmatic, and regard as utopian any insistence that they change. Human nature might be pretty fixed, but 'political realities' are more malleable. We need to think through which realism we are choosing. Some types of realism are not an option — at least not an option consistent with survival. As the residents of Easter Island could tell us, scientific realism will trump political realism in the end.

2.5 Conclusion

One of our overriding needs is for statesmanship, deploying rhetoric of the calibre of Gandhi, Lincoln, Mandela, Confucius or Churchill, to prepare the world for, and lead it into, swift and far-reaching changes. The messages are not easy, and the rhetoric will need to draw on simplicity and to extend the discussion beyond economics. Governments might engage in cool calculation, but people are inspired by rhetorical appeals to deeply held values and visceral feelings. At the moment, the populations of most countries are largely in psychological denial, 'yearning to be free' of the knowledge, deep down, that we are collectively on the wrong road. The abolition of slavery overrode economic arguments by appealing to basic human values. Surely averting climate chaos, and hence ensuring our survival and that of much of the natural world, is an equally inspiring goal?

Any framework such as C&S would be adopted alongside other measures, such as a push on R&D, infrastructure projects and funding for adaptation; research into geo-engineering and sequestration technologies; agreements concerning land use; and so on. We will need them all. But we will also need a dramatic change in global popular opinion — a change of world-view. Adoption of a simple, fair and realistic framework for cutting global carbon emissions — such as Cap & Share — would

be inspirational, resonating with this change and with efforts to solve the other problems that face us collectively on our finite planet.

1. Carbon Maintenance Fee

In recent years FEASTA has also been looking at mechanisms to address the need to protect the natural carbon sinks and cycles. Although the protection of sinks and the promotion of sequestration is covered in the UNFCCC, it has been very much on the back burner in the UNFCCC process, except, unfortunately, as a means of reducing the level of obligation placed on fossil fuel emitters. This is despite the fact that anthropogenic ecosystem emissions were and remain a major element of the climate problem. Measures to reduce fossil fuel emissions, if they are in any way effective, have the potential to have enormous negative impacts on ecosystem carbon cycles. Indeed, there is undeniable evidence that the growing use of biofuels is already having this impact.

Currently, proposals for REDD+ (Reducing Emissions from Deforestation and Degradation Plus) are being developed for incorporation into the next UNFCCC agreement. FEASTA is strongly of the view that it is essential that carbon cycles and sinks are effectively addressed at the UNFCCC, particularly as the restrictions on fossil fuel use which UNFCCC plans will otherwise create enormously destructive pressure on the natural world and the carbon cycle.¹⁹ FEASTA is also of the view that the apparent proposal in REDD+ as currently being developed to treat ecosystem emissions and fossil fuel emissions as interchangeable is profoundly mistaken and that it has the potential to lead directly to devastating consequences for populations affected as well as to fail to achieve the goal of protecting the climate.²⁰ In response, FEASTA is developing a proposal for a Carbon Maintenance Fee. The following text describing how the Carbon Maintenance Fee would work is largely taken from the chapter 'Turning the Land from an Emissions Source to a Carbon Sink' in *Fleeing Vesuvius*²¹ and from the chapter on 'Policy Packages' in FEASTA's 2012 book *Sharing for Survival*.²²

A substantial proportion of CO₂ emissions stems not from the burning of fossil fuels but from changes in land use,²³ such as deforestation and draining of peat bogs, and from carbon-depleting agricultural practices. Around 30% of total greenhouse gas emissions are from land use, with around 1/3 of this attributable to CO₂. Various authors have suggested ways to curtail these, and means whereby the land might actually be used to draw down excess CO₂ by enhancing its natural 'carbon sink' function. The biggest single problem is with effective emissions from deforestation, which make up around 90% of CO₂ emissions from land use. There are currently an estimated 7500 GtCO₂ locked up in soils and vegetation²⁵, which it is crucial to preserve. However, it is also necessary to increase this stock, to reduce atmospheric concentration of CO₂, since 350ppmv of CO₂ has already been exceeded. Significant threats to the current stock include continued deforestation and peatland degradation.

¹⁹Wise, M., *et al.*, 2009, Implications of Limiting CO₂ Concentrations for Land Use and Energy, *Science* 324, 1183

²⁰Kenrick, J., 2012, The Climate and the Commons, in Davey, B., (ed.), 2012, *Sharing for Survival*, FEASTA

²¹Byrne, C., 2010, Turning the Land from an Emissions Source to a Carbon Sink, in Douthwaite, R. (ed.), 2010, *Fleeing Vesuvius*, FEASTA

²²Bardsley, N., 2012, Policy Packages, in Davey, B., (ed.), 2012, *Sharing for Survival*, FEASTA

²³So-called 'LULUCF' emissions: Land Use, Land Use Change and Forestry.

²⁴CCSN 2010. *Reducing Greenhouse Emissions from Activities on the Land*. Carbon Cycles and Sinks Network, working paper.

²⁵Stern, Nicholas. 2006. *The Economics of Climate Change: the Stern Review*. Cambridge University Press: Cambridge.

Approaches that have been suggested to tackle this problem include incorporating land use into the existing so-called 'Clean Development Mechanism' (CDM) instruments via credits from 'Reduced Emissions from Deforestation in Developing nations' (REDD). The CDM involves certification of projects which reduce emissions relative to a hypothetical scenario, the issuing of emissions credits corresponding to these reductions, and finally the trading of these credits for money on carbon markets. The premise is that it does not matter where emissions reductions occur, so long as they do occur. Those who are willing to pay more to emit can buy the rights to do so in return for emissions reductions elsewhere, so that emissions are reduced at least cost. The CDM has generated considerable trading activity. However, there are serious problems with the approach.

The CDM is widely believed to deliver few (if any) emissions reductions, at a high cost, to be extremely vulnerable to fraud and to generate perverse incentives. A key problem is that the assessment of emissions abatement relative to a hypothetical future does not imply emissions reduction in an absolute sense. The "reductions," that is, are only relative to "what would have happened." Regarding perverse incentives, two examples are indicative. Many hydropower schemes have apparently been certified that would have taken place even without the CDM; and the production of HCFCs has been stimulated in order to generate HFCs, in order to earn credits from abating HFCs.²⁶ Similarly there is a danger that the inclusion of reduced deforestation will create a perverse incentive to increase rates of deforestation in order that more credits could be earned by a given degree of restraint. One could also expect false claims of afforestation and reforestation for example, to accompany industrial forestry or plantations, which have very different characteristics to naturally occurring forest.

To avoid such issues arising, a far simpler approach, advocated by FEASTA, is to pay countries a fee for the carbon stored in their forests and soils, and for this to be assessed via auditing procedures including remote monitoring. This 'Carbon Maintenance Fee' (CMF) would thereby give nations an incentive to maintain their forests, to increase the carbon stored in plants generally, and to increase the carbon content of their soils.

The CMF would operate as a global fund overseen by a global climate trust. Countries could contribute to the fund's costs proportionally to their incomes. FEASTA propose a two-part, annual payment from the fund to each country. The first part of the payment would be based on the estimated mass of carbon in a country's soils and biomass in the course of the year. The second payment would be for any increase in the stock of carbon that had occurred during that year. There would be a corresponding financial penalty if the stock of carbon had decreased over the period. The scheme is illustrated in the insert below.

The basic carbon maintenance fee would generate a small payment per ton of CO₂. A 10¢ per ton fee would amount to an initial \$204bn set of transfer payments since there are currently an estimated 2040 Gt of carbon stored in the world's vegetation and soils. Transfer payments should not be considered a cost to the world since total world income is not affected. If all nations held equal carbon stocks, the transfers would net to zero across nations. The transfer is received in return for a service provided to all peoples. How the funds are used would be left to individual countries to decide for themselves.

An additional transfer is proposed to provide strong incentives for carbon sequestration and

²⁶Tickell, Oliver. 2008. *Kyoto2*. London: Zed Book, pp34-37. HCFCs are refrigerant gases, damaging the Ozone layer, controlled by the Montreal Protocol. HFCs are alternative refrigerants falling under the Kyoto Protocol, and extremely powerful greenhouse gases. HFC-23 is a byproduct of HCFC production.

penalties for CO₂ emissions. Sequestration would be rewarded and emissions penalised, at the CO₂ price (determined by Cap and Share). Consider deforestation. There are an estimated a hectare of forest contains an estimated 1000 tons of CO₂. If income from crops and sale of timber amounts to an estimated value of just over \$2000/ha,²⁷ any CO₂ price above \$2 per ton would make it unprofitable to deforest, even ignoring income foregone by additional carbon sequestration. The penalty could be levied by withholding the basic maintenance fee. Given that realistic carbon prices would be well in excess of \$25 per ton CO₂ there would be very strong incentives operating to end deforestation.

Standing forest sequesters additional CO₂ each year, so payment of the CO₂ price for additions to the stock would constitute regular income for nations maintaining or growing their forests. A recent study in Africa estimates the sequestration rate there as 2.2 tons CO₂/ha. This implies African forest sequestration of 1.2GtCO₂/yr, so an income of \$30bn at a CO₂ price of \$25/tCO₂, or over 10% of total Sub-Saharan African export earnings in 2007. This constitutes an additional (transfer) funding requirement for the scheme, which could operate on a national income tax basis.

Aside from curtailing deforestation and peatland degradation, new activities that this could stimulate include greater use of organic agriculture, and the widespread production and application of biochar from crop wastes. Biochar is a form of charcoal formed by pyrolysis and charged with live organic matter such as compost.²⁸

Issues raised by the CMF include how countries might use the funds and how to finance it. Concerning the former, how it would be implemented within a country would be up to the national government. Incentive payments to farmers are one option. An example comes from Costa Rica, where forest cover increased from 22% in 1977 to 51% in 2005, thanks in part to a \$45/ha afforestation incentive payment to farmers. At present making payments conditional on soil carbon improvements on specific land holdings seems too demanding in terms of accuracy of measurement at high spatial resolution. Monitoring of agricultural activities and other land use practices, to estimate carbon sequestration at a local level, seems more feasible. It would make sense for incentive payments to go to farmers rather than landowners. However, one problem would be that rents and land values could increase, reflecting the value of the new subsidy, providing windfall gains to landowners. To counteract this, a land value tax could be introduced, whereby landowners would pay either a regular fee or a percentage of the sale price of land.

A land value tax would tap windfall gains deriving from land ownership generally, and raise substantial revenues. Those revenues would also be available on a long term basis. This is appropriate because carbon sequestration will be a very long term process, extending beyond the Cap and Share period. The tax could therefore help nations finance their contribution to the carbon maintenance fee. An additional source could be revenue from an international 'Tobin tax.' A Tobin tax is a small tax on international financial transactions, which would also help to curb speculative financial flows and capital mobility, the magnitude and volatility of which are widely recognised as undesirable features of the current system.

As Tickell²⁹ argues, however, incentive schemes to governments to halt deforestation risk violating

²⁷ Stern, Nicholas. 2006. *The Economics of Climate Change: the Stern Review*. Cambridge University Press: Cambridge.

²⁸ Bruges, James 2009. *The Biochar Debate*. Green Books: Totnes.

²⁹ Tickell, Oliver. 2008. *Kyoto2*. London: Zed Books. pp.46-47

land rights of indigenous peoples and / or existing commons management arrangements. Payments should therefore be conditional on respecting such rights and practices. Furthermore, incentive payments may not always be the best approach at ground level. For example, it may often be the case that strict protection of existing land use rights and commons management arrangements from competing interests provides the best means of preserving and enhancing forest carbon stocks, rather than incentives payments to farmers, foresters and so on. Monetary incentives plausibly crowd out intrinsic motivations. This is evidenced in Titmuss's classic comparison of blood donation in the UK and USA,³⁰ for example, and in studies in behavioural economics.³¹ It may therefore be counterproductive to introduce payments in contexts where protection can be afforded without them.

4. Transition to a Sustainable Economy

Ireland is committed to the long-term goal of the UNFCCC to prevent dangerous anthropogenic interference in the climate system. What we now know about the science of climate change confirms the correctness of the view, long held - and expressed - by members of FEASTA, that the existing economic system, being fundamentally based on fossil fuels, is incompatible with that long-term goal.

Despite this, climate policy in Ireland has been based on the idea of making variously the least burdensome or most economically optimal changes to the existing economic arrangements in order to bring about the level of emissions reductions required (in the short term) by international agreements. As a result, the economic analysis used for the last Climate Change Strategy, and that typically still being relied on by policy-makers as we understand it, is the short-term cost analysis contained in Marginal Abatement Cost Curves.

While this analysis is indeed very valuable, it is fundamentally insufficient. The overriding long-term analysis required is scenario-based. It should set out a picture of a low-carbon, climate-resilient sustainable economy and identify the investments and economic mechanisms required to move in the direction of such an economy. The European Commission has recognised this and based its Roadmap for Moving to a Competitive Low Carbon Economy in 2050³² on precisely this kind of analysis. Similar, and in many respects corroboratory, analysis has been done by the European Climate Foundation³³ and by Stockholm Environment Institute.³⁴ Some work on 2050 scenarios for the energy sector has been done by SEAI.³⁵ However the reports themselves are described on the SEAI website as "not available at this time."

Ireland needs to plan its transition to a low-carbon economy; scenario-based planning for such an economy over the period to 2050 is essential. This planning needs then to be reflected in climate change strategies. The long-term transition to a low-carbon economy tells you what the overall changes required are; analysis such as MAC curves can be useful in indicating the order in which those changes are made but is not a sufficient guide for a long-term response to a long-term

³⁰Titmuss, Richard. 1970. *The Gift Relationship*. London: Allen and Unwin.

³¹Gneezy, Uri. and Rustichini, Aldo, 2000. A Fine is a Price. *Journal of Legal Studies*, 29, 1-17. Bowles, Samuel, 2008. Policies Designed for Self-Interested Citizens may Undermine "the Moral Sentiments". *Science* 320: 1605-1609

³²European Commission, 2011, A Roadmap for Moving to a Competitive Low Carbon Economy in 2050, http://ec.europa.eu/clima/policies/roadmap/index_en.htm

³³<http://www.roadmap2050.eu/>

³⁴SEI, 2009, Europe's Share of the Climate Challenge, <http://www.sei-international.org/publications?pid=1318>

³⁵http://www.seai.ie/Publications/SEAI_Roadmaps/

challenge.

Planning and policy-making for this long-term transition needs to be matched with a framework for effective implementation. Neither the political nor the economic culture of Ireland is given to long-term thinking. Ireland is far from unique in this regard. Indeed, the fact that we are globally so far from responding adequately to the climate crisis so long after first becoming aware of it is evidence of the short-term nature of our thinking. In order to ensure that a long-term perspective on climate change is integrated into policy-making and decision-making, a climate law is essential. We urge the Oireachtas to enact a climate law which enshrines in Irish law Ireland's existing international law commitment to taking on its share of the common but differentiated responsibility for protecting the climate system and which translates that commitment into enforceable duties on the Government, local authorities and various other executive agencies of the State.

5. Ireland's role in the international negotiations

Small countries without significant vested interests dominating their relationship with other countries, such as Ireland, have a particular opportunity to contribute positively to the search for a resolution to climate change at an international/global level. In recent years Ireland funded work commissioned by UNEP from WRI to look at proposals, such as Cap and Share, originating outside the UNFCCC process. Unfortunately, that work did not get as far as intended in carrying out a peer review as originally proposed for that study. The inadequacy of the commitments made at Durban further highlights the need for a different approach to resolving the global climate problem. We urge the Government to follow up the UNEP study with further consideration of proposals and to explore all possibilities including those proposed in *Sharing for Survival*.³⁶

³⁶Davey, B., (ed.), 2012, *Sharing for Survival*, FEASTA