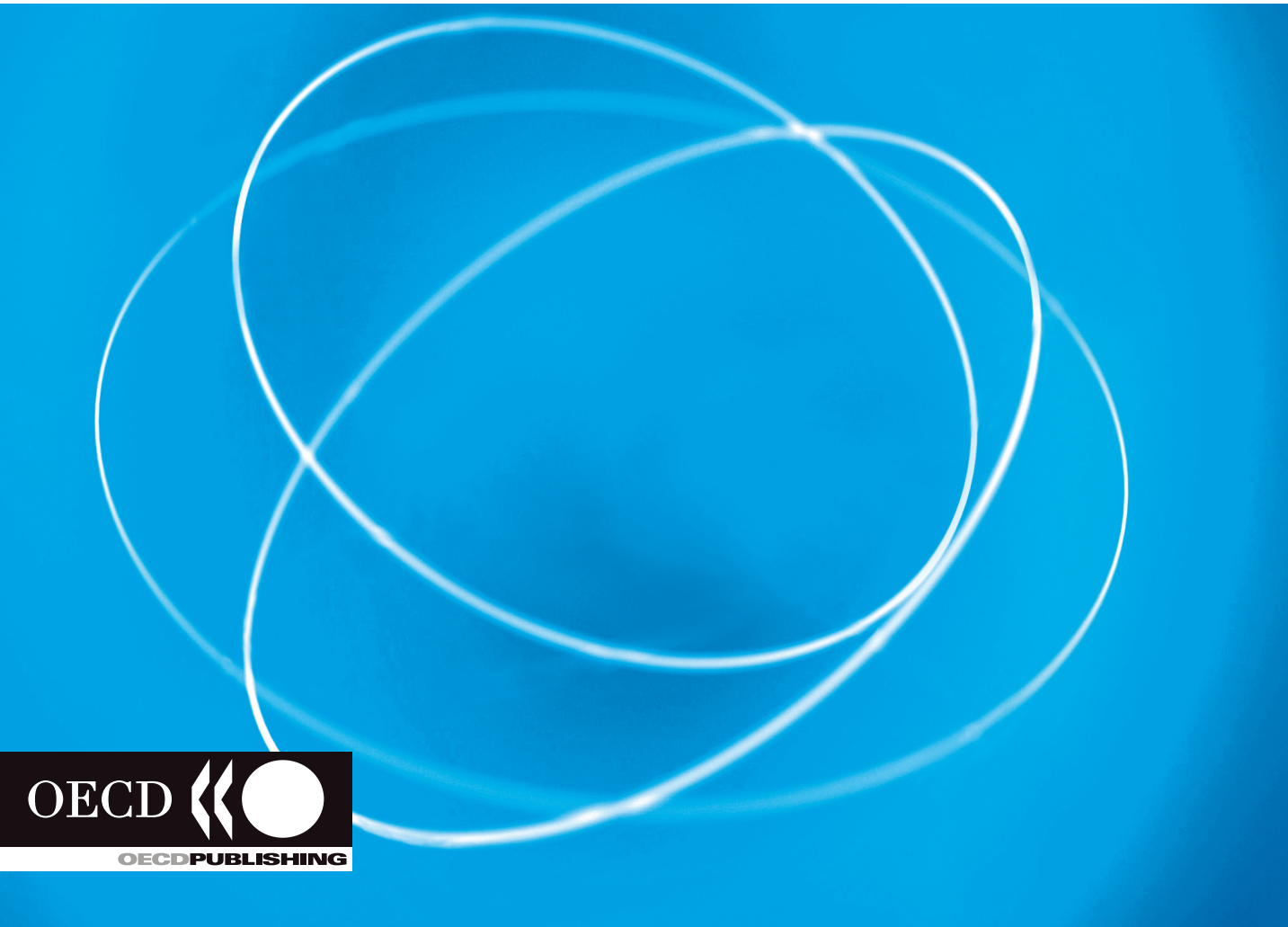
OECD Sustainable Development Studies

Subsidy Reform and Sustainable Development

POLITICAL ECONOMY ASPECTS



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Foreword

This report contains the proceedings of an OECD workshop on *Subsidy Reform and Sustainable Development: Political Economy Aspects* held in Helsinki, Finland on 20-21 June 2006. The workshop was sponsored by the Finnish Ministry of Finance and organised under the auspices of the OECD Horizontal Programme on Sustainable Development. The workshop explored, through sectoral case studies and discussions, the political economy and governance dimensions of subsidy reform and how to overcome obstacles to removing harmful subsidies.

This workshop was the fourth in a series of OECD meetings on reforming subsidies which are harmful in the economic, environmental and/or social sense. The first workshop in November 2002 introduced a "checklist" to identify those subsidies whose removal would benefit the environment (see OECD (2003), *Environmentally Harmful Subsidies: Policy Issues and Challenges).* The second workshop in November 2003 focused on developing a framework for defining, classifying and measuring subsidies across sectors (see OECD (2005), *Environmentally Harmful Subsidies: Challenges for Reform*). The third workshop in October 2005 deepened understanding of the linkages between the economic, environmental and social impacts of subsidies (see OECD (2006), *Subsidy Reform and Sustainable Development: Economic, Environmental and Social Aspects*).

It should be noted that the papers in this volume reflect the views of the authors and not necessarily those of the OECD or its Member countries.

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Preface

Kiyo Akasaka

OECD Deputy Secretary General

Reforming environmentally-harmful subsidies is a focus of the OECD Horizontal Programme on Sustainable Development. The OECD's combination of economic, environment, social, development and trade expertise, as well as its work in sectors such as energy, agriculture, fisheries, industry, transport and services, give it a special role in addressing the challenge of reforming harmful subsidies. Subsidies often introduce economic, environmental and social distortions with unintended consequences. They are expensive for governments and may not achieve their objectives while also inducing harmful environmental and social outcomes.

For example, fuel tax rebates and low energy prices can encourage overuse of fossil fuels and stimulate greenhouse gas emissions. Agricultural subsidies can lead to the overuse of pesticides and fertilizers with harmful consequences for natural resources and human health. Socially, these supports can redistribute income from consumers to producers and distort allocations across firms and sectors. Subsidies also often undermine exports from developing countries.

Government support for certain sectors and economic activities is pervasive in OECD countries and among the most powerful public policy instruments now in use. For example, spending on agricultural support is very high, amounting to more than 300 billion USD a year – much higher than total annual Official Development Assistance (ODA) to developing countries. The OECD is working to bring sustainability insights to the difficult task of reforming these subsidies.

This workshop, the fourth in a series, was aimed at better understanding of the political realities of subsidies and identifying good practices to reduce environmentally-harmful subsidies. It should be seen in the context of OECD discussions on the political economy of structural policy reform, which focuses on the governance issues surrounding implementation of positive changes to policies. For many years, the OECD has recommended specific labour market reforms to promote employment, product market reforms to increase competition, regulatory reforms to benefit consumers, subsidy reforms to reduce environmental damage, tax reforms to raise economic efficiency, and financial market reforms to boost investment. These reforms are often not undertaken or meet resistance owing to political economy considerations.

At the 2006 OECD Ministerial Council Meeting, Ministers shared experiences on how reforms are more easily implemented when they come in a comprehensive package with a focus on burden-sharing, are transparent in their potential effects on all parties, supported by top political leadership, and consistent over the long-term. In the same vein, subsidy reform may only be achieved through greater transparency, coherence, co-operation and integration in policy-making.

As illustrated in the papers presented at this Workshop, only full transparency in subsidy policies and inclusion of stakeholders – including industry and non-governmental organisations (NGOs) – will enable reform to begin. Whole-of-government decision-making processes are needed to bring together the many relevant agencies at national, regional and local levels. Managing the social effects of subsidy changes – on industries, workers and communities – is key. And in some cases, transitional supports may be needed to get rid of longer-term embedded subsidies.

The OECD places subsidy reform in a sustainable development context because they are both about coherence, co-operation and integration in policy-making. Only a "holistic approach" will lead to greater transparency about the effects of subsidies and more public understanding of potential distortions. It will provide better arguments for overcoming vested interests to prompt subsidy reform. This volume illustrates, through concrete sectoral examples, that achieving change in structural policies such as subsidies depends largely on good governance practices.

Chair's Summary

Lori Ridgeway
Fisheries and Oceans Canada

Introduction

This workshop – which benefited from a number of very interesting and thoughtful papers on the policy process associated with reforming subsidies – was the second OECD workshop on the "political economy of subsidy reform" and the fourth OECD workshop relating to environmentally harmful subsidies. Understanding the political economy of reform has become a priority given the lack of progress in actual implementation of subsidy reform, notwithstanding a broad understanding of the need for it.

The additional context for this workshop – looking at subsidy reform in the context of sustainable development – arose out of the recognition in the 2005 workshop on "Subsidy Reform and Sustainable Development: Economic, Environmental and Social Aspects" that actual reform processes – as is the case for any kind of policy reform – must be able to navigate the shoals of not only environmental interest but economic and especially social need. This is paramount in realistically managing the transition from a pre-reform to post-reform world. Too often, subsidy analysis focuses on comparative static results (of goals or end-points) and narrowly on specific environmental or economic domains, which inevitably overstates the likelihood that reforms will be achieved. Such results ignore the need for understanding and managing the *process of reform.*

As this workshop demonstrated, it is hard enough to properly disentangle and understand the full environmental costs of subsidies, and hence the benefits of reform. However, impediments to reform often arise because of lack of understanding – and hence lack of management – of the effects of subsidies reduction on the distribution of economic benefits and especially social spheres. These impacts – often localised – are often those that most inhibit the *political* process of reform, irrespective of the intellectual understanding of the need for change.

This was a point made poignantly in the 2005 workshop in relation to large-scale coal subsidies. It was pointed out at that time that reform failures are not always due to a lack of understanding of the costs of environmentally harmful subsidies. In some cases, governments themselves had transparently published assessments of the environmental consequences of certain subsidies, but wider concerns played into the actual policy process. Perceptions, assumptions, short-run interest – and sometimes even long-run strategic (security) or even geopolitical issues – often were dominant in decision-making.

It was thus agreed that discussions on the experience of reform – based both on a sustainable development context that would integrate environmental, economic and social

considerations, and sharing of best practice in moving difficult reforms – would be quite useful in illustrating how to close the implementation gap.

However, the preoccupations in this particular workshop were not so much focused on best practice, which, in the view of this author, remains somewhat unfinished business. Rather it was focused on delineating more generically the *ingredients in the policy process* that would lead to a more complete strategy for reform, drawing illustrative examples from the specific case studies.

The outcomes of this workshop thus served two critical roles:

the results provided a framework against which one should be better able to discuss illustrative best practice in subsidy reform; and

the discussions linked the policy ingredients in subsidy reform to the broader tenets of policy processes and change management more generically, especially taking into account sustainable development.

The overwhelming outcome of this workshop was that the ingredients in successful subsidy reform are no different than any other strong policy process underlying structural reform and decision-making under uncertainty.

As pointed out by one author, subsidy reform boils down to very intelligent change management in a broad integrated context. However a particularly rigorous policy process is needed for dealing with subsidy reform, as it generally means identifying and then removing "entitlements" to state or public funds, for more dispersed benefit, which is likely to engender widely and strongly-held factions, both for and against. And looking at subsidies in a sustainable development context invites the issue of disentangling various subsidies objectives and impacts, which also takes rigorous analysis.

As all the case studies presented at the workshop showed, there is no one simple formula for successful reform processes. But some general requirements of a good policy process can be – and were – identified. As for next steps for the OECD, there still remains a role for examining best practices in putting such frameworks into place, as practical examples of how to overcome obstacles to subsidy reform.

Workshop structure

The workshop was divided into three main sessions, each session building on the preceding and all three sessions focused on enabling reform:

The first session focused on enabling subsidy reform through addressing economic, environmental and social impacts. This session was led by a paper from Stephen Barg (IISD) on assessing the benefits of reform in a sustainable development context, and supported by two case studies: Pentii Lahteenoja (Finland) looking at forestry subsidies and Gunnar Lindberg (Sweden) who discussed transportation subsidies. The discussant, Blair Comley (Australian Delegation to the OECD), commented on these papers through the provision of a framework for considering policy impacts and implementing change.

The second session focused on enabling subsidy reform through addressing social and transition issues. This session benefited from a paper by Anthony Cox (OECD Trade and Agriculture Directorate) on easing reform in relation to social issues and transition supports, and was supported by case studies from Janet Dwyer

(United Kingdom) in relation to subsidy reform in agriculture, and Petri Lehto (Finland) regarding manufacturing. These cases were discussed by Veronique Deli (Mexican Delegation to the OECD).

The third session focussed on enabling reform through using integrated and inclusive stakeholder processes. Daniel Puig (UNEP) introduced the session in relation to whole-of-government approaches for reform, supported by case studies from Doug Koplow (Earth Track) in relation to US energy subsidies and James Brown (EU) in relation to EU decision processes. These papers were discussed by Outi Honkatukia from the OECD Secretary General's Office, who also introduced lessons learned from recent ministerial discussions on such reforms.

Context

The workshop built on the following key messages recalled from the preceding 2005 workshop discussions on the political economy of reform of environmentally harmful subsidies:

- the need to understand the impacts of reform on the 3 pillars of sustainable development and for healthy institutional decision making in order to more systematically manage inputs into decision-making;
- the important role for information, analysis and transparency in the amount, nature and opportunity costs of subsidies, in order to tell stories about the benefits of reform, overcome myths and build allies for change;
- subsidies are generally associated with broad systems of preferences to certain sectors or beneficiaries, all of which tend to be reformed as part of a package;
- this generally means the mobilisation of a reform agenda, which may cut across government departments and/or orders of government, and which requires political and bureaucratic leadership;
- effective governance and policy coherence are essential to realising the benefits from reform;
- the reform process needs to include diverse stakeholders and opinion makers, in order to gather information and ensure resilience of policy decisions;
- "entitlement mentalities" develop quickly when transition assistance becomes regularised and imbedded in expectations, thus affecting the handling of transitions and reform impacts; and
- there is a need to be cautious of "environmentally-motivated" subsidies – which can suffer the same economic and social inefficiencies and become just as embedded as inefficient policy tools.

General Observations

One of the most immediate outcomes of these discussions was the reconfirmation of the pre-eminence of the points above from the 2005 discussions. Key points of emphasis also included the following:

- there is no one-size-fits-all model to follow in reforming subsidies, although the ingredients to good policy making can be easily delineated;
- the role of transparency on subsidy objectives, impacts and costs is essential in motivating a reform process, and hence the need for rigorous and robust assessment frameworks;
- this includes an understanding of incidental and unintended effects, as well as hidden subsidies (such as those arising from certain pricing structures);
- an understanding of the distribution of costs and benefits is essential to designing a reform process and understanding reform options and the optimal path to reform;
- more effort is often expended on such analysis, than in the critical roles of validating such analysis in inclusive processes with stakeholders, or planning and validating acceptance of options for reform;
- transitional support may well be needed and justified but must be carefully planned. It can slow the process of reform and adjustments just as easily as smooth the path. Transition support must be truly short term and well targeted, and coherent with underlying broader policy settings of economies;
- open and inclusive decision making processes are essential to sustainable policies; political and social institutions matter and will affect the scope and pace of reforms;
- managing transitions and supporting subsidy reform requires whole-of-government processes – the multidisciplinary nature of the reform challenge requires multi-stakeholder processes and intra-and inter-governmental decision making;
- where internal reforms cannot be implemented, there is room for third parties to play a role in forcing transparency and highlighting the inefficiencies and ineffectiveness of policies.

Enabling reform

Enabling subsidy reform through addressing economic, environmental and social impacts

The first session focused on the elements of decision-making that are needed to encourage reform. The most durable model that persisted throughout the discussions was that put forward by Blair Comley, which included five elements required for successful reform, covering both analytical and implementation phases of change management;

1) policy objectives must be defined clearly and rigorously;
2) distribution of costs and benefits must be transparently identified;
3) the government must engage broadly with stakeholders;
4) the government must set ambitious end points but cautious timetables for reform; and
5) fiscal transfers are often required to facilitate the transition process.

Overlaid on this model was a set of steps identified by Stephen Barg:

1) a features scan of the objectives and design of the subsidy; including its effectiveness in achieving stated goals, and cost effectiveness with respect to alternative policies;
2) impact analysis on the economic, social and environmental planes;
3) long-term effectiveness review (whether the subsidy would have ever achieved the goals for which it was designed); and
4) a policy reform scan outlining the economic, social and environmental impacts of different paths for reform.

The Barg model – being more analytical in emphasis – skipped the explicit steps defined above that address actual implementation and thus was a complementary approach. It focused more on understanding the objectives and impacts of policy and possible reform options – a richer look at some aspects of analysis but, at least on the surface, in a slightly narrower context than the Comley framework.

Discussions in this workshop and in 2005 suggest that without careful implementation planning, including transition assistance in some cases, reforms will likely fail. That said, Barg's paper was valuable in delineating the rigour required of analysis in pointing out the concept of incidental and unintended effects, and adding some definition to social, economic and environmental impacts. Barg's paper highlighted the need for rigour in looking at goals and objectives of regimes. The analysis – and the alignment – of short-run and long-run outcomes is oriented to getting at the roots of behaviours that are problematic in respect of environmental harm, rather than symptomatic behaviour. Standard analysis is often quite partial in overlooking unintended effects through ignoring linkages. He also emphasised the need for good scenario planning for policy alternatives.

Discussions in this session built on these aspects to consider a reform *cycle*, or checklist, where lack of information or negative outcomes at one phase of analysis reinforced the need for constant re-evaluation of policy tools including ongoing subsidy regimes (**Figure 1**). Determinations of negative social, economic and or environmental outcomes of subsidies would engender review, as would incoherence among economic, social and/or environmental impacts and/or cost ineffectiveness, all else being equal. The latter could be the case of pro-environment subsidies which may be inefficient ways of achieving environmental outcomes in relation to other tools.

Figure 1. Subsidy reform checklist

Subsidy definition

↓

Beneficiaries identification

↓

Policy impacts of subsidy (economic, social and environmental)

(*poor outcomes lead to considerations of reform)*

↓

Adequacy of institutional processes to evaluate decision-making

(*which establishes adequacy of integrated decision-making and analysis*)

↓

Coherence and mutual reinforcement of outcomes

(*if poor results then consider reform*)

↓

Cost-effectiveness in relation to goals

(if poor outcome, consider reform)

Issues raised in the workshop on the role of stakeholders and management of transitions further modified this planning cycle, in terms of the need to generate buy-in to analysis, increase understanding and for creating alternative paths of reform, as well as understanding better how to manage transitions.

Discussions continually emphasised that all of these considerations are taking place in a very dynamic context, and that such planning cycles should represent a continuous process of scrutiny rather than reliance on one-off analysis. The intent of subsidies and the impacts of beneficiaries can change, alongside changes in associated policies and/or global or local context that change the relative costs and benefits of subsidy reform. Thus the evaluation process needs to be kept dynamic through continual monitoring and evaluation.

Discussions thus moved from a focus on specific one-off reform efforts to the important concept of continuous and *adaptive policy making* – which suggests the ability to make incremental changes and improvements to policy frameworks and outcomes as a result of ongoing monitoring and additions to information and understanding, rather than waiting for perfection in analysis before making necessary changes. Such benefits can also be achieved, as noted by Comley, in phased approaches to implementation.

In the context of environmental impacts (including of environmentally harmful subsidies), impacts on ecosystems and biodiversity are often especially uncertain. This provides some guidance to issues in other pillars as well. This is due to lack of data and information, especially on the structure and functioning of ecosystems, whether in

relation to internal relationships, or the effects of external and/or *cumulative* influences. The analysis and understanding of impacts of policy are often partial, which introduced to discussions the concept of risk management and precautionary planning. There may be some room in analysis for reverse burden of proof as part of a precautionary approach, and pre-determined policy responses based on certain indicators. This is most common in terms of environment but can be applied in policy contexts (as illustrated in relation to tests and guidelines at the time of Australian anti-competition legislation).

Interestingly, this concept of ecosystem uncertainty – and the possibility of irreversible damage that could imply the need for precautionary approaches – was alluded to by Janet Dwyer in the context of understanding social impacts as well, where she raised the issue of remaining sensitive to the risk of irreversible harm to social or human ecosystems – the structure and functioning of community and other relationships. One could imagine this applying as well to economic spheres, and gives a more solid perspective that may help some understand the elusive concept of "sustainable development".

One aspect that arose in discussions when appealing to a broader sustainable development framework is the issue detangling the effects and the purposes of subsidies, as issues can be too easily presented as "multifunctionality" – subsidies aimed at providing multiple environmental, economic and or social outcomes and which thus "cannot afford to be reformed". In such a case, however, the issue of cost-effectiveness in achieving goals becomes a most useful test.

A related issue – as was the case in the 2005 discussions – was the issue of the efficiency of subsidies for environmental "goods". Indeed some case studies alluded to this function for subsidies, whether to encourage a change in behaviour, or to encourage the increased production of ecosystem services directly. The view was again that green subsidies can still distort economies and markets, often simply being original subsidies under another name (even if some of the harm to the environment is mitigated), and may simply be "renamed" subsidies to ongoing recipients. The issues of policy mix – subsidise "goods", penalise "bads", or the use of incentives such as better pricing policies – all have different opportunity costs – including to the public purse – and need to be examined carefully.

Enabling subsidy reform through addressing social and transition issues

In this session, discussion emphasised that well-defined transition planning needs to be anchored by a well-defined policy reform and "end-point". It also places a premium on ongoing monitoring especially if compensation is involved. It was noted that the timing and nature of reform options need analysis, including the pace of reform (such as 'big-bang" approaches, phasing in, or demonstration projects that can be scaled up when knowledge and information is more complete). It was noted, as well, that a relevant consideration for broad reform success is the capacity of governments to run multiple reforms, and the risk of reform fatigue of populations.

This returned to the topic of risk management, and the need to set priorities at the biggest risks. However, the importance and benefits of "opportunistic" reform were also discussed, which describes the context of some very important reform experiences (*e.g.*, New Zealand fisheries).

Much of this topic links to the distribution of gains and losses from reform and motivations for helping individuals manage change. Not all changes in policy justify

transitional assistance, as entitlement mentalities can set in quickly and prejudice expectations of citizens for future reforms or even the need to be compensation for structural change. Reasons why transition assistance might be provided range from the need to facilitate exit, to reduce opposition to change, legal obligations and a sense of societal moral duty. However, as much of the transition path in reform is fraught with risks of reform reversal, as various groups of winners and losers jockey to lobby for policy change (or status quo), those affected must ultimately believe in the irreversibility of the policy change. This raised the critical importance of development of a track record of following through on reform efforts.

As noted by several authors, transition assistance can actually prevent or delay change as much as assist it, especially when industry exit is required. Program design becomes paramount. Anthony Cox provided a comprehensive look at issues associated with provision of transitional help as part of the process for subsidy reform and suggested, alongside other authors, that such assistance can form a valid part of a reform package. It may be necessary to reduce opposition to reform, reduce the negative impacts of reform, or to reinforce policy reform for individuals or communities. The major lesson from his work – and that of others – is that transitional assistance must be truly temporary and well targeted if it is to be effective and not undermine government reform credibility.

As was the case in 2005, there was a strong link in discussions to "whole-of-government" approaches. In the case of subsidy reform in sectors, single government ministries typically do not have access to all the tools required to either compensate those bearing the burden of adjustment, or help with economic diversification. They may not even have convening power to plan such approaches (fisheries is a classic example, where fisheries departments increasingly tend to be regulators, not program providers, but where reforms create hardships in coastal communities badly in need of broader economic and community strategies more associated with economic branches). As in discussions in 2005, it was noted that this places a burden on bureaucratic and political leadership, to force "reform agendas" that are broad in scope and planning, and brings all relevant players to the table to design holistic change management approaches.

Enabling subsidy reform through using integrated and inclusive stakeholder processes

Integrated and inclusive processes can refer to a number of needs – a need for coherence, for whole-of-government approaches, for comprehensive policy reform to address a range of policy preferences aimed at certain segments of an economy (and where critical mass of change is needed), or to include deliberations of diverse stakeholders in the process. Many of these issues were discussed in the context of other portions of the agenda, as can be noted above.

The latter – the inclusion of stakeholders in the decision-making process – would be aimed at the need to widen the information base, increase stakeholder understanding, validate analysis (especially of economic and social impacts), build dissatisfaction with the status quo, and test (or build) buy-in to policy options.

As for the importance of stakeholder engagement, discussions emphasised the ultimate need for durable reform. This is the essence of the political economy challenge – ensuring follow-through, and that the planning and implementation process has minimised opposition to change and maximised forces in favour of it. Governments need

to build alliances for change, and try to reduce behaviour that would reduce or distort change that is able to take place.

Such outreach is necessarily based on a deliberate outreach and communications strategy. Sometimes, peer pressure, international organisations and civil society can increase interest and participants in such processes. Ultimately, third-party mandatory approaches can help provide cover (*e.g.* in the World Trade Organisation) for the imperative for change, leaving the questions more reduced to "how".

Multi-stakeholder process were widely seen as essential and may need to be facilitated by third parties, which are open, facilitate an exchange of information and analysis across diverse interests, are most transparent, and can help find consensus – or at least common understanding – on new approaches or options for reform. The scrutiny of such processes often increases the need for rigorous analysis, which may itself have been exposed to peer review in order to establish credibility.

Buy-in to change requires transparency in delineating the objectives of policies and the impacts and distributions they have in common. It was also agreed, however, that transparency through government-to-public communications can take the place of some multi-stakeholder processes, although one loses the benefit of interactions across stakeholders.

Conclusion

As noted, this discussion on the political economy of subsidy reform focused on the generic ingredients to a robust planning process. The discussion showed that strong planning for subsidy reform is no different than other structural reform planning processes, except for the rigour with which impacts of subsides on economic, social and environmental effects need to be determined and analysed. It is important that as much care be taken, however, in actually planning for implementation as for impact analysis. *Sufficient information and analysis for managing transitions from pre-reform to post-reform outcomes are critical*.

This discussion was illustrated by case studies, but these were not specifically aimed at a sharing of best practices under such a rubric. There might be utility to such work for identifying best practices in the processes surrounding subsidy reform now that there has been an in-depth discussion of the parameters of the planning process and change management that would help provide a benchmark.

Discussant Remarks

Blair Comley
Australian Delegation to the OECD

Introduction

The objective of this workshop is to understand better the political economy of subsidy reform. Put another way, we are trying to understand *how* to get reform rather than to understand *what* reform should be undertaken. For the pessimists among us, the objective might instead be thought of as trying to understand *why* reform does not take place.

The perspective I hope to bring is not that of an expert in sustainable development, but instead as an Australian policy adviser. Australia has been continually reforming for more than 20 years and my assumption is that lessons from other areas of microeconomic reform may be useful in understanding the preconditions for subsidy reform.

My role as a discussant is made more challenging by the fact that the papers attempt to do quite distinct things. Stephan Barg, Aaron Cosbey and Ron Steenbilk (2006), for example, start from the presumption that greater information will lead to reform of subsidies and then outline a framework that allows the relevant information to be systematically collected. They state that "the framework assumes the best policy result is obtained when there is an understanding of the distribution of the costs and benefits of subsidies and this information is made available to policy makers and the public." Most of the other papers discuss reforms in particular sectors, such as reform of forestry subsidies in Finland or distortions in the pricing of transport in Europe.

There are certain key factors that may assist reform. Importantly, these factors start from my own presumption – that if we are concerned with achieving reform, then we need to conceptualise reform as an exercise in change management. In addition, to help illustrate the principles, I will introduce an example of a successful reform program from Australia, the National Competition Policy (NCP). Along with examples from the papers, I hope this will shed some light on the key question of *how* we can achieve reform.

National Competition Policy

Australia's National Competition Policy (NCP) was a substantial program of coordinated reforms that began in the early 1990s (Productivity Commission, 2005). However, the preconditions for the NCP were laid down long before the actual reforms. Australia's economic performance had deteriorated in the 1970s and 80s which led to a widespread consensus that reform was essential. Key decisions in the early 1980s included the floating of the currency and removal of controls on foreign capital. Trade

reforms followed, initially with the abolition of import quotas and then with phased reductions of tariffs.

The opening of the economy highlighted inefficiencies in infrastructure service provision as businesses became increasingly concerned about their cost structures and competitive positions. As the reform momentum increased, it became apparent that the competition policy reforms were needed to address sectors that were not constrained by the external sector reforms.

In 1992, an independent committee – the *Committee of Inquiry into a National Competition Policy for Australia* (the Hilmer Inquiry) was established. The Committee's recommendations focused on extending the reach of competition policy to improve the performance of the economy in areas where external market discipline was less effective, including in the non-traded sector (where arbitrage discipline was weaker) and in spheres dominated by government ownership and regulation.

The Council of Australian Governments (COAG), the peak intergovernmental forum in Australia, comprising the Prime Minister, State Premiers, Territory Chief Ministers and the President of the Australian Local Government Association, asked an independent statutory body, the Industry Commission, to quantify the potential economy-wide effects of the key reforms. The Industry Commission estimated that the aggregate gains would be substantial – around 5.5% of GDP and also identified a range of other benefits including higher employment and lower unemployment. In view of the potential benefits, COAG agreed in 1996 to a six-year program of reforms to implement the NCP. This was later extended to 2005.

The reform package included four main elements: extension of the coverage of the *Trade Practices Act 1974*; review of anti-competitive regulation; reforms to public monopolies; and related infrastructure reforms. The element I would like to highlight is the review of anti-competitive legislation under which each jurisdiction agreed to list, review, and, where appropriate, reform all legislation that restricts competition by 30 June 2000. This deadline was later extended to 30 June 2003, partly reflecting the size of the task. The guiding principle was that legislation should not restrict competition unless it can be demonstrated that the:

1) benefits of the restriction to the community as a whole outweigh the costs; and
2) the objectives of the legislation can only be achieved by restricting competition.

A critical point is that this reversed the usual onus of proof. The status quo was not given a privileged position. Instead, advocates of existing arrangements were required to demonstrate why a restriction was in the public interest.

Around 1 800 individual pieces of legislation were listed for scrutiny. This was clearly an ambitious task. The Productivity Commission has noted the National Competition Council's (NCC) assessment that no Australian Government had complied fully with the legislative review program – either in procedural terms or in terms of a reasonable application of the public interest test. That said, by June 2004, 81% of all legislation scheduled had been appropriately reviewed. It is hard to argue with the proposition that the total reform effort was higher than it would have been in the absence of the competition policy framework.

An important feature of the NCP is the competition payments made by the Australian Government to the States and Territories for satisfactory progress. Funds totally AU$ 5.7 billion were allocated for competition payments over the period 1997-98 to 2005-06. As

part of the NCP an independent body, the NCC was established to, among other things, assess progress against the commitments. The NCC makes recommendations to the Federal Treasurer on whether the States and Territories should receive NCP payments in full. The Treasurer is responsible for the final decision on the level of payments.

Reform lessons

The NCP reform experience suggests at least five key elements are required for successful reform:

1) policy objectives must be defined transparently and rigorously;
2) the distribution of benefits and costs must be transparently identified;
3) government must engage broadly with stakeholders;
4) government should set ambitious endpoints but cautious timetables for reform; and
5) fiscal transfers are often required to facilitate the transition process.

Define clearly and rigorously policy objectives

My experience as a policy adviser leads me to believe that the most important issue is to clearly specify a policy's objective. My experience also suggests that this is a very difficult and subtle process.

Policy advisers must define objectives that are sufficiently broad, but not so broad that they are operationally meaningless. I once asked a regulatory agency to explain to me their objective. They replied – "to regulate the industry". This was clearly too narrow, is not a sensible objective and precludes the use of alternate instruments. Perhaps at the other end of the spectrum the Australian Treasury's mission is to improve the wellbeing of the Australian people. While elegant, this is clearly not operational without additional thought.

Accordingly, the Australian Treasury has developed a wellbeing framework which identifies five elements of wellbeing: consumption possibilities; distribution; complexity; risk and opportunity and freedom (Australian Treasury, 2004). Whilst this provides greater guidance to policy advisers, this framework needs to be applied in a sophisticated manner to the consideration of individual policy initiatives. In terms of this framework, the art is to define objectives that are aligned sufficiently with the elements of wellbeing, but that are concrete enough to be operational. Regulating an industry is not an objective that would fit these criteria. Regulating with the objective of reducing societal risk to an acceptable level might be.

Those resisting reform have a strong incentive to obscure the objectives of policy. This is a great risk in the area of sustainable development. The existence of three pillars often lends itself to multiple objectives. Single policies that attempt to hit multiple objectives rarely represent good policy, particularly as circumstances evolve over time. As Tinbergen so aptly put it, *n* objectives require *n* instruments (Tinbergen, 1956).

In the discussion at the workshop there was a debate about whether the approach of seeking *n* instruments for *n* objectives was sensible. Some were concerned that this would not result in holistic and integrated decision making. I have sympathy for these concerns. However, I would argue that holism is achieved best by comprehensively identifying the

suite of objectives and then designing a well targeted package of instruments. As circumstances evolve, the relative importance of each of the objectives is likely to change. The existence of separate instruments is likely to facilitate more continual adjustment of the policy response, than a single policy instrument. This conclusion may be tempered in practice by the need to keep complexity and administrative costs as low as possible.

The first element of Barg *et al.*'s (2006) framework is the features scan that examines the objectives and design of the subsidy. I cannot agree more that this is the essential element. However, I cannot stress enough that the way in which you define the objective in practice is critical to whether the analysis is of real help in the process. Indeed, their paper illustrates the need to be very careful.

For example, one of the objectives of biofuel policy is to promote energy security. However they note that

> *"…There are two elements to energy security: assurance of supply and protection from wild swings in fuel prices. Governments frequently combine these two notions and equate energy security with energy self-sufficiency. That is to say, they assume that domestic production of energy – any energy – will* a priori *improve national energy security. This assumption, naturally, ignores the potential that always exist for disruption of domestic production, such as through natural disasters." (Barg et al., 2006)*

This is a careful description of the energy security objective. However, there may be even more helpful ways of defining the objective. For example, take the second limb "protection of wild swings in petrol prices". Why is this an objective? Are we really worried about fluctuations in energy prices or the resultant fluctuations in income (consumption possibilities) and the distribution of that income? If it is the latter, then how would that change our view of the possible instruments that could be used?

Pentti Lahteenoja (2006) focuses on the broadening of the objectives of policies for sustainable forestry in Finland. It is hard to disagree with this focus, but one does need to be cautious about the way this is done in practice. For example, Lahteenoja's abstract notes that

> *"According to the* 1997 Act on the Financing of Sustainable Forestry*, subsidies can only be granted to ensure generally the sustainability of timber production, to maintain the biodiversity of forests, and for forest regeneration, prescribed burning, tending of young forests, harvesting of energy wood, forest remedial fertilisation, renovation ditching and forest road construction."*

Although this is a reasonably long list of objectives the latter elements appear to be more in the nature of instruments than objectives. This is an important distinction. Confusing objectives and instruments often leads to poor policy. For example, many OECD countries wish to increase innovation. The European Union's Lisbon Agenda sets targets for research and development. This may be an appropriate *strategy* for attaining the goal of enhanced innovation, but it should not be seen as a sensible policy *objective* in its own right.

Returning to forests, Lahteenoja also comments that "Finland…also relies on the forestry sector to maintain social sustainability in the Finnish countryside." It is possible that these two statements are consistent. Forestry may be maintained in order to achieve sustainable timber production and biodiversity and this may in practice be at a sufficient

level to "maintain social sustainability in the Finnish countryside", but one suspects that this is really the third objective. If it is the third objective, then any lack of clarity as to its status is likely to reduce the likelihood of considering alternate means of ensuring social sustainability.

A good example of a similar issue is the reform of the Common Agricultural Policy. In a very succinct analysis Christopher Haskins (2005) notes that:

> *"Until 2003 subsidies were directly related to production, so farmers had to grow a crop or milk a cow in order to receive the payment. This encouraged them to produce food even if the land was unsuitable…The Fischler reforms changed all that. Farmers no longer have to produce food to receive a subsidy, but, instead, are given a straight payment, known as the single farm payment, as long as they adhere to minimalist environmental rules…In this new situation the single farm payment can only be justified as a social payment to mitigate the distress of small, largely tenant farmers and to a lesser extent as an incentive to landowners to protect the rural landscape."*

Multiple objectives should not be an excuse for sloppy analysis. Instead they should be an invitation for careful analysis of each of the objectives and then careful design of, often independent, instruments. Separating objectives and instruments enhances transparency and increases the likelihood that unjustified interventions will whither over time. This is an important component of Barg *et al.*'s framework which considers the cost-effectiveness of other alternatives. It is also a feature of Lindberg's analysis of the transport sector. "Refined pricing policy" is code for disentangling the underlying objectives and instituting price signals that allow these constituent parts to be targeted correctly.

Reconfiguring subsidies may seem like a boring alternative to radical reform, but the dividends can be substantial. Detailed analysis of the effects of a subsidy in terms of meeting different objectives is important, but it probably is easier to apply pressure to a program with a single, well defined and transparent objective, particularly where the program involves direct fiscal costs that are subject to annual review. Two examples of this outside the environmental area are instructive. Economists have long argued in trade policy that a tariff in a small open economy is equivalent to an equal value production subsidy and consumption tax. The same level of domestic support can be provided by a production subsidy financed by general taxation. Such a subsidy would need to compete annually with other demands on the government. In the area of public finance, economists have long argued that tax expenditures are less transparent than direct expenditures.

In terms of subsidy reconfiguration the Forest Biodiversity Programme for Southern Finland (METSO) appears promising. Lahteenoja notes that this is a specific program whereby the landowner enters into an agreement to maintain or improve specified biodiversity values of the forest and in return receives a regular payment from the State. By separately targeting the biodiversity objective, the program is more transparent than general forestry subsidies.

In the case of the legislative reform program under the NCP in Australia, clear specification of the objectives of the reform was the starting point. This is not to say that it was always done perfectly. The NCC's assessment was that 81% of the scheduled legislation had been reviewed by June 2004 in a manner compliant with the original goals (Productivity Commission, 2005). Political obstacles were certainly a part of this lack of full compliance. However, another factor, the difficulty in marshalling high level

analytical capacity, also played a role. This reinforces the point that subtle analysis is often required for real world policy and there are limits to the total volume of analysis that can be undertaken let alone implemented.

Transparently identify the distribution of benefits and costs

While reform normally results in substantial aggregate benefits, changing existing arrangements affects different groups in different ways. Most microeconomic reforms have some losers as individuals structure their arrangements to make the most of existing rules.

Understanding the extent of potential losses is critical. If transitional losses are small enough, then appropriate transitional assistance can pave the way for reform. Failing to be explicit about the transitional costs of a reform may appear the easy way out but is unlikely to result in durable reform (either of a particular reform, but also of reform more generally).

Barg *et al.* (2006) explicitly considers the costs and benefits of reform, making them as transparent as possible. In particular the "incidental impacts scan" draws attention to the broader consequences of a particular policy, not least of which is the fiscal implications of subsidies. Lindberg (2006) clearly sets out the winners and losers of existing arrangements in the European transport sector. The process of NCP reviews in Australia also led to a clear identification of the transitional issues associated with reform.

Engage broadly with stakeholders

The first two elements focus on good analysis and transparency, raising awareness that may increase reform impetus and enrich our understanding of desirable reforms. The third element, engaging broadly with stakeholders, also contributes to understanding what should be reformed, but may be more important in terms of assisting the path of reform.

For example, Barg *et al.* (2006) note that:

> *"It is beyond the scope of this paper to describe the actual process for using the results of this framework. But it is worth noting that the process needs a strong participatory element… While a strong stakeholder engagement process is inherently important, there perhaps is even greater need to have a process for co-operation and horizontal analysis among government departments and agencies whose mandates, policies and programmes may overlap within the subsidized sectors."*

The typical formal way of engaging with stakeholders is to conduct a review. I am indebted to a former colleague of mine, Greg Smith, for the observation that policy reviews can have three functions: to inform; to empower; and to delay. All reviews are motivated by varying combinations of these three goals. Reviews inform because policy advisers are not omniscient. Stakeholders often have access to the best information. Engagement also allows stakeholders to be informed which can narrow the range of contentious issues.

Arguably, the workshop discussion focuses too much on the process of informing and not enough on the question of empowering decisions. In a world where everyone objectively assesses and is influenced by the evidence, this may not be an important distinction. We do not live in that world. In many cases, the decision of who should

conduct a review and how they go about it may be just as important as the analytical content of the report. A supportive review of subsidy reform, authored by a member of the industry benefiting from the subsidy, and which consulted all relevant stakeholders may be more influential than the same report prepared by a technocratic institution. There is no one size fits all solution to this, but key institutional design issues are likely to affect the outcome. For example, one might ask: "what is the best way to organise a review of transport policies to increase the chances of empowering reform proposals?"

While my focus here is on the need to consider empowering, I should also note that delay can be important as it alters the timing of a decision and can ensure that the final decision is made in an environment more conducive to positive reform. For example, a review may delay a decision within the political cycle or may allow time to pass after a high profile incident that may lead to unbalanced policy decisions. In the case of the Australian NCP, jurisdictions had considerable flexibility to choose the modality of the review process. This probably assisted reform in some places and alternatively provided governments with the opportunity to stifle reform in others. Either way, there is little doubt that review design was an important issue.

Across OECD countries, the nature and allocation of decision making and advising functions varies considerably. That said, even in countries where policy advisers do not have decision making power with respect to political issues management, it is still necessary to advise on the transitional management process.

Set ambitious endpoints but cautious timetables

The fourth element focuses on the speed of reform once an opportunity arises. In the case of the Australian NCP, a window of opportunity was presented by the pressure created by earlier reforms and by the recession of the early 1990s. This created a strong consensus that more was required to continue the transformation of the Australian economy.

The temptation as a policy adviser is to attempt to use a window of opportunity to jump straight to the best solution. This rarely works for at least four reasons:

1) government capacity for reform is limited so that reform can only be pushed on a limited number of fronts at any one time;
2) the adaptive capacity of the community is limited;
3) *ex ante* analysis of the benefits of reform is rarely as compelling to the public as the demonstration of actual experience; and
4) dramatic reform also increases the likelihood of policy reversal.

Given these considerations, often the best approach is to set ambitious endpoints, but have slow (but credible and pre-specified) phasing of the changes. This was the Australian approach to tariff reform and to the NCP. Phasing can allow adaptation by those affected without compromising the final objective. In some environmental areas, this conclusion may need to be qualified by consideration of stock/flow and irreversibility issues. If adverse effects are smaller than estimated by stakeholders (they do find ways to adjust), then phasing allows the truth of this to be revealed over time.

Phasing also increases the chances that reform will be continued when the policy environment is less favourable than it was before. The pre-commitment to reform legislation embedded in the NCP agenda allowed a range of reviews to be conducted

(which itself maintained pressure for reform) even when a key initial driver, the poor performance of the Australian economy, had ceased to be relevant.

Facilitating the transition

Finally, many reforms that require the elimination of existing rents will need transitional assistance to succeed. We should not be afraid of this assistance. After all, the recipients were previously receiving these benefits, only in a non-transparent form. The key is to ensure that any transitional assistance facilitates rather than hampers the required adjustment.

In many cases, transitional assistance will not result in a net cost to the government's budget as the government will benefit from reduced expenditure on an initial subsidy. However, this will not always be the case. Where the subsidy is hidden by underpricing or regulatory controls (such as monopoly marketing arrangements), the reform may dissipate rents, that were not being directly paid by the government.

In the case of the NCP, the Australian Government provided annual payments to the States and Territories contingent on them meeting their commitments under the agreement. In a number of cases, the States and Territories and the Australian Government paid transitional assistance to groups affected by the competition reforms.

The need for budgetary funds may constrain the capacity for reform. However, given that reform is a continual process, this indicates that fiscal authorities may need to permanently factor in a portion of funds each year to facilitate structural reforms. Naturally the area in which these funds will be required will change over time and all claims for assistance will need to be assessed on a case-by-case basis in terms of their benefits in facilitating reform. The key point is that it is unlikely to be correct to think of a one-off investment in structural reforms that will not need to be repeated in other areas. This may be an important point in the context of the Stability and Growth Pact. Some countries have argued that they should be allowed to breach the 3% deficit ceiling on the basis that funds are needed to facilitate structural reform. This argument does not appear compelling if there is a continual expectation of the need to fund (different) structural reforms.

Conclusion

The objective of the workshop was to try and understand better *how* to achieve subsidy reform. My contention is that this requires an understanding of the change management process of reform. I have outlined five elements that I think are important: defining clearly objectives; identifying transparently winners and losers; engaging broadly with stakeholders; setting ambitious endpoints but cautious timetables; and facilitating the transition with fiscal transfers that do not hamper the adjustment process.

The first two elements are mainly focused on transparency and bringing to light the desirable direction of reform. I have noted that these are subtle tasks that require high quality personnel. Given this, we must always be mindful of the limited capacity to undertake reform on too many fronts at once. The last three elements are more focused on the reality of managing the transition process.

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Part I

Enabling Subsidy Reform through Addressing Economic, Environmental and Social Impacts

Chapter 1. A Sustainable Development Framework for Assessing the Benefits of Subsidy Reform

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Introduction

A central tenet of sustainable development is that activities in any one of the economic, social, or environmental spheres of human endeavour will frequently generate impacts in one or both of the other two spheres. Subsidies are economic in their initial impact, but can also generate important social or environmental consequences. Analysing subsidies from the perspective of sustainable development requires that these consequences be considered in an integrated fashion.

The sustainable development perspective also emphasizes the fact that the connections among activities are global, not just local, and that the implications of an action must be evaluated over the long term, not just the short term. Since its promotion in the Brundtland Report (WCED, 1997), the concept of sustainable development has consistently been international in scope. Attention to the long-term implications of policy is inherent in any definition of sustainable development, which concerns itself with the welfare of both present and future generations.

Figure 1 shows these relationships in schematic form, expressing the impacts of a subsidy first in the economic context and then showing social and environmental impacts. This distinction is necessary because the analytical tools used for each area are different, and because economic activity is regarded as a means to further human well being and environmental integrity, not an end in itself.

For the purposes of this paper, it is not necessary to engage in an extensive discourse on the definition of a subsidy, because the main points to be made do not hinge on the details of the definition. Readers are referred to the discussions in Steenblik (2003), Sterner (2003) and OECD (2005*a*). In general, "a subsidy is the result of a government action, that confers an advantage on consumers or producers, in order to supplement their income or reduce their costs", (OECD, 2005*a*). The government action may consist of a payment of money, relief from a tax burden, protection from competition, or a variety of other policies or measures.

There is also a much broader form of benefit – the existence of an uncompensated externality, where a producer of a good or service does not bear the full cost of production – but rather imposes some of the cost on the environment. In a sense, this is a subsidy from the environment (or all of us) to the producer. This leads to a product being sold for less than its full social cost, and thus to over-utilisation. This sort of benefit is beyond the scope of the framework elaborated here, where the term "subsidy" refers only

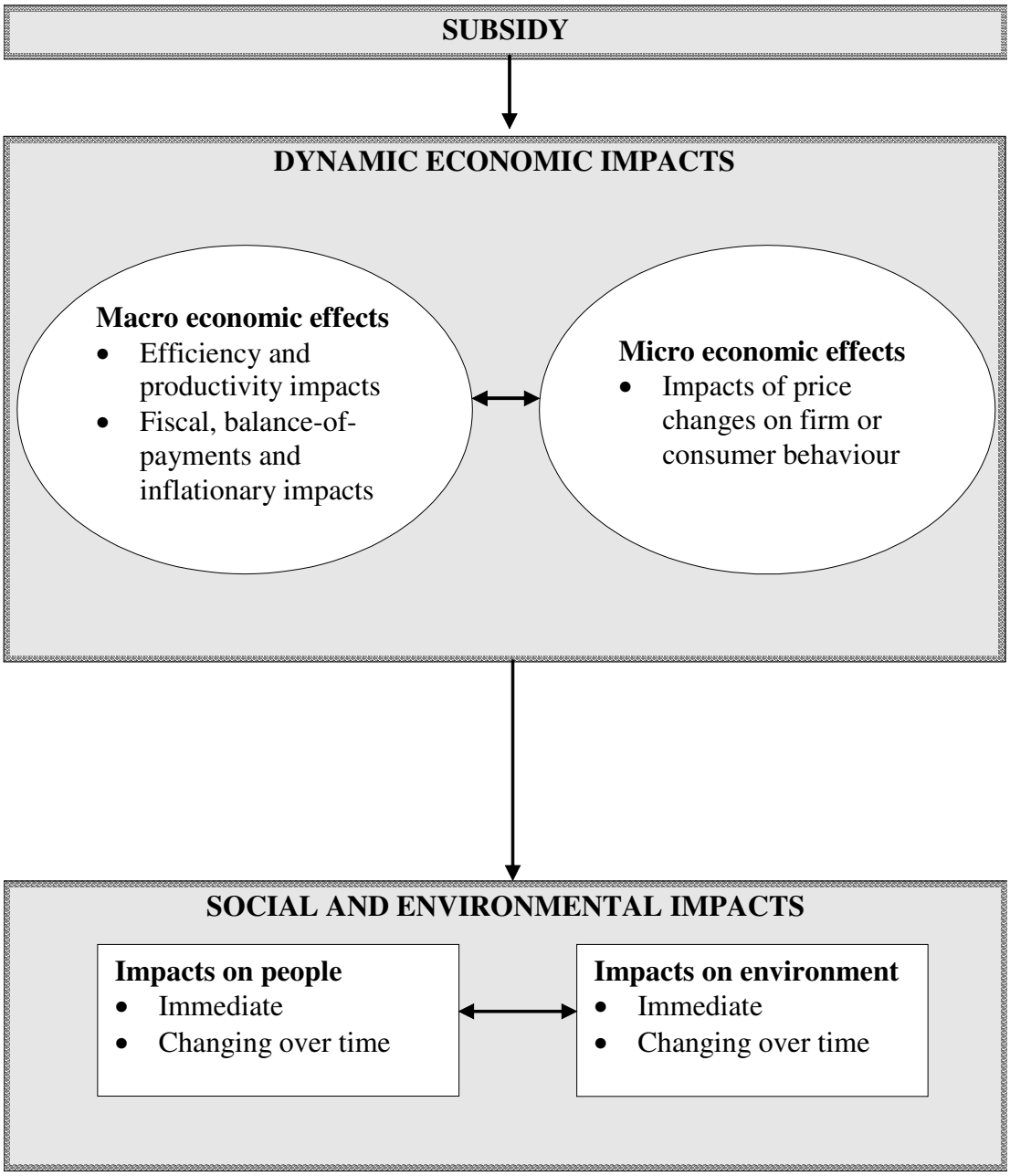
to the results of government *actions*, and not to government *inactions* which may allow for the existence of uncompensated externalities.

This definition also does not include the benefits to economic agents created through changes in monetary policies or general tax relief, either of which can have impacts comparable to subsidy policies, but do not involve the sort of expenditures we are discussing here.

The intention of this paper is to develop a framework that is broad enough to be applied to subsidies of any type consistent with the definition propounded above: a financial contribution by a government that confers a benefit on consumers or producers to increase their income or reduce their costs. The aim, as well, is that the framework be applicable both to *ex ante* and *ex post* analyses.

The result of a government action is to change the incentives facing those receiving the subsidy. The direct impacts are economic: the subsidy creates winners and losers. In **Figure 1**, these impacts are divided into micro-economic and macro-economic effects. It is useful to separate these, since the tools used to analyse them are different, as are the responsible government authorities.

Figure 1. Subsidies in a sustainable development context



Why is subsidy reform important?

The potential benefits of subsidy reform can be discussed from a number of perspectives. Consistent with the sustainable development approach used in this paper, we consider those benefits in terms of economic, environmental and social outcomes.

Potential economic benefits of subsidy reform

Table 1 provides some examples of subsidies to particular industries or sectors. As can be seen, the numbers involved are substantial – certainly at a magnitude likely to distort production or consumption, and thus prices. Reducing harmful subsidies would reduce distortions to markets and would also improve several other economic variables.

Table 1. Examples of subsidies in various countries

Description	Source	USD billion
Total support to agriculture in OECD countries, 2004	OECD, 2005b	378
Support to agricultural producers in OECD countries, 2005	OECD, 2006	280
Upper estimate of annual total incentive expenditures for economic development, by state and local governments in the United States, early 2000s	Peters & Fisher, 2005	50
Estimate of annual government financial transfers benefiting commercial fishing, worldwide, late 1990s	Virdin, 2001	15
Estimated annual subsidies for irrigation in Egypt	Raphaeli, 2004	5
Annual "sales aid" supporting production of hard coal in Germany	Storchmann, 2005	3
Annual Central Government subsidies to support fertilizer use in India, crop year 2004-05	Govt. of India, 2004	3
Annual subsidies for electricity in Iran	IranMania, 2006	2
Annual tobacco subsidies provided by the EU, 2003	www.epha.org/a/1556	1

Effects on budgetary expenditures

Even a desirable subsidy, if scrapped, can reduce budgetary expenditures. As per Table 1, the savings might be significant. More to the point, however, eliminating an *undesirable* subsidy is not only sparing of fiscal outlays, but also presumably increases the average effectiveness of the remaining expenditures. That is, after terminating or reforming expenditures that did not yield the desired results, the remaining portfolio of government expenditures will achieve a higher average "return on investment". As well, eliminating incidental negative impacts from ill-conceived subsidies can achieve public benefits at cost savings. This can happen, for example, when the government is subsidizing agricultural production on the one hand, but also trying to clean up ground-water pollution, or purchase easements on land it wants to preserve for wildlife habitat.

Effects on the process of structural adjustment

Subsidies tend to lock in the patterns of activity that they support, and thus prevent dynamic responses to changing circumstances. An example of this can be seen in the case of Canada's subsidies to its Atlantic groundfish industry, where the existence of a variety of social and industrial support payments, coupled with the (unfulfilled) hope that the fish

would return, maintained a population in remote villages for some time after their economic basis had been destroyed by over-fishing.

Effects on sectoral efficiency and productivity

Removing a subsidy that fails the tests set out in the framework will almost by definition increase sectoral efficiency and productivity. Subsidies tend to encourage rigidity, because they maintain the production and consumption decisions encouraged by the subsidy. As such, those decisions are driven by false signals, meaning productive resources are not deployed toward their most efficient possible use. Resources are diverted from elsewhere in the economy. Such influences often last long past the date when a change would have been more efficient.

But it is dangerously simple to end the analysis there, as it would imply a blanket condemnation of all subsidies. Subsidies can, under the right conditions, internalize positive environmental externalities. And they can have benefits that offset the distortion of price signals. In most cases those subsidies that fail the tests set out below will do so precisely because they have negative effects on sectoral efficiency and productivity, without adequate compensating benefits.

Environmental effects of subsidies

Subsidies can have positive, neutral or negative consequences for the environment. Those that are positive usually are designed specifically to mitigate an environmental problem or boost the supply of an environmental good. Those that are neutral or negative generally are designed and implemented with little or no regard for their environmental consequences. In some cases, trying to undo the long-term harmful environmental impacts of a subsidy can cost more than the payment required to compensate current recipients of the subsidy for its elimination. Analysis of these types of environmental impacts against perceived or actual benefits allows policymakers to determine which trade-offs are efficient from a sustainable development perspective and not just in terms of economic development.

Subsidies are rarely designed to harm the environment, but often harm will result from a poorly designed subsidy programme. For example, subsidies to promote offshore fishing are generally intended to develop or maintain a fishing industry, particularly one that may benefit coastal communities. Unfortunately, as has been observed globally, the subsidization of this sector has also contributed to the reduction of important fishery stocks and an increase in the mortality of non-target species, reducing the resiliency and integrity of the ecosystem. Not only have these subsidies contributed to ecosystem failures, they have also necessitated expenditure on new programmes – notably, vessel or license retirement schemes – to mitigate the negative externalities. Likewise, subsidies intended to help lower the costs of farming inputs, such as irrigation water, fertilizers and pesticides, have helped raise agricultural productivity and profitability. But the subsidization of irrigation water (or the electricity required to pump it out of the ground) at below-market prices has often resulted in depletion of groundwater aquifers and, more generally, the inefficient use of a scare and critical resource.

The environmental effects of consumption or production induced by subsidies also can include higher volumes of waste or emissions. For example, subsidies to promote irrigation often encourage the growing of crops that are farmed intensively, leading to higher levels of fertilizer use than would occur otherwise; drainage water from irrigated

crops typically contains high levels of nitrates, as well as dissolved salts. In countries that subsidize local coal production, that coal is often higher in sulphur content than imported coal (Steenblik and Coroyannakis, 2005); removing the sulphur from the flue gases of power plants that burn that coal can, depending on the technology used, create sludges that must then be disposed of.

Social effects of subsidies

Effects on community capacity to adapt

Adaptive capacity is the ability of the community to respond to change without moving significantly from its equilibrium. Adaptive capacity can consist of many factors, and much research remains to be done on the topic. Holling (2001) links it to the "sustainable" component of sustainable development. Subsidies can increase the capacity to adapt through increasing a community's economic strength and its environmental resilience.

A subsidy that increases the supply of public goods may also enhance adaptive capacity. The existence of subsidy programs that help train workers affected by declines in commodity prices, and subsidy programs aimed at public provision of education will similarly confer an improved ability to adapt to changed circumstances.

Effects on income distribution across consumers and producers

Inequality of income distribution has been suggested as a component of adaptive capacity (Alberini *et al.*, 2005). It is the poorest who are most vulnerable to changes in climate, for example. Subsidies that redistribute income will expand the options of people at the lower end of the income distribution. While ultimately it is a political decision as to what level of income support subsidization is appropriate, almost all countries provide some mechanism to transfer money to low-income groups.

Effects on trade conditions for developing countries

There is particular cause for concern from the social perspective when subsidies granted to developed country producers create barriers to trade for developing country producers. The best known subsidies of this type are agricultural support for OECD producers, calculated at almost USD 300 billion annually, and the proximate cause, together with barriers to market access, of the stagnation in the WTO's Doha Round of trade talks. This type of support has several negative outcomes from the perspective of developing-country exporters. First, it effectively blocks access to important developed country markets, by making those countries' producers artificially competitive. Second, it also forces developing-country producers to compete with subsidized producers in third-country markets, and even in their own domestic markets.

Given that some 75% of the world's poor live in rural areas where agriculture predominates, it would seem to stand to reason that OECD agricultural support constitutes a negative force in terms of international income equity. However, it is also the case that many low-income countries are net food importers, and that low commodity prices – the result in part of massive support – can, other things being equal, be beneficial for consumers in these countries (McMillan *et al.*, 2005).

Effects on social capital

Social capital is the informal and unofficial set of connections among members of a society. These interactions may nevertheless be supported by subsidies, for example to community centres, to amateur sports teams, to cultural exchanges, and so on. Most developed countries have a very large range of small subsidy programs devoted to such causes.

The analytical framework

The assessment framework described in this paper is integrated across the three spheres of sustainable development. The alternative, more often used, employs separate analyses of the economic, environmental and social impacts – a form of analysis that has been criticized among other things for leading to trade-offs that often end up prejudicing environmental and social objectives (Pope *et al.*, 2004). Perhaps more important, an integrated analysis allows for better consideration of synergistic effects. For example, the environmental impacts of subsidy reform may have important second-order effects in the social and economic spheres that are difficult for separate analyses to pick up. Too often, partial analysis fails to predict perverse or unexpected results.

The framework set out in **Box 1** seeks results that are more like a comprehensive story than a pass-fail test. Its underlying assumption is that the best policy result will obtain when there is explicit understanding of the distribution of costs and benefits, and this information is made available to policy makers and the interested public. That means, ideally, laying bare the full gamut of costs and benefits, winners and losers, intended and unintended effects in the environmental, economic and social spheres, highlighting where the trade-offs exist. To go further than that and pass judgement on the social desirability of the subsidy or of a proposed reform would require weighting various competing priorities and would risk usurping the role properly belonging to those entrusted with balancing competing interests in service of the general good.

Subsidy reform often involves trading off the concentrated benefits of vested interests against greater, but more widely dispersed, benefits to the public at large. While the information provided by application of the framework may help build the case for reform, it can only do so if it is understandable by the general public and widely disseminated.

While stakeholder engagement is vital, there perhaps is an even greater need to establish a process for enlisting co-operation and horizontal analysis among government departments and agencies whose mandates, policies and programmes may overlap within the subsidized sectors. A sustainable development analysis aimed at guiding the reform of a subsidy or set of subsidies may require what is often called a "whole-of-government" approach which looks at policy coherence and linkages among institutional actors.

Box 1. Integrated assessment framework

Features Scan

Objectives

What are the objectives of the subsidy, with respect to its environmental, economic and social impacts?

Design

Does the policy design avoid problems inherent in long-term existence of subsidies?

Adaptive design: Does it have a sunset clause or an adaptive review process?

Are the conditionalities right? Are they based on outcomes, rather than specific technologies (avoiding lock-in effect); on inputs and outputs rather than on capital stock?

Effectiveness analysis

Does it or will it achieve its objectives?

Economic: correct a market failure; increase the supply of a public good

Social: improve income distribution generally, or reach a target group with intended benefits; induce socially desirable behaviour.

Environmental: reduce pollution; preserve habitat; encourage the use of an environmentally preferable product speed the development of more-efficient or clean technologies.

Cost-effectiveness

What alternatives exist for meeting those objectives that might be more cost-effective?

Incidental Impacts

What incidental impacts (impacts other than those intended) have been or can be expected from the subsidy? The stress here is on long-term, dynamic and international impacts.

Economic: unintended economic impacts such as impacts on the prices of factors of production and intermediate inputs used by non-target industries; economic impacts of environmental improvement.

Social: socially undesirable distributional impacts (*e.g.*, on low-income consumers, on non-target population generally, on developing country exporters); negative dynamic responses to the subsidy

Environmental: linked mainly to primary economic impacts – changes in the levels of inputs and wastes. *e.g.*, degradation of ecosystem services; loss of biodiversity, synergistic effects

Long-Term Effectiveness

Is the subsidy designed so as to eventually address the underlying problems that gave rise to its creation?

Economic: Does the subsidy address the underlying problem, *e.g.*, by spurring innovation, increasing resource or labour productivity or increasing the supply of a public good?

Social: If it is aimed at a soluble problem, rather than a structural market failure, does the subsidy decrease dependence, eventually making itself obsolete?

Environmental: Is the subsidy designed to directly address the problems facing infant environmental industries?

Policy Reform

What would be the environmental, economic and social impacts of various scenarios for reform of the subsidy, including outright elimination, phased elimination, and change in policy design? Would they differ from a simple reversal of the incidental impacts discussed above?

Where negative impacts are predicted (even in the context of positive net impacts), what sorts of flanking measures might be helpful in addressing them?

Features Scan

Objectives

In applying this framework, the analyst should begin by asking what the objectives of the subsidy are. The official objectives may be surmised from the legislative history, or statements by officials. The objectives may be expressed in terms of environmental, economic or social outcomes, or some combination of the three, and the effectiveness analysis should unfold accordingly. This test is a sort of basic threshold criterion: if the subsidy fails at achieving even those objectives for which it aims, then it is in need of reform regardless of its incidental impacts.

Motivations for any particular subsidy, however, will often reflect a complex mix of political and economic drivers, and the officially stated objectives may not always fully mirror reality. This is partly because of the political basis for public policy, and the tendency to try to accomplish several goals, some of them unarticulated, with a single programme. Policies developed quickly, in situations of crisis (or perceived crisis), will typically involve minimal consultation and discussion. And the beneficiaries of a subsidy, including those who administer it, may have an incentive to obfuscate the narrow sectoral interests it serves and exaggerate the purported public objectives. Finally, a programme that does not have clear objectives cannot be accused of failing to meet them, so policy makers may prefer not to be explicit about them.

In analysing the effectiveness of a programme, the analyst faces at least two obstacles, both of which are very common and which often occur together:

- Incomplete policy analysis: While it is common for policy makers to make explicit the direct, short-term, economic impacts of a subsidy, the environmental and social goals of a subsidy program are often at best an afterthought, and therefore avoid scrutiny. Where such goals do not exist, or cannot be inferred, there is obviously no need for effectiveness analysis in those areas. In such a case any environmental or social impacts would be considered unintended, and would be addressed in the incidental impacts scan.
- Incomplete understanding of human or ecosystem responses: As is discussed in Box 1 below, even with good policy analysis, policy makers are often not able to forecast impacts of subsidy measures. The scientific knowledge of many geophysical and ecological processes is incomplete, and since many of the processes are non-linear and can have a variety of equilibrium points, the ability even of experts to forecast them will be inadequate. Thus, even where environmental or social goals are explicit, it will be inherently difficult to answer the question: will they be achieved?

Design

The second stage of the features scan, focused on policy design, asks whether the subsidy is designed to avoid several known characteristics that prove problematic over time. The checklist here includes verifying whether the subsidy programme has a built-in sunset clause or an adaptive review process. It also includes asking whether the conditions imposed on subsidy recipients are appropriate. Incentives tied to outcomes,

rather than to specific technologies, will generally reduce the risk of technological lock-in.

The need for a sunset clause or review mechanism arises either because of poor design or because the subsidy creates rigidities. For example, a government may create a new subsidy to help an industry adopt a new technology in order to compete more effectively with manufacturers in other countries. If the subsidy continues for longer than was originally intended, as is frequently the case, the industry can become dependent on the subsidy, building it into its business model. By that point, eliminating the subsidy may impose economic losses on the industry. Its owners, managers, and employees of the industry have an even greater incentive to maintain the subsidy, making reform that much more politically difficult.

Rigidity in subsidy design and implementation, which sets in over time, is a result of the vested interests that develop around a subsidy. Yet many of the markets and policies that affect the recipient of the subsidy are themselves dynamic and change over time. The combined effect is that the subsidy gradually becomes less and less aligned with the policy and commercial reality, even while its recipients become more resistant to change. This progression is how subsidies become perverse.

A specified sunset clause, giving the subsidy an expiry date at the outset, *may* help to avoid these types of problems. On the other hand, a sunset clause can make an ostensibly temporary programme appear to be less costly than a permanent one, which as Toder (2002) points out can mislead if the subsidy is so popular that policy makers are unlikely to let it expire. Another general prescription is to build in a review mechanism that assesses on a periodic basis whether the subsidy is still necessary. The risk is that vested interests will nonetheless organize more effectively to lobby for subsidy renewal, than members of the general public, who will have much less incentive, and less information, to lobby effectively for the subsidy's termination.

The issue of conditionalities is important. Pieters (2003) argues that subsidies that are conditional on specific technologies or applied to inputs are likely to be environmentally (and economically) damaging in the long run. Subsidies to material inputs remove the incentive to increase efficiency of use, and may lock in undesirable technologies. Subsidies that are conditional on the use of specific technologies not only suffer from the lock-in problem, but also may encourage inefficient processes. By contrast, subsidies that target *outcomes* leave the firms involved to find the most efficient ways to achieve those outcomes.

Effectiveness

In general, it is much less difficult to analyse the effectiveness of an existing subsidy against its objectives than to analyse the effectiveness of a proposed subsidy. The latter involves being able to predict the various impact pathways, and knowing with some reliability the functional relationships between the subsidy and the various independent variables of interest.

Environmental effectiveness

This part of the analysis asks whether a subsidy achieves, or will achieve, its stated environmental objectives. Obviously, this step is meaningful only in cases of subsidies that *have* such objectives, normally expressed as a desire to promote environmental

improvements. The biofuels subsidies case study, for example, infers environmental objectives including reducing emissions of greenhouse gases in the transportation sector, and lowering vehicle emissions. It finds that these objectives may indeed be fulfilled, though perhaps not to the extent that many expect.

Economic effectiveness

This line of questioning is fairly straightforward. The first is, does the subsidy achieve the economic impacts that it is expected to achieve? As with the other types of effectiveness analysis, one of the most difficult aspects to this search is to actually articulate the objectives in such a way that they can be used as an objective standard for assessment. The second question is what effect does the subsidy have on the budget and on welfare?

As Sowa (2006) reminds us, there are two parts to the welfare equation. One is the *revenue-financing effect,* which is the welfare cost of financing a subsidy. Because most taxes create distortions in the markets for production factors, particularly labour, financing a subsidy through taxation imposes welfare losses on an economy. Partially offsetting this welfare effect may be the *tax-interaction effect*, which is the welfare gain from the increase in labour supply, induced by the increase in the real household wage when the price of a subsidized consumption good falls. That is to say, to the extent that a subsidy reduces costs to households, there may be a welfare gain from an increase in the labour supply. In OECD economies, many subsidies mainly keep alive production that would otherwise go out of business, and generally do not lower costs to consumers. But subsidies undoubtedly do benefit some consumers in developing countries.

Social effectiveness

Like the analysis of environmental and economic effectiveness, the analysis of social effectiveness is essentially about good policy design. If a subsidy is targeted at a particular group, the first question is whether the subsidy in fact reaches the intended recipients. Often subsidies will be justified on the argument that they benefit a vulnerable or marginalized segment of society, as a sort of regional-development policy. If this segment does not receive all or most of the benefits, then the subsidy fails at a basic level. Alternatively, if the target is the general population (*e.g.*, subsidized provision of health benefits), it needs to be asked to what extent the actual results measure up to the stated objectives.

Cost-effectiveness

The final step in the features scan is efficiency analysis. Here the question is: could the objectives of the subsidy be achieved by other, more cost-effective policies? While collecting new, detailed information on the cost-effectiveness of alternative policies, if not readily at hand, can be time-consuming and costly, the analyst should at least consider and describe alternative policies This step helps set the stage for analysis of the impacts of policy reform.

Incidental Impacts

The *features scan* asks in part what the impacts of a subsidy are, or could be expected to be, in relation to its stated objectives. The analysis of incidental impacts, by contrast,

asks what impacts have occurred, or might occur, in areas that were not part of those objectives. This sort of analysis forms the classic environmental approach to subsidy analysis, which concerns itself with uninternalized environmental externalities created by the subsidy's economic incentives. Here it is applied to all three types of impacts. It is also applied with attention to long-term and dynamic impacts, and impacts beyond the jurisdiction providing the subsidy.

Economic Impacts

Economic impacts are often the primary goal of subsidies. Incidental economic impacts are those not foreseen or targeted in the original subsidy design. These effects may be transmitted to non-targeted sectors by price changes in the targeted sector. For example, support for the production of biofuels from crops can increase feed costs for livestock producers. There may also be economic impacts deriving from intended and incidental environmental and social changes. A classic example here is the economic fallout from a fisheries sector that collapses in part because of subsidies that encouraged over-fishing (**Box 2**). The analysis of incidental economic impacts is not a simple matter, but there are a number of existing methodologies that may be employed.

Box 2. Subsidies and ecosystem management

The integrated assessment framework asks whether the subsidy is achieving its goals. Even when the goals are clear, there is another problem: the lack of scientific knowledge that would allow the prediction of the future. This is especially true where the subsidy requires co-ordination with some aspect of ecosystem management

Consider the example of Canada's North Atlantic cod fishery. Initially, when it was shut down by the Canadian government, policy makers hoped that it would recover in a few years. That has not been the case, even to this day. Fundamentally, we do not really know enough about how that ecosystem works to make predictions about how to manage it or how it will respond to future actions.

Especially for marine fisheries, this is the norm, not the exception. Virtually all marine fisheries are under pressure, as is reported by the FAO: "All the information available tends to confirm the estimates made by FAO in the early 1970s that the global potential for marine capture fisheries is about 100 million tonnes, of which only 80 million tonnes are probably achievable. It also confirms that, despite local differences, overall, this limit has been reached. These conclusions lend support to the call for more rigorous stock recovery plans to rebuild stocks that have been depleted by overfishing and to prevent the decline of those being exploited at or close to their maximum potential." (FAO, 2004 p. 33-34).

Catch numbers may be exaggerated, as well. Watson and Pauly (2001) scrutinised the FAO's data on fish catches from the 1990s and concluded that the figures should be adjusted downward by approximately 5 million tonnes because of systematic over-reporting. According to these scientists, the global catch has actually been declining, not rising, in recent years. They point out that this decline may suggest that problems with the world's fisheries are more serious than even previously thought.

At the same time as we face a lack of science and (probably) declining catches, we also face a new uncertainty – that stemming from the changing climate. This affects water temperatures, currents, and other things. The FAO says: *The assessment of these [climate-change related] and other ecosystem-fisheries interactions is still in its infancy and much more needs to be known about their effects on fishery resources, fishing communities and industries, their causes and trends, and how to deal with and adapt to them. The state of fishery resources and their ecosystems, however, allows little room for delay in the implementation of measures that should have been taken in the last three decades. Therefore the precautionary approach to fisheries, recommended by UNCED, the United Nations Fish Stocks Agreement and the FAO Code of Conduct for Responsible Fisheries needs to be implemented in practice. (FAO, 2004 p. 35)*

The challenge in designing a subsidy regime – or any other policy instrument, for that matter – is that we do not necessarily know what the impacts of the new policy will be, especially when the impacts include ecosystem effects. To the extent possible, policies should be designed cautiously, with this uncertainty in mind. The discussion on adaptive policy design, in Box 2, offers some responses to this challenge.

Environmental Impacts

Incidental environmental impacts arise primarily from economic impacts, and will tend to be negative. This is an inescapable consequence of the nature of subsidies' economic impacts; subsidies are primarily designed to increase production or consumption, with attendant scale effects on the environment, such as increased resource use, or increased emissions. Positive incidental effects are possible in theory, but for the most part any positive environmental impacts delivered by subsidies will result from specific environmental objectives, rather than the incidental result of induced economic or social change. Some positive effects may derive from new technologies, or the structural redesign of an economy toward less polluting industries, but in many cases these effects are drowned out by the scale effect.

Social Impacts

The incidental social effects of a subsidy will primarily reside in its distributive effects, with the most fundamental question being who gains and who loses? This analysis asks first whether a subsidy entails a net benefit or a net cost for non-target populations. Subsidies usually involve a transfer from one segment of the population to another – something which may be justified on social welfare grounds, but which should be made explicit in any impact analysis. The analysis should then go further to describe the characteristics of the various groups. Ideally the transfer effects of any subsidy should be neutral or in the direction of a more-equal distribution of wealth or income (and distribution of non-income public goods), and should work to the benefit (or at least not the detriment) of socially marginalized populations.

The incidental benefits or costs of subsidies are not always financial. For example, subsidized public education has a number of important social benefits accruing to non-students. Subsidies to primary and secondary education are usually justified on equity grounds because they involve transfers that foster a more equitable distribution of employment opportunities later in life, especially for children of parents who might otherwise not be able to afford to send them to school.

It is particularly important to extend the analysis beyond the jurisdiction implementing the subsidy. Many subsidies will benefit domestic producers, and perhaps even consumers, to the detriment of foreign producers. An example is found in the biofuels study, where Brazilian ethanol producers face high tariffs imposed by a number of OECD countries. Globally there is a net loss, because the domestic producer has to use more resources to make the product than would the producer of the imported product. Many of the subsidies listed in Table 1 may fall into this category. The analysis should note such impacts, discussing in particular any significant development gaps between the beneficiaries and the victims.

Analysis of Long-Term Effectiveness

It was argued above that sustainable development emphasises the need to take a long-term perspective when undertaking an analysis, as well as pay attention to the interconnections among the economic, social and environmental elements. The long-term perspective is particularly important because much of the political support that governments get for subsidies is based on short-term and local impacts. Too often, a subsidy designed to solve a short-term problem may easily become the cause of problems in the longer term.

The analyst needs to ask whether the subsidy is merely treating the symptoms of a larger problem, or whether it actually addresses underlying causes. The assumption is that, if the former, the subsidy may in fact be delaying necessary structural change.

Economic dimensions

Ideally a subsidy would be a time-limited measure designed to correct an underlying problem such as low productivity, or the need to accelerate the pace of the uptake of new technology. If, on the other hand, the subsidy is aimed at symptoms rather than causes, the long-term dynamic impacts will be merely to prolong a bad situation, and will be negative.

Local and global effects are likely to coincide here: any increased productivity in an exporting firm results in welfare increases for the global consuming public, though whether other producers will be better off as a result will depend on whether the innovation can be replicated quickly. If a subsidy meant to postpone the inevitable has any trade impacts, they will likely be negative. The reasoning is that any such subsidy is likely supporting unviable economic activity, and therefore replaces production by foreign sources that may in fact be more efficient.

There are exceptions to the demand for solutions aimed at underlying problems: some problems, such as market failures, may require indefinite programmes. It can be argued that left to themselves, people choose to consume less education than is socially optimal, for example, and that there is no way to "solve" this underlying problem. Therein lies a rationale for ongoing public support (particularly when coupled with the distributional rationale that might be laid out in a social incidental impacts analysis, as described above). The argument can be extended to most of the classic roles for the state, such as defence and security, and the protection of public health (Lopez, 2005).

In the long term, poorly designed subsidies may have their benefits dissipated, through being capitalized into the value of land, permits or other scarce assets (Tullock, 1975). If so, the ostensible benefits accrue principally to the original recipients of the subsidy. Such a situation also has special significance when reform is contemplated; those that bought into the system at the inflated prices stand to lose significantly when the subsidies are removed.

Environmental dimensions

Subsidies with environmental objectives have a limited set of underlying problems to be addressed. One set concerns the problems of a fledgling "green" industry or sector: the need for costly and risky research and development, lack of infrastructure for the take-up of new technologies, the need to achieve economies of scale, lack of public knowledge on

the workings of, or existence of, new technologies, and so on. In all of these cases there may be a justifiable basis for public support.

But that support should take forms that actually address the underlying problems. There may be a case for supporting the development of cleaner forms of generating electricity, for example. Subsidies to the production of wind turbines or solar cells may increase the supply of those technologies, but they tend to do so in a way that favours certain producers (usually domestic manufacturers) over others. Subsidies to wind- or solar-generated electricity, or for the purchase of rooftop solar panels, have the merit at least of non-discrimination between domestic and foreign suppliers of the equipment involved. By stimulating production and learning by doing, rapid reductions in the unit costs of production may be thereby achieved. If maintained over a long time, however, subsidies for consumption of electricity from renewable-energy sources may mask the true cost of electricity to consumers and encourage more consumption than would otherwise take place.

Social dimensions

As with the economic and environmental analysis, the question here is whether the subsidy is designed to address underlying problems, in which case it may lead to long-term positive social impacts, or whether it is designed to treat symptoms, and thus perhaps to merely perpetuate an unsustainable state. Obviously this sort of analysis is somewhat subjective in that it involves identifying "the underlying problem" that gives rise to the perceived need for the subsidy in the first place. Different characterizations of the problem will of course result in different judgements about the propriety of the solutions.

The most interesting sort of subsidy in this context is that meant to preserve threatened communities, or a traditional lifestyle. The short-run results may in fact correspond to these objectives, but in the longer term the preservation of an unsustainable community, without measures or incentives to foster adaptation to changing circumstances, may actually have corrosive effects on individual and community enterprise, achieving the social version of "lock-in."

Policy Reform

This final stage in the analytical framework, considering the impacts on sustainable development of various scenarios for reforming subsidies, is obviously applicable only to assessments of existing subsidies, as opposed to those in the process of formulation. This involves highlighting the costs and benefits of the various options for reform, including outright elimination of the subsidy, phased elimination, changed policy design, and alternative measures. The analyst may also need to ask what sorts of flanking measures might be considered as a palliative complement to the various reform options.

It is critically important to distinguish between the long-run and transitional effects of policy reform. In the long run, predicting the economic, environmental and social effects of removing a subsidy ultimately involves modelling a hypothetical universe without the subsidy in place. As important as this is, particularly given the emphasis given to long-run desired impacts in the preceding analysis, the more important issue for those considering policy reform is the transition from business as usual to the reformed state.

The benefits and costs of removing or reducing an existing subsidy will not necessarily be the inverse of the benefits and costs generated when the subsidy was first created. Where the anticipated value of future subsidies has been capitalized, for example, the owners of the affected capital may be significantly affected (particularly if they bought in after the capitalization occurred). Resource-based communities that had been supported by subsidies may no longer be viable, or may need to shift toward a new economic base, and in the process of adjustment could face considerable social and economic hardship. The general, and rather obvious, lesson is that in the short run the effects of removing a given subsidy can vary markedly from simply reversing the negative impacts caused by maintaining the subsidy.

Box 3. Adaptive policies

Subsidies are policy instruments that tend to be quite rigid, for at least two reasons. First, they involve the expenditure of public funds, and thus prudent financial management requires that the eligibility rules be clear, so that the disbursements can be made according to established rules. Furthermore, clear rules make for more predictable expenditures, an important goal of the budget managers in the government. And of course the recipients need to know exactly the amount they may be entitled to and how to access it. As a result, subsidy programmes tend to be designed for certainty, not flexibility. Moreover, once a programme is in place, the beneficiaries will work hard to keep it as it is, while opposition or calls for reform may be widely diffused

However, scientific knowledge is far from perfect. Thus our capacity to understand the impacts of subsidies will improve as we learn more. And changing economic and social circumstances will also call for changing policies.

The concept of adaptive policy design offers a way to bridge these conflicting objectives, By designing policies that can adapt to changing circumstances over time, rather than break down. Walker *et al*. (2003) suggest that policies be "devised not to be optimal for a best estimate future, but robust across a range of futures." This approach requires that learning and adaptation of the policy be made explicit at the outset and the inevitable policy changes become part of a larger, recognized process and are not forced to be made repeatedly on an ad hoc basis. This approach is followed in the features scan discussed above – a clear statement of policy goals is the first stage in the analysis. The need for regular reviews of the policy to see if it is still meeting its goals efficiently is also part of the features scan. If a policy has a regular review as part of its structure, problems will become apparent at earlier stages than might otherwise be the case.

Walker *et al*. (2001) suggest some aspects of a possible review process. At the time of policy design, possible vulnerabilities of the policy to changing circumstances should be explicitly considered. With these in mind, mitigating actions and risk-hedging actions can be taken in advance. In order to monitor implementation, the policy design should include the development of signposts (information that should be tracked in order to determine whether defensive or corrective actions or a policy reassessment is needed) and triggers (critical values of the signpost variables that lead to implementation of defensive or corrective actions or to a policy reassessment). If the indicators show that the policy needs to be reviewed, defensive actions may be taken to preserve a policy's benefits, or corrective actions taken to adjust the basic policy in response to triggers. Alternatively, the policy may need to be completely reassessed when it has lost its validity.

A review of the existing literature and emerging research on adaptive policy design can be found in Barg *et al.* (2005).

Case study: subsidies to liquid biofuels

Introduction

Biofuel is the generic term for a fuel derived from a non-fossil plant or animal product. Generally, the term refers to liquid fuels, as distinguished from gaseous or solid fuels derived from biomass. Currently, around 37 billion litres of bio-ethanol (ethyl alcohol) and 3 billion litres of biodiesel (methyl ester or ethyl ester) are used worldwide as fuel, mainly for road transport. Most of these fuels are consumed in blends with gasoline or petroleum diesel. Smaller amounts of vegetable oils are consumed in their pure form, mainly by people in developing countries for cooking or illumination.

Biofuels were invented long ago. As proponents of biofuels point out, Otto Diesel's pioneering compression-ignition engine was meant initially to run on peanut oil, and Henry Ford's model T automobile on ethanol. Petroleum-derived fuels soon proved to be less expensive, however, and most vehicles since then have been powered by them.

Government support for biofuels also has a long history. Brazil first began turning sugar into ethanol, and adding it to gasoline, in the 1930s (Kojima and Johnson, 2005). Its modern industry dates back to the mid-1970s when, in response to a rapid rise in oil prices, the Brazilian Government provided subsidised loans and other forms of assistance to develop ethanol refineries and associated infrastructure. The United States, similarly, started providing relief from excise taxes on gasoline containing ethanol in 1979, and in 1980 imposed a USD 0.54 per gallon (USD 0.148 per litre) MFN tariff on imported ethanol.

Because of various historical policy decisions and the composition of its automobile fleet, the EU's first big push, starting in the early 1990s, was into biodiesel rather than bio-ethanol. The EU now accounts for 75% of world production of biodiesel. Relief on fuel excise taxes is the largest component of support, though there are also special payments to farmers who grow energy crops. Australia and Canada are relative newcomers to subsidising biofuels, but the protection afforded to Australian producers is today among the highest in the world.

Support for biofuels is typically provided to producers through one or more of the following policies:

- Support for the construction of processing plants via grants, subsidised interest rates on loans, or government-guaranteed loans.
- Support for the production of biofuels via per-litre payments, import tariffs on the same biofuels or closely competing fuels, or (excise) tax credits or rebates on biofuels.
- Support for the production of feedstock, such as coupled payments for the production of crops used in the production of biofuels, and subsidies for or in-kind provision of inputs such as irrigation water or fertilizer.
- Support for value-adding factors used in the production of feedstock, such as area payments for crops used as inputs to biofuels.

Government procurement – *e.g.* target minimum shares for biofuels in the fuel purchases of government car fleets or municipal buses – has also played an important role in stimulating the market for biofuels. In the presence of trade barriers, they also have the

effect of stimulating domestic production. In recent years, such renewable-fuel requirements have been expanded to embrace the wider market for transport fuels in general.

Thus, for example, in 2003 the European Union (EU) established a target of biofuels supplying 2% of motor fuel requirements by 2005, and 5.75% by 2010. In August 2005, the U.S. Federal Government established a "Renewables Fuel Standard" (RFS) that requires that at least 4 billion gallons (15 billion litres) of ethanol and biodiesel be used nationwide in 2006, ramping up to at least 7.5 billion gallons (30 billion litres) in 2012. Several U.S. states, such as Hawaii and Minnesota, had already established minimum renewable-fuel requirements (Hunt *et al.*, 2006), and several others have since followed suit. Ethanol produced from agricultural residues, woody biomass, fibres, municipal solid waste, switch grass, and at facilities where animal wastes or other waste materials are digested or otherwise used to displace 90% or more of the fossil fuel normally used in the production of ethanol, will qualify for 2.5 credits for every gallon of ethanol until 2013 (Washburn and Jennings, 2005).

Features

Objectives

Policy makers have used numerous arguments for supporting the domestic production of biofuels. As with any public policy, one has to recognize that the official rationale may bear little relation to the real motivation, which is usually the result of a complex political calculus. However, analysts must take the ostensive reasons as their starting point. The reasons most commonly given are:

- Energy security. There are two elements to energy security: assurance of supply and protection from wild swings in fuel prices. Governments frequently combine these two notions and equate energy security with energy self-sufficiency. That is to say, they assume that the greater the share of energy – any energy – produced domestically, the more secure will be a nation's energy supply. This assumption frequently ignores the potential that always exists for disruption of domestic production, such as through natural disasters.
- Environment. The environmental merits of biofuels initially were secondary to the other justifications given for supporting their development. It was known already in the 1970s that their combustion typically yielded lower amounts of sulphur dioxide and particulate matter than gasoline and petroleum diesel. But nowadays, biofuels are promoted as much for their life-cycle emissions of greenhouse gases, especially carbon dioxide (CO2), as for their superior characteristics in respect to emissions of most pollutants.
- Rural development. Again, what this means to policy makers often differs from what it means to economists. To policy makers, rural development can mean simply transferring income from other segments of society to farmers or farm communities. No doubt, support for biofuels both increases demand for certain farm outputs, which in turn also leads to higher demand for suppliers of farm inputs. The construction of a biofuels plant in a rural area creates temporary employment and its operation more permanent jobs.

In addition to the above, policy makers often cite macro-economic reasons for supporting domestic production of biofuels, such as improving the balance of payments. But these reasons are general and often invoked in support of any import-substitution policy.

Effectiveness

Looking only at the positive side of the ledger, it is easy to see why government support for biofuels has been popular in most countries. However, there are some negative effects that need to be taken into account as well. Whether current policies on balance promote sustainable development is rarely scrutinised.

To the best of our knowledge, the macro-economic effects of policies to promote biofuels have not been modelled. Before that can be done, the subsidies need to be quantified and other information required for input into computerised models needs to be assembled. By contrast, numerous studies of local economic impacts of biofuel plants have been generated, particularly for ethanol plants in the United States. But, as Swenson (2006) warns, "There is a tendency for proponents of this industry to overstate, over-describe, and outright double-count economic activity linked to ethanol and other biofuels production." The following paragraphs therefore discuss only the effects of the subsidies on the major public-policy goals that they are supposed to address.

Energy security

If security is defined in terms of avoiding or mitigating the high cost of a disruption – which primarily manifests itself in terms of price spikes and localized temporary shortages (sometimes themselves an indirect result of price rises) – subsidized biofuels have made little evident contribution to energy security in OECD countries. The notion that support for biofuels has a dampening effect on oil prices does not appear to be supported by the evidence accumulated so far.

For one, prices for ethanol and biodiesel tend to track (after-tax) prices for competing petroleum fuels, albeit sometimes with a lag (because of the medium-term contracts under which some ethanol is purchased); this market verity is acknowledged even by the USA's National Corn Growers' Association, who writes on their web page (www.ncga.com/ethanol/main/FAQ.htm): "Ethanol prices are highly correlated with the price of gasoline and gasoline blending components." Thus, when prices for gasoline rose in the United States in the fourth quarter of 2005, so did spot prices for ethanol. During much of the first half of 2006, spot prices for ethanol actually exceeded those for gasoline in the United States. That run up in prices has been attributed largely to the phasing out of MBTE (methyl tertiary butyl ether), an alternative fuel oxygenate that had been one of the primary additives used in reformulated gasoline. In Australia in mid-2006, large petroleum companies were being blamed for not passing on the value of the federal ethanol subsidy to consumers. In response, the Commonwealth Treasury ordered the Australian Competition and Consumer Commission to start monitoring the retail prices of ethanol-gasoline blends across the country.

Whereas biofuels contribute to the diversification of supplies, they are also subject to the vagaries of the weather, notably drought or freezing, and disease. In 2004, a drought in India limited the amount of sugarcane feedstock available for bio-ethanol production, prompting a relief of the 5% blend mandate and pulling in significant volumes of imported bio-ethanol, mainly from Brazil (Kojima and Johnson, 2005). In the United

States, low corn supplies due to a drought that started in 1995 and continued into 1996 drove up ethanol prices dramatically in the State of Minnesota and led to a 60% decline in year-on-year production (Wirtz, 2001; Crooks, 2004). In 1970-71, a fungal corn blight laid waste more than 15% of the North American corn crop. Currently soybean rust is a concern.

Environmental effectiveness

Biofuels have been credited with reducing emissions of particulate matter, carbon monoxide and sulphur dioxide (SO_2) in cities in which they have substituted for more-polluting fuels. Ethanol's particular advantage is its high oxygen content (35%). The higher the oxygen content of a fuel, the more complete is its combustion. Ethanol therefore produces less carbon monoxide and unburned hydrocarbons than gasoline when burned in an internal combustion engine. It also displaces benzene, a potentially harmful component of gasoline. In some vehicles, mixing ethanol with gasoline can increase emissions of acetaldehyde, a toxic pollutant (see, *e.g.*, Reading *et al.*, 2002), but these emissions can be controlled through the use of advanced catalytic converters.

Numerous studies (*e.g.*, National Traffic Safety and Environment Laboratory, 2004; Biodiesel Advisory Council, 2005; Biofuels Taskforce, 2005) have shown that, on balance, vehicle emissions from biodiesel are less than from petroleum diesel. The exception is nitrogen oxides (NO_X), vehicle emissions of which are higher when using biodiesel blends than pure petroleum diesel.

The impact which subsidies to biofuels have had on global emissions of greenhouse gases is more difficult to determine. One of the most controversial debates relating to biofuels concerns their net energy balance, which in turn largely determines the net carbon balance. The most recent and authoritative studies on this subject (Farrell *et al.*, 2006; Hill *et al.*, 2006), find that producing ethanol from maize yields approximately 25% more energy than the energy used in its production, though most of this gain comes from counting the energy contained in the co-product, dry distillers' grain, which is used as feed for livestock. By contrast, Hill *et al.* (2006) found that biodiesel made from virgin soy oil yields 93% more energy than invested in its production.

Life-cycle emissions of GHG concern more than just the CO_2 emitted from the energy used in producing biofuels. Application of nitrogenous fertilisers and incorporation of plant biomass into the soil can also cause microbially mediated production of N_2O, which when released to the atmosphere forms a potent GHG. Taking these additional emissions into account, Hill *et al.* estimate that, on a life-cycle basis, the production and use of ethanol from maize releases 88% of the net GHG emissions of production and combustion of gasoline on an energy-equivalent basis. For biodiesel derived from soy, they estimate that life-cycle GHG emissions are 59% of those of petroleum diesel. They add (p. 11207), "It is important to note that these estimates assume these biofuels are derived from crops harvested from land already in production; converting intact ecosystems to production would result in reduced GHG savings or even net GHG release from biofuel production."

Hence, all else equal, by stimulating production of ethanol and biodiesel from crops grown on existing farmland, some reduction in CO_2 emissions has been achieved. Not else is always equal, however, at least not for ethanol. In North America, some ethanol is sold as E85, a blend of 85% ethanol and 15% gasoline. Only vehicles designed to be able to handle fuel with such a high ethanol content – so-called 'flexible-fuel vehicles' (FFVs)

– can operate on E85. Because of the peculiar incentives offered through laws that credit higher than actual fuel economy for the purpose of calculating Corporate Average Fuel Economy (CAFE) standards, however, the FFVs manufactured in North America tend to be larger than average. Of the 34 FFVs from the 2007 model year rated by the U.S. Environmental Protection Agency, 26 have 5.3-litre engines and obtain only 16 miles per gallon (14.7 litres per 100 kilometres), or worse, in simulated city driving (www.fueleconomy.gov/feg/byfueltype.htm). Therefore, to the extent that policies promoting ethanol have encouraged greater uptake of FFVs with relatively poor fuel economy, the resulting increased overall fuel consumption may have offset some of the already modest GHG benefits of replacing gasoline with ethanol.

One environmental benefit of some biodiesel production is that it provides a way to utilise waste cooking grease and low-value tallow. However, in some countries, like the United States, the rate of subsidisation of biodiesel produced from virgin vegetable oils is greater than for the production of biodiesel from tallow or waste cooking oils, which has limited the benefits that could otherwise have been achieved.

Social effectiveness

As a policy for transferring wealth to people living in remote rural areas, support for the production of biofuels shares characteristics with support provided indirectly for other crop-based agricultural products. The main one is that the transfer efficiencies of the policies are low. That is because, in order to receive the transfer, the recipient must spend money – particularly on inputs (seeds, farm machinery, fuel, fertiliser and pesticides), as well as on any land that is leased and for hired labour. In addition, often the money passes through the hands of intermediaries, such as crushers and refiners, who usually take their own cut.

Some of these actors are also living in rural areas, but by no means all. Allowing for poor transfer efficiency, how are the benefits to farmers – however small or large – distributed? No study has been done that empirically traces the flow of money between taxpayers or consumers and farmers associated with support for biofuels, but some indication of the possible distribution of support can be garnered from studies of the distribution of agricultural support in general, as well as to the specific crops used in biofuels production. The Environmental Working Group (www.ewg.org/farm), a non-profit organisation, has calculated that half of all USDA programme payments to U.S. growers of corn during 2004 went to the top 6% of recipients. The corresponding concentration ratio for soybeans was 7.5%.

The degree of pass-through of profits from processing vegetative feedstocks into biofuels depends in part on market structure. Where there is vertical integration between feedstock production and processing into fuel, the chances of farmers earning profits from sales of biofuels when prices are high should be good. According to Wirtz (2001), in 2000 about 80% of the existing and then planned ethanol plants in the upper Midwest states of the United States were owned as farm co-operatives, including 12 of Minnesota's 15 plants, with a combined membership of 8,750 corn farmers. Farmer-owned ethanol co-operatives provide "value-added" payments – profits paid out to farmer shareholders – on top of the market price paid to farmers for their corn. With the high rates of return on investment witnessed in recent years, these value-added payments can be substantial. However, equity ownership carries risks as well. The same co-operative shareholders would also have to carry the fixed costs of the plants in which they invest, or sell their crops for less than they could obtain in other (*e.g.*, feed-corn) markets, if and

when the market for the biofuel slumps. Or, to quote Swenson (2006), "Remember, those multipliers, whatever they end up being, also work in reverse."

Cost-effectiveness

Whether other policies would have yielded the same benefits for an equivalent or greater opportunity cost to the economy is an open question. (See, for example, Kampman and Boon 2005.) Take one of the rationales for supporting biofuels, their ability to displace imported petroleum products. Patzek (2006), taking into account the low net energy efficiency of converting corn starch to ethanol, and the lower thermal value of ethanol compared with gasoline, has estimated that, as of mid-April 2006, the US taxpayer was paying almost $16 in subsidies for every gallon of premium gasoline displaced by corn ethanol. For that amount of money, there are likely to be many options for reducing consumption of gasoline that are more cost-effective than subsidizing ethanol.

Similarly, whether border protection, combined with production subsidies, has resulted in greater reductions in GHG emissions than could have been achieved with no border protection and only tax preferences is not self-evident and certainly worth examining in a deeper analysis. Most recent studies show, for one, that net GHG savings (compared with gasoline) for ethanol derived from sugarcane, the main ethanol feedstock used in Australia and Brazil, are much greater than for ethanol derived from cornstarch, sugar beets, or wheat, the feedstocks used in most OECD countries (IEA, 2004).

Incidental impacts

Current support policies for biofuels have a strong domestic focus. To the extent that policy makers acknowledge effects outside their own countries, they generally stress three types, all positive:

- Pecuniary: Supporting the substitution of gasoline and diesel by biofuels is supposed to reduce consumption of the former, and thereby reduce pressure on prices for petroleum products. Since the before-tax prices for petroleum products are generally set in global markets, all consumers benefit.
- Knowledge spillovers: National expenditure in support of research and development related to biofuels generates a public good in the form of scientific and technical knowledge. As well, as experience with producing the biofuels cumulates, ways to improve the efficiency of the production process are discovered. Some of these ideas are shared with (or licensed to) producers in other countries, thereby helping them to lower their own costs.
- Environmental externalities: To the extent that biofuels replace fossil fuels, they yield some reduction in global CO2 emissions, depending on what inputs were used in producing the feedstock, powering the refineries, and transporting the fuels to final consumers.

Other incidental impacts are less likely to be acknowledged. One effect of the common practice of exempting biofuels from part or all of the excise tax on transport fuel is that it has altered the way that revenues are collected and disbursed. In the United States, for example, the introduction of tax relief on gasohol – gasoline blended with ethanol – had the unintended economic consequence of reducing appropriations from the Highway Trust Fund even to states that sold no gasohol. Rask (2004) estimates that

between 1981 and 1996, U.S. state governments lost between USD 3.2 billion and USD 7.6 billion in highway funds (compared with the counterfactual of no federal tax relief on gasohol), and that some of the biggest losers were states such as Florida, New York, and Pennsylvania, which during those years sold very little fuel containing ethanol. These numbers do not count revenue losses from exemption of excise taxes levied by the states themselves on motor fuels.

Rarely do policy makers discuss other countries or groups other than domestic producers who lose out from a subsidy. The first group in the case of biofuels is those adversely affected by lost opportunities for production, and lower product prices. These include foreign suppliers of both biofuels and the fossil fuels that biofuels displace.

In addition, there are domestic (and, to a lesser extent, foreign) producers who as a result of the policy must pay higher prices for the resources used in producing biofuels. This group would include producers of other crops, but particularly livestock producers heavily dependent on grains for supplementing the diet of their animals. High prices for cornstarch could have a dampening effect on growth in the market for biodegradable plastics also.

A recent study by the Centre for International Economics (CIE, 2005) showed that the gains to farmers from Australia's support for ethanol production would be outweighed by losses to the livestock industry caused by increased higher costs for domestically produced grains. At some point, imported grains would be cheaper to use than domestic feedstocks, despite Australia's distance to other sources of feed grains, and the costs imposed by quarantine and inspection. Similarly, a study of Minnesota's biodiesel mandate by Runge (2002) found that each dollar in benefit to soybean farmers would cost consumers between USD 2.13 to USD 6.40.

And, finally, there are final consumers of the products (sugar, plant oils) that experience a welfare loss because of higher food prices. Such rises in commodity prices, in large part attributed to surging demand for biofuels, were already evident in 2006. According to Unilever vice-president, Alan Jope, half the cost of producing a tub of margarine is the edible oils from which it is made (*e.g.*, rape oil and palm oil), and the prices of those commodities have risen by 30% per cent this year (Mortished, 2006). The prices of internationally traded sugar and maize have also risen substantially in the year to August 2006 (www.fao.org/es/esc/prices).

The greatest negative impacts on the environment from subsidies for biofuels are those stemming from the large-scale, intensive production of feedstock grains, oilseeds and sugar beets. Corn is a crop that requires considerable volumes of fertilisers (**Table 2)** and pesticides, and in some places irrigation water. In Europe, canola typically requires heavy doses of insecticides. In the OECD area, almost no crops grown for transformation into biofuels are produced using organic methods. (There are a few notable exceptions, however. See, for example, "Organic Biodiesel Could Pay Off for NW Farmers", http://nwpr.org/HomepageArticles/Article.aspx?n=1900. The small amounts of certified organic ethyl alcohol produced are used mainly in cosmetics). Although it could be argued that these crops would have been produced without subsidies to biofuels, a large part of this argument depends on one's assumptions regarding the continuation of subsidies that benefit these crops under prevailing agricultural support policies. Were all crop subsidies to be eliminated, it is likely that expenditure on chemical inputs in the formerly subsidizing countries would decline. At the transformation stage, emissions from ethanol refineries (most of which are located away from urban airsheds) can be

significant, and at times have been in violation of air-quality standards (Associated Press, 2002).

Table 2. Estimated primary nutrients applied to selected crops grown in the United States in 2003

	Lbs/acre	Kgs/Hectare
Corn		
— Nitrogen	136	152
— Phosphorus	59	66
— Potassium	85	95
Soy beans		
— Nitrogen	23	26
— Phosphorus	49	55
— Potassium	89	100
Wheat		
— Nitrogen	67	75
— Phosphorus	35	39
— Potassium	44	49

Source: USDA/NASS and AAPFCO/TFI.

Long-term effects

Over the longer term, to the extent that there are rents (*i.e.,* excess profits) generated by policies supporting biofuels, these will tend to be capitalised into the value of immobile assets, notably farmland and biofuel refineries. Ultimately, therefore, the main beneficiaries among primary producers will be owners of farmland and their heirs, and the original investors in biofuel plants. Farmers who lease land to grow feedstock for biofuels will be charged more in rental payments, and buyers of such land or of biofuel plants will pay a price that is increased by the discounted stream of future subsidy-boosted profits.

A possible long-term impact that is admittedly difficult to substantiate, much less quantify, is the chilling effect that support to biofuels could have on other transport alternatives. Assuming, as even groups favourable to biofuels do (*e.g.*, Worldwatch Institute, 2006), that biofuels can make only a partial contribution to the supply of liquid transport fuels; they will always need to be consumed with petroleum fuels. That will tend to reinforce the existing, internal-combustion-engine dominated transport system and, all else equal, discourage the emergence of alternative technologies and transport approaches.

Policy reform

Reform of domestic policies supporting biofuels could mean any of several scenarios. A standard economic definition of comprehensive reform – the baseline – would probably involve the complete elimination of all support for domestic production of biofuels, including support for production of the feedstock and for the construction of biofuel refineries; the elimination of tariff and unwarranted non-tariff barriers; and the realignment of domestic excise and value-added taxes on biofuels such that tax differentiation between biofuels and their petroleum-derived substitutes reflected only differences in emissions from combustion.

Variations on the baseline scenario could be envisaged that allowed for a phased reduction in support, different degrees of reduction of support, continuation of support for the vegetative feedstock, or any combination of these.

The economic effects of reform could be examined at several geographical levels. In countries currently subsidising the production of biofuels, comprehensive reform would create both winners and losers. The budget – *i.e.*, taxpayers – would benefit from a reduction in government expenditure. This gross benefit would be broad-based and thin. Elimination of an annual expenditure of, say, USD 6 billion translates into an average of USD 20 per person a year in a country with 300 million inhabitants, perhaps twice that per taxpayer. However, looking to the future, the annual gross savings would be greater to the extent that growth in subsidized domestic production, and thus subsidies, was halted and reversed. With no changes in policies, in the United States and the EU this would be considerable, given current renewable-fuel mandates.

The effects of reforming biofuel subsidies in OECD countries would depend to a large degree on how the reforms were implemented and on developments in the markets for fossil fuels. Under a low-oil-price scenario, many ethanol and biodiesel producers in OECD countries would not be able to compete with petroleum fuels or imports. That would affect shareholders in biofuel plants in the main (who range from members of farmer co-operatives to individual tycoons), and to a lesser extent farmers. Biofuel plants are much less flexible than farms in what they produce. Moreover, OECD producers of biofuel feedstock always have the option of selling their corn or sugar beets or oilseeds for food or feed, though with reform of biofuel subsidies the price of their crops would probably fall.

Such economic scenarios would have social implications. In OECD countries, the main social effects would flow from lost jobs at biofuels plants. These jobs, since they were often expressly subsidised in order to increase local employment in rural areas, would in some areas be difficult to replace in the short run. As well, to the extent that the subsidisation of biofuels displaces imports of transport fuels (whether biofuels or petroleum fuel), the elimination of subsidised production would redistribute some domestic jobs from the interior of the countries (where the biofuels tend to be produced) to the coasts (where transport fuel demand tends to be concentrated). To minimise negative impacts on individuals, a mixture of passive and active labour-market policies might be required.

Among the likely beneficiaries of subsidy and tariff reform would be developing countries (Amani and Tokgoz, 2006; Steenblik, 2006). Currently, the main low-cost producer of ethanol is Brazil, and the main low-cost producers of biodiesel (based on palm oil) are Malaysia and Indonesia. However, in the presence of high barriers to trade, current production is a poor indication of production potential. Guyana, South Africa, Sudan, and Thailand, are also low-cost producers of sugar and thus potential low-cost producers of ethanol. Similarly, low-cost producers of oilseeds would become likely candidates for exporting biodiesel.

With regard to broadacre oilseeds, such as soy and rapeseed, the world's lowest-cost producers are found in Argentina, Brazil and the Ukraine (UFOP, 2005). (Argentina and Brazil also are large producers of tallow.) But there are many "unconventional" sources of plant oil that could be developed. New investments in *Jatropha curcus* (physic nut) plantations in India, Madagascar and the Philippines by the British firm D1 Oils suggest that these countries could similarly benefit from increased opportunities for trade in biodiesel.

To the extent that elimination of subsidies in OECD countries created opportunities for new or increased exports of biofuels from developing countries (including potentially a number of LDCs), a positive impact could be expected on employment in these countries, and in maritime shipping.

Increased production of biofuels (*e.g.*, for export) might also stimulate the transfer of knowledge and technology to developing-country producers. On the agricultural side, that knowledge would tend to be concentrated on the growing of high-sugar or high-starch plants, and oil-bearing plants, but some of this knowledge would be transferable to food crops. Experience gained in developing countries in the fermentation of crops for ethanol, and their chemical transformation into biodiesel, would have some application to agri-food and chemical industries in general.

The environmental effects of eliminating subsidies and import tariffs on liquid biofuels would depend on a number of variables. Assuming current renewable fuel standards remained in place, and exports from developing countries increased, some of that increased supply could be at the expense of tropical forests. As observed by Steenblik (2006): "*Effects on biodiversity due to changes in or loss of habitats will vary considerably, being greater the more dramatic the change – e.g., from mixed, low-intensity agriculture to intensively farmed monocrops, or from tropical rainforest to managed plantations. However, it is important also to recognize that this is not only an issue concerning new production of crops for biofuels. To the extent that current government support policies maintain agricultural land in production, and that land would likely revert to less-intensive agriculture or forest if the support were withdrawn, there is an opportunity cost associated with continuing these policies in the sense that the resulting level of biodiversity is less than it might otherwise be*".

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Chapter 2. Easing Subsidy Reform for Producers, Consumers and Communities

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Introduction

The subject of subsidy reform has received considerable attention in recent years. However, much of this attention is focused on the end points or goals of reform and less attention has been paid to the actual process of reform. It is generally recognised that appropriately targeted subsidy reform will result in improved overall economic efficiency and will increase social welfare. But not everyone will gain in the short run and some individuals and communities may be adversely affected by the policy change, prompting governments to seek ways to cushion the impacts of reform on individuals and communities.

This paper provides a review of the key issues involved in the provision of transitional support as part of the process of subsidy reform. The potential social consequences of reform for individuals include reduced incomes, unemployment, relocation and retraining, while affected communities may experience flow-on effects from income redistribution, economic structural change and changes in social capital. The paper reviews the rationales for transitional support, arguing that such support may be necessary to reduce the opposition to reform, reduce the negative impacts of reform, and to reinforce policy reform.

Governments have a range of options for helping individuals and communities in the transition: different types of support, primarily involving compensation payments, and active labour market programmes. The paper reviews some OECD experiences with these policy tools in agriculture, fisheries and trade and provides some insights for the design and implementation of transitional measures. The major lesson from this experience is that transitional supports need to be truly temporary and well-targeted if they are to be effective and help to maintain policy credibility for the government. Other key insights relate to the timing and sequencing of reforms, concerns over equity versus fairness, and the need to ensure coherence between transitional programmes and the broader policy settings of economies.

The context of reform

In the late 19th century, an American political commentator, John Jay Chapman, remarked that "*[p]eople who love soft methods and hate inequity, forget this – that reform consists in taking a bone from a dog. Philosophy will not do it*". Just because a particular

reform is a good idea and is judged to be beneficial, this does not mean that it will be easy. Rational arguments, economic findings, reason, or philosophy will not be enough to get the reform done. Much more is required.

Reforming policies by reducing or removing subsidies improves economic efficiency as a whole through a better allocation of resources. Society as a whole will be better off. However, this does not mean that everyone will be better off. In most cases, subsidy reform in a sector will have adverse effects on some individuals, households and communities engaged in the sector, in particular in the short-term. There may also be negative impacts on upstream and downstream sectors. Regional economies that rely on commodities whose prices and production levels fall with reductions in support may also be affected.

Such adverse impacts, or just the threat or prospect of adverse impacts, is one of the major reasons why governments find it difficult to make progress on subsidy reform. And this is despite significant and arguably growing pressures for reform to meet multilateral and bilateral trade commitments and to respond to budgetary constraints.

Social issues in subsidy reform

The process of subsidy reform must take into account a number of key social issues. The most obvious and immediate impact of subsidy reform is that there will be a change in the income distribution between individuals. While there will be an overall gain in welfare, some individuals will be made worse off and some better off as a result of changes in income or wealth. This is effectively the driving force behind the political economy of subsidy reform. Those who stand to gain from the *status quo* or who lose from the reform have the greatest incentive to lobby for the retention of the existing regime or modification of the proposed reform to lessen the impact on their individual or group welfare.

There will also be impacts at the level of the community(ies) in which the affected individuals live. This will vary with the dependence of the community on the subsidised industry, which in the case of some fishing, agriculture and resource dependent areas, can be quite high. There may be a lack of immediate alternative opportunities for employment or economic diversification, reflected in a low resilience in the community to handling change. And there will be effects on activities and communities both upstream and downstream from the formerly subsidised sector.

At the same time, however, it must be remembered that reform can generate new economic opportunities over the medium to longer-term. A more efficient allocation of resources will create a stronger enabling environment in which economic activity can flourish. In the case of the beef liberalisation in Japan, farmers responded to trade liberalisation by shifting to more value-added products and decreasing costs by expanding farm size. When subsidies on grain transportation in Canada were removed, farmers responded to market signals by diversifying crop patterns, increasing livestock production and increasing value-added processing. The underlying goal of transitional support should therefore be to help individuals and communities to increase their resilience and flexibility and to improve the sustainability of the industry.

Rationale for transition support

The reform of an existing policy situation does not by itself justify the provision of transition support. Modern economies are constantly changing as they evolve in the face of technical progress and other external influences, creating winners and losers in the process. It is impossible and arguably undesirable to indemnify all members of society from harms caused by economic change. One of the primary risks in offering support is that the market signals that lead to improved efficiency and productivity may be muted or silenced entirely, adversely impacting the long-term growth and viability of the sector. So care is needed in designing transitional support measures.

Nevertheless, transition support may be an attractive policy option in many cases. The motivation for this may come from reasons of social choice and preferences, political economy, some legal obligations or a sense of moral duty. These different rationales are of interest because different motivations and objectives lead to different reform approaches to obtain them.

Social choice: Social preferences may be expressed for relative income distributions across individuals, communities or sectors. If the underlying preferences have not changed despite the subsidy reform, then it can be argued that transition support will help keep actual income distribution in line with the preferred one. Community concepts of fairness and equity are central to these preferences and how they are manifested in policy.

Political economy: Policies are chosen in order to maximise social welfare according to economic and political constraints. In addition, pressure groups can have influence on policy reform and the distribution of benefits. Transition support, either in the form of compensation or some other policy concession, may well then be the equilibrium outcome of a political process where some stakeholder group or groups apply sufficient political pressure to obtain favourable treatment. The amount of the policy concession is more a function of the influence of the pressure group than the amount of harm that might be incurred.

Legal obligation: the idea of a government "taking" – a reduction in the value of property as a result of government action – is best developed in the United States, although this clearly depends on the laws and constitution of different countries. A central criterion in determining whether a taking has occurred is "reasonable investment-backed expectations".

Moral duty: Finally, there may be a sense of moral duty on the part of the government to offer transitional support. Governments may feel a responsibility to offer compensation subsequent to a policy reform that changes an economic landscape that they had a hand in creating. Governments may also be motivated by genuine concern for less advantaged groups.

Types of transition support

Different reform strategies are possible, depending on the duration of implementation and the level of compensation (**Figure 1**). Gradual reform without compensation reduces interventions over time, significant enough to yield benefits but slow enough to avoid resistance (*squeeze-out*). When reforms are offered with compensation, typically the old policy is terminated and replaced with a series of cash payments (*cash-out*). When these

payments are of unlimited duration, this is termed "re-instrumentation". Rapid reform terminates a policy completely without a phase-out period, either associated with a compensation payment (*buy-out*) or not (*cut-out*).

Figure 1. Alternative subsidy reform strategies

Compensation?	Duration of implementation	
	Long	Short
Yes	Cash-out	Buy-out
No	Squeeze-out	Cut-out

There are several types of or approaches to transition supports in the context of subsidy reform which are discussed below: 1) reliance on existing social assistance, 2) "fiddling" with the reform, 3) economic diversification, 4) compensation, and 5) packaging reforms.

Existing social assistance

Basing transition supports on the generally available social security system, retirement and retraining schemes, or upskilling and training could be regarded as the "do nothing" option or the "cut-out" option. This approach has been used in many countries, particularly for minor reforms where the political weight of the affected groups was not sufficient to create a groundswell of support for extensive new assistance.

This has several advantages in that the support system is already in place and functioning or could be easily adapted, and it is low cost and administratively simple. An example is the additional social security available to fishers in countries such as France and Norway when direct fisheries supports are modified or withdrawn.

However, the existing social security or training schemes may not be sufficiently targeted or easily tailored to the sector affected by subsidy reform. Owing to regional and other disparities, one size does not necessarily fit all. For example, a small coastal French fishing village will not face the same adjustment challenges as a steel town in the heart of the Ruhr valley. In addition, there may be poor political acceptability by the public as well as the industry and workers. Doing nothing does not always sit well with the voters and may be difficult with flagship sectors or sectors with some attachment to society's heritage (such as fishing and farming).

"Fiddling" with the reform

The "fiddling" approach involves longer phase-in periods for reforming harmful subsidies, just as international trade rules generally allow for longer phase-in periods for special and differential treatment reasons. This may include exemptions or carve-outs for specific groups – a good example being the exemption wrought by taxi drivers from the Central London traffic charge (which was not given to other groups such as nurses).

The advantages of this selective approach include the ability to target the reform to specific groups or sectors, the extended time allowed for adaptation, and general political acceptability. However, the extension of the transition period and the temporary exemptions from the reform can become entrenched and permanent. Once governments provide exemptions, there may be doubts about the direction, timing and political commitment to reform. Judgements about equitable treatment are also required. As a result, overall policy credibility may suffer.

Governments who try to minimise social dislocation by delaying adjustment also run the risk of creating a situation requiring greater and more difficult adjustment later on. In the chemicals industry, for example, countries such as the United States which left adjustment to market forces experienced some declines in employment but recovered relatively quickly. In contrast, some countries who delayed adjustment experienced longer periods of turmoil with greater declines in employment in the end.

Economic diversification

Subsidy reform programmes oriented towards increasing economic diversification include the use of active labour market programmes (unemployment insurance, early retirement payouts, counseling and training), regional supports, and aid to industry and infrastructure development. These aids are generally targeted towards individuals and communities. An example is the *Farm Family Restart Scheme* in Australia designed to assist exit of farmers from the industry by giving them access to professional advice on the future viability of their business and other employment opportunities. Over the 7 years up to 2004, 8 700 farmers have accessed the scheme, 7 400 have received professional advice, 1 000 have received re-establishment grants, and 200 have accessed training grants.

There are several advantages to this approach, including enhanced political as well as individual and community acceptance of reform. Individual capabilities and social capital can be deepened, the resilience and flexibility of communities and regions can be strengthened, and the economy can be diversified away from supported sectors. In general, active labour market programmes have proven to be largely successful.

There is some evidence that decentralisation of adjustment policies may be beneficial because different regional effects can be taken into account. It may be possible to base transitional support packages on local information and may allow more targeted actions and policies to be undertaken. For example, fishing industry adjustment in France was assisted by local policies, and some support payments in US tobacco industry case were devolved to the local level.

However, care must be taken to not shift subsidies and support to new industries or to diversify resources into sectors or activities that are themselves still the subject of significant support. There can be other unintentional side effects of the diversification strategy. For example, regional subsidies provided to some companies in the European

chemicals industry were part of the reason for the excess capacity in the 1980s. The subsidies allowed inefficient producers to survive and numbed the ability of efficient producers to sense impending change and adjust to changing market conditions.

Compensation

There are many examples of compensation packages being put in place to assist subsidy reform, including payments for loss in asset value, reductions in prices, elimination of quotas, etc. In the EU and US tobacco industries, for example, compensation was provided to assist individuals whose wealth was in part based on quota holdings. In the Australian dairy industry, an adjustment package was provided to help farmers adapt to the elimination of a price support scheme for manufacturing milk. Two components of the adjustment package were directed to farmers (one for all dairy producers and one to assist those who wished to exit the industry) and a third component was directed to communities in which dairying was an important contributor to the local economy.

Over- and under-compensation are both potentially optimal strategies to overcoming opposition to subsidy reform, where the relative influence of pressure groups is the determinant factor. Policy reform and compensation provide an opportunity to bring the distributional impacts of agricultural policies more in line with current social preferences, implying in some cases a pattern of compensation payments different from that of the reformed policy. Compensation should in every case minimise market distortions. Programmes that are temporary, targeted and tailored will minimise costs and allow beneficial market adjustments to occur.

However, there are also certain disadvantages to this approach. Compensation can itself become entrenched and difficult to remove, as is the case with all types of transitional supports. The credibility of governments with regard to the true commitment to reform can be questioned, while they may also be accused of "picking winners" and making bad selections of industry segments to support. In addition, compensation linked to subsidy reform can itself have high budget costs.

Packaging reforms

Subsidy reduction can be packaged with other fundamental policy changes or combined with other changes to the regulatory environment governing an industry to ease the adjustment process. In the case of fisheries in New Zealand, for example, the early 1990s saw a major shift in policy towards the sector. Subsidies were eliminated virtually overnight, a major change in management philosophy was introduced in the form of rights-based management and individual transferable quotas, and there was a minimum buy-out of existing rights. Subsidy reduction alone would not have been sufficient to create a sustainable fishing sector and would have caused substantial financial and social distress. It would also have an impact on fish stocks due to overfishing when fishers increase effort in order to try and cover marginal costs. In New Zealand, subsidy reduction went hand in hand with a shift to a management regime (individual transferable quotas) which helped give those remaining in the fisheries sector a good chance at creating a profitable business environment, while allowing those who wished to leave to be bought out by those who wish to remain.

Devising a roadmap for reform which packages together several offsetting measures may reduce political opposition to policy changes as well as increase transparency.

Reducing subsidies while also changing regulatory and management regimes can improve the overall functioning of the economy. However, correct policy sequencing can be difficult and "big" reform packages are often politically difficult to sell unless there are external driving circumstances.

Ensuring successful reforms

In summary, a successful subsidy reform process which includes transition supports depends on a number of factors:

1) a good enabling environment – including macroeconomic settings, the social security system, labour market programmes, and a well-funded education system;
2) a clear exit strategy – where programmes are time bound from the outset. If not, they risk preventing the adjustment they were designed to facilitate. For example, a programme that compensates farmers for the fall in prices or revenues resulting from reform or liberalisation beyond the short-term may have exactly the opposite impact to that intended. Moreover, such programmes are extremely difficult to terminate. If they continue in place for a long time they may create new distortions;
3) clear and agreed objectives – where adjustment policies are well targeted to specific adjustment aims and intended beneficiaries. Consideration needs to be given to whether up or downstream industries should also be included in adjustment measures or whether economy-wide measures relating to reconversion or redeployment of resources tied up in affected industries are sufficient. More generally, from a political economy point of view, the equity issues relating to who gets assistance and who pays, needs careful consideration in the design of any transition package;
4) policy coherence – when designing several programmes for adjustment, these should be mutually consistent and integrated. A well designed subsidy reform scheme would include coordinated and consistent entry and exit elements, and coherence with existing policies such as the general safety net.

Conclusions

In conclusion, there is no one true and tried formula for designing and implementing transition support policies in the context of subsidy reform. This varies from country to country and from sector to sector. Transition support should help producers who want to leave the industry to do so with dignity and financial standing or to diversify into other activities. Here, financial grants and job training for other activities, buyouts and early retirement plans are useful. Transition supports should also aim to raise the stock and quality of the human, material and social capital of the sector in question in order to improve the competitiveness or viability of those who stay in the sector, both individually and from a community perspective.

Political economy considerations have tended to dominate the design of transition support programmes. The use of compensation payments as a means of reducing opposition to reform is pragmatic but can set the sector and government up for unintended effects. Careful design is therefore needed.

For any adjustment process to be successful it is important for those affected to believe in the irreversibility of the policy changes being made and in the time-limited

nature of the assistance measures being offered. Clearly, one-off measures or multi-year schemes with provisions known in advance will be more plausible than year by year decisions. Governments therefore need to be clear and transparent about their intentions and, in so far as political processes allow, should hold firm to the reform and adjustment measures as originally announced. The prior planning and consultation process should be managed so as to limit the risk of moral hazard or adverse selection.

The reluctance of governments to undertake reform suggests that they may have underestimated the adjustment potential of industry. Reduction of subsidies presents severe challenges to industry and governments alike, but it also generates new opportunities. We have seen this in many cases where the potential of producers to transform changing conditions into new opportunities has been demonstrated. For example, this has been accomplished by shifting to more value-added products, by expanding firm size, by consolidating companies, and by developing export opportunities. Adjustment packages associated with subsidy reform need to be designed to unleash the potential of the private sector to create new opportunities in response to changing conditions.

PART II

Case Studies of Subsidy Reform and Sustainable Development

Chapter 3. Agriculture

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Introduction

This paper addresses the political economy of transitional support in the context of subsidy reform in the agricultural sector in the European Union (EU). Agriculture is acknowledged as one of the most protected sectors in many developed country economies. As a consequence, it has proven a sensitive sector within which to seek multilateral agreement on reforms, within the context of the World Trade Organisation (WTO). Nevertheless, acceptance of the desirability of further trade liberalisation in agriculture, as part of a wider package, has gained credence within the European Union (EU) in recent years and this, combined with domestic and budgetary pressures, has given impetus to domestic policy reform within the sector.

This paper examines the arguments behind the various applications of transitional support, and gathering evidence of its apparent impacts, from a variety of examples drawn from within the EU. An initial section discusses the theory and rationale for transitional measures in the specific context of achieving agricultural policy reform. Section 2 then examines how these measures have been applied in the EU and attempts a brief evaluation, based upon the limited research evidence, of their performance in respect of both effectiveness and efficiency. The final section presents some tentative conclusions about their usefulness and likely future continued use, in this context.

Theory and rationale for transitional measures in agricultural policy reform

Understanding the nature of transitions - simple markets versus dynamic systems

In economic theory, the process of sectoral adjustment is generally assumed to occur in response to a variety of changing market and policy circumstances in such a way as to enable resources to move freely between different businesses or types of productive activity. In the simplified models of neoclassical market analysis, these movements are immediate and without cost. However, it is recognised that in practice, this process is frequently more drawn out, complex and/or irregular, and that in some cases this can lead to significant inefficiencies and/or externalities. The main reasons for divergence between the theory and the reality are usually combinations of the following:

1) *transactions costs* – where actors in markets face adjustment or information costs in picking up and responding to market signals and thus do not adjust smoothly and incrementally to changed conditions;

2) *imperfect substitutability* – where land, labour or capital cannot be perfectly substituted by other forms or sources when their relative costs shift as markets evolve;

3) *"thresholds"* which trigger change between different system "types" – non-linear adjustment processes usually related to shifts in technology or organisational structures, such that up to a certain level, change is not cost-effective and therefore very little occurs, and then beyond a certain point it becomes possible to adopt a new system in order to achieve the same endpoint more effectively, thence leading to significant change. This is a systemic result of combinations of transactions costs and imperfect substitutability;

4) *path-dependency* – the situation where the options for making adjustments depend upon the availability of resources and conditions which are themselves determined by past trends or choices – *i.e.* we don't start from a "tabula rasa" every time change to an economic or policy system is contemplated, and our current and past positions influence the range of possible future options, at least in the short to medium term; and

5) *irreversibility* – we know that once made, some choices cannot be reversed at a later date if we wish to do this, for practical reasons (*e.g.* limits on timescale, technological capability, scientific understanding). Examples might include a decision to consume a finite resource such as fossil fuels, or eradicate a particular species of plant or animal, or a decision to abandon flood defences and allow coastal retreat, in certain locations. None of these decisions could easily be reversed, once implemented.

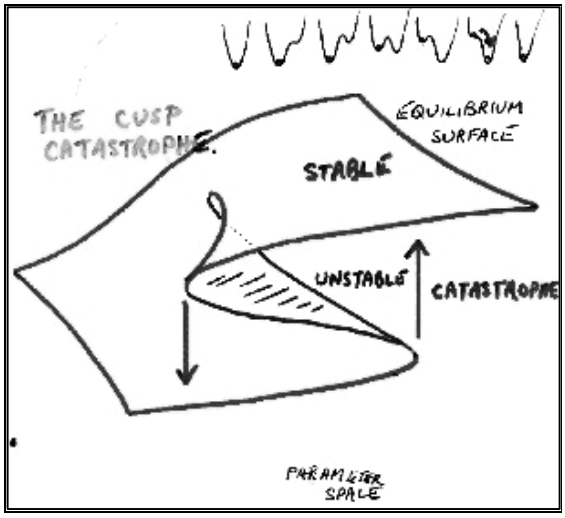
These considerations highlight the need to consider the nature of policy change that is being contemplated in any reform process. In many circumstances, ongoing policy development or review may introduce minor refinements to basic interventionist or market-regulating mechanisms over a number of years. In these cases it may be argued that the above points are not likely to be significant, and thus gradual adjustment by the beneficiaries of policy can be anticipated. However, where the changes to policy instruments are major – involving new mechanisms or significant reductions in levels of intervention over a relatively short time period, these factors could be an important consideration. It has been widely argued within the EU that each of the most radical episodes in recent reforms to the Common Agricultural Policy (CAP) (1992 and 2003) should be considered as major change.

The non-linearity and threshold-sensitive nature of real-world socio-economic responses to change can perhaps be illuminated by some approaches used in the scientific analysis of systems change. In dynamic systems theory, a variety of approaches seek to conceptualise and understand the different properties of systems, including catastrophe theory and chaos theory.

Catastrophe theory was a concept originally developed by French mathematician René Thom in the 1960s, attempting to describe how certain kinds of system exhibited sudden and dramatic changes between states, rather than smooth and incremental change. He conceived of a three-dimensional plane via which to portray these systemic differences (**Figure 1**).

Chaos theory (Gleick, 1987) has been used to examine the specific phenomenon of the influence of chance or randomness in the way some systems behave. It explains the contrast between standard statistical theory, which tends to model systems in which the effects of random events will cancel each other out over time, and evidence that in practice, the effects of random events can frequently be magnified through feedback loops, to dramatically alter eventual outcomes. This can be a useful concept in seeking to understand the observed phenomena of path-dependency and irreversibility in systems behaviour (Gleick, 1987, discusses a number of examples from economics and biology).

Figure 1. Catastrophe Theory – an illustration



Explanation: systems can operate at any position from the back to the front edges of the plane illustrated. If towards the back, they will adjust continuously and incrementally to change, whereas if nearer to the front, they will experience sudden jumps between alternative states. This creates thresholds of response and in some situations, transitional states which are less stable than those states from which they originated, or towards which they may further move ('degenerate'). The drawings of a ball on a curved line at the top of the picture also illustrate these different states. The curved line represents gradual shifts in the nature of the system and the ball shows how much change occurs before its position shifts, but that once it shifts, this is both markedly and irreversibly.

Source: after Rohm, 1971, and Zeeman, 1977.

Such "systems approaches" to understanding real-world phenomena can help us in considering how processes of adjustment occur within socio-economic and cultural contexts, as well as in relation to the environment. Like purely ecological systems, those involving social and economic as well as environmental variables are also complex, dynamic and thus can be subject to these kinds of behaviour.

Issues of concern in relation to sectoral adjustments

Systems models and their economic characteristics as listed earlier, help to explain why environmental organisations and experts have, in many situations, been critical of the pace of adjustment in sectors such as agriculture, in the development of modern economies. Particularly in Europe, the longstanding interdependence and co-evolution of ecosystems and biodiversity with socio-economic systems of primary production is well known (for example, Baldock, 1995). Therefore, the non-linear and potentially irreversible character of change in agricultural systems means that there is frequently a

risk associated with the process of restructuring, in respect of the multifunctional characteristics associated with particular farming systems – most notably, their socio-cultural and/or environmental by-products.

As widely recognised in the EU and increasingly at a global scale (OECD, 2001), agriculture is one sector in which the phenomenon of joint production of marketable products alongside valued environmental characteristics may be particularly pronounced. Also, longstanding 'traditional' farming systems have given rise to a whole range of cultural norms and practices including unique local events, speciality products, cultural behaviours, language and customs. These are often valued by inhabitants and visitors, and may underpin associated economic potential in rural areas, such as their attraction for tourism or leisure. Thus there is a risk that when underlying technical and structural systems in farming change, in response to policy reform, the precise mix of other environmental and social benefits that accompany existing production modes and structures could be lost, perhaps irreversibly, in that process.

Losses could be related to non-linear responses within the economic structures themselves, such as when the loss of permanent farm labour means non-income generating tasks, such as landscape maintenance over the winter, cease to happen. Alternatively, they could arise from non-linear responses in the nature of the joint production systems, such as where cheap fossil fuels encourage farms to mechanise and install oil-fired domestic heating, thus both rendering unnecessary traditional rotational hedgerow management (to generate woodfuel for domestic heating), and promoting annual mechanised trimming. In this instance, the joint production relationship between woodfuel production and wildlife from traditional hedgerow management is strong and positive, whereas that between annual flail trimming and wildlife can be neutral or negative, particularly if hedges are trimmed during the bird nesting season (more of a risk on pastoral farms).

Systems' understanding also has implications for economic concerns. Most EU farms are micro-businesses (with 1-5 employees), and research has shown that their behaviour in response to market changes tends to exhibit a range of classic *market imperfection* issues. These include: poor access to information, capital, skills and training leading to sub-optimal degrees of adjustment which can be compounded by relatively risk-averse behaviour; and a relative lack of market power (an inability to pass costs on up or down the food chain – making them relatively vulnerable to external shocks).

These characteristics suggest that when operating in response to changing market or policy-induced signals, the degree and direction of market adaptation will be less than optimal (Dwyer *et al,* 2004). For example, if new policies significantly increase direct costs to farmers and these cannot be passed up the supply chain, the effects upon farm business survival could be disproportionately severe. Such shocks might lead either to widespread business consolidation in the sector, creating oligopolies which could be anti-competitive in the longer term, or to the complete collapse of a particular industry in a particular location, which may not be easily replaced. These kinds of argument have been used as a rationale for government intervention in respect of the small business sector in general, and agriculture in particular.

These considerations help to explain why stimulating change through policy reform is often viewed politically and administratively as a difficult process to achieve successfully, and fraught with a degree of significant risk. This in turn gives rise to governments attempting to manage the process of change, often using transitional measures or policy 'adjustment packages' to accompany significant policy reforms.

At the same time, it is also apparent that a call for transitional measures could be made as much as a tactic for delaying or resisting change, as for embracing and supporting it in a measured way. Alternatively, policy makers may feel obliged to introduce transitional aids in response to rent-seeking behaviour among producer groups and interests when there is little firm evidence to support the widespread need for such measures. In farming, the so-called 80:20 characteristic structure of the sector (eighty per cent of the product comes from twenty per cent of the farms) is well understood. Yet in many cases although the arguments for transitional measures focus upon the needs of the smaller producers, in practice they may equally or more generously support the largest. Thus issues of additionality, targeting and cost-effectiveness can be critical, in this context.

Options for applying transitional measures

From a policy design perspective, it is possible to choose one of several approaches to managing the environment in which agricultural change occurs, in response to significant policy reforms. Briefly described, the options and their implications are usually as follows:

1) *Laissez-faire* – offer no particular support and be prepared for rapid change and some significant losses, as businesses are exposed to the full shock of the policy reform as soon as it is implemented;

2) *Cushion* – take steps to slow down the rate of change or smooth the implementation processes of reform, phasing them in over time - to enable more prior or gradual adaptation and help to maintain systems linkages, thus aiming to achieve more measured adaptation with fewer business failures and less collapse in specific practices;

3) *Toolkits and capacity-building support* – put in place assistance which is designed actively to promote more benign/sustainable patterns of change, correcting market imperfections, reducing transactions costs, improving substitutability or increasing the reversibility of changes, as well as strengthening positive joint production relationships wherever possible. Such aid may include assistance for those exiting a sector as well as aid for those who remain (as both are, in effect, adaptations to changed circumstances).

4) *Transitional subsidies* – offer a specific, time-limited compensation payment or lump sum to those who will lose out from the reform process.

Experience from reform adopting the first approach (most notably, New Zealand during the 1980s – see Meister and Shakur, 2002) suggests this has the benefit of being unequivocal and stimulating a significant shift in producer and supply chain behaviour, but that it also involves social and environmental risks and losses. Some experience of the second option suggests that it may simply defer reform and thus may undermine its own rationale, with hindsight (*e.g.* Ruseski, 2005). The fourth tactic has been long advocated in respect of EU agricultural policy reform as a transition mechanism for reducing protection – the famous "Tangermann bond" option (most recently reconsidered in Swinbank and Tranter, 2004).

However, it has not been used in this form due to continuing disagreement about the desirability of such a radical reform, among other issues. Nevertheless, something approaching this has been offered to the ACP countries as a result of the 2006 EU

agreement on reform of the sugar regime. Because they would lose their preferential trading terms as a result of the significant cut in the guaranteed price for sugar within the EU, the Union has promised them funding for rural development in a one-off adjustment package. It remains too early to evaluate the effectiveness of this transition measure but it is clear that the affected countries have not been entirely satisfied with the package, claiming that the sums offered are insufficient.

The rationale for, and the impacts of, the third approach are perhaps the most complex and thus require some explanation. The aim will generally be to target enhancement of the competitive ability of the sector or the locality, whilst simultaneously strengthening or protecting the environmental and socio-economic assets associated with it. Because of the inherent tensions between these goals, this needs to be done in an integrated way such that it has the ability to conserve, rather than undermine, beneficial systems linkages (economic-social-environmental).

Commonly, in the context of agriculture this implies a number of tactics. These include promoting economic diversification or the development of alternative income sources (to reduce the pressures for intensification of production systems); strengthening community and environmental links in production chains (increasing multiple benefits from the process); and/or branding or otherwise adding value to the primary product. This kind of "policy package" also often includes measures for capacity-building (strengthening social capital) to promote innovation, adaptation and the empowerment of local actors. This is in order to enable new, benign or positive systems linkages to be identified and established, as major reforms are implemented. These are some of the characteristics that are increasingly being promoted in an EU context, particularly in the light of recent commitments to the environment (the so-called "Göteborg Agenda") and the fostering of a more competitive economy (the "Lisbon Process").

European Union examples

Use of transitional measures

Within the EU, there are a variety of examples of transitional support mechanisms. In managing successive reforms of the Common Agricultural Policy (CAP) over the past 20 years or so, some supports have been explicitly identified as transitional measures, with a clear start and end point. Three recent examples are listed below.

1) The creation in the 2003 CAP reforms of a new measure for 'meeting environmental standards', to enable member states to offer time-limited structural adjustment aid to those farms which need to invest in new technology or adapt production systems to meet the requirements of new EU environmental legislation. This measure has been added to the range of aids available for member states to offer in their Rural Development Programmes, under the CAP. The aid can only be offered for up to five years from the date when the relevant environmental standards have become mandatory within the member state, and must be granted as a flat-rate, temporary and degressive aid on an annual basis (EC Regulation 1698/2005).

2) The use of a transition mechanism in the UK when support to producers in designated "Less Favoured Areas" was changed under the Agenda 2000 CAP reforms, from aids which had been paid per head of livestock kept, to aids paid

instead on the hectarage of marginal land farmed. The change in the basis of the payment was phased in, in three annual stages, rather than made immediately.

3) The deployment in England of a significant 7-year "transition" in its reform of the decoupled Single Payment Scheme (SPS) that was introduced in 2005 following the 2003 CAP reform. The SPS begins with payments based almost wholly upon each farm's historic aid entitlement, but is gradually shifting towards payments based entirely upon a flat-rate per hectare of farmed land (differentiated by broad "zones"), and this is being phased in over seven years.

However, there are many more CAP aids which have been designed to promote structural adjustment and adaptation in the farm sector, and these have been increasingly seen as an important element in managing CAP reform, in recent years. These measures are found in the CAP's so-called "second pillar" for rural development (Regulation 1257/1999), which was created in 2000 from a suite of measures developed gradually over the preceding decades. Second pillar aids are available for farm investment to improve business performance and to support the diversification of agricultural activities, for farm-related market research, training and innovation in sectors such as tourism and craft activities, as well as environmental and leisure enterprises.

In addition, aids can be offered to support capacity building through mechanisms such as LEADER – using so-called "bottom-up" methods to stimulate local territorial and multi-sector economic development in rural areas. In developing their seven-year Rural Development Programmes (RDP), individual Member States or regions can choose to apply packages of these aids, differentiated by territory or other characteristics, to promote rural development. In a number of cases, a significant element in the rationale for RDP actions in the period 2000-6 has been the need to help farmers and rural communities to manage the process of economic and social adjustment to CAP reform. In this specific instance, therefore, it is legitimate to examine these measures as examples of transitional measures, as discussed here.

Appraisal of measures

To date, the evidence concerning the effectiveness and efficiency of EU measures when applied in the specific context of transitional adjustment to CAP reform is limited. Some, such as the "meeting standards" measure, are too recent to have yet been evaluated independently: the first such evaluations at Member State level will only be made in 2007 when the current round of rural development programmes has come to an end. However it is possible to make some tentative judgements of other approaches, based upon specific cases and upon the longer–term use of the CAP second pillar measures to aid farm adjustment more generally. A number of studies in recent years have examined the implementation and effectiveness of these aids in this context (*e.g.* Dwyer *et al.*, 2004, Shucksmith *et al.*, 2005, Terluin and Venema, 2003).

Cushions

First, let us consider the two UK examples of what I have termed "cushions", above: where changes to policy measures are phased in over time, to slow and smooth change processes and their impacts. To date, no studies have been conducted on the effects of these approaches by comparison with the alternative option of introducing the policy changes in full, immediately. Nevertheless, some points have been gathered via a brief

analysis of the arguments used at the time to support the transitional approach; and discussion with farmers' representatives whilst preparing this paper.

When the Single Payment Scheme (SPS) in England was devised as the mechanism for decoupling mainstream CAP subsidies to farmers (under the so-called 'first pillar' of CAP), following the 2003 CAP reform agreement, Member States had been given a choice about payment approaches. They could opt to make these payments to farmers based purely on their historical receipts under the former, partially decoupled direct payment system, or to make them at a flat rate corresponding to an average of the level of historic receipts per hectare of eligible land, for specific zones or regions as defined by the Member State. In England, the government's Department for Environment, Food and Rural Affairs (Defra) was minded to opt for the second of these models. Their rationale was that this would avoid the problem with a "historic" approach that support levels would be somewhat arbitrarily linked forever to past production patterns, which would become increasingly difficult to justify over time as farm structures and patterns of land use changed.

However, moving from the former direct payment system to a system based upon zonal average payments per hectare would have significant redistributional consequences. Under the former, partially coupled support system, direct payments were made as compensation for agreed cuts in guaranteed prices for each sector, so certain kinds of land use and production received much higher payments per hectare than others, even if they were located in the same areas. Thus the farming unions, in particular, made a strong plea to Government, that such a change must be phased in over a long period of time, rather than introduced immediately. This led to the eventual decision now being implemented: to begin in 2005 with a SPS system based 90 per cent on historic receipts in the first year, and to gradually replace this with a zoned flat-rate, area payment system, over a seven year transition period. The area-based element in the SPS began at 10 per cent in 2005 and will rise incrementally up to 100 per cent by 2012, as the historic element declines to zero.

The rationale for the transitional measures was fairly simple. It was recognised that for many farms in England, this payment would be a significant element in their annual income and that it, just like the direct payments that preceded it, would have been acting to influence a whole range of development and investment decisions by individual farm businesses. In its evidence to a National Audit Office enquiry into the SPS, the National Farmers' Union states that the total subsidy from the CAP to farmers has exceeded the Total Income From Farming (TIFF) in England, persistently since 1998, meaning that in their words "direct payments have been essential to allowing farming businesses to continue operating" (NFU, 2006).

Based upon farm income figures from the government's Farm Business Survey of individual farms across the country, it appears that for all sectors, the CAP first pillar aids have represented more than 100% of average net farm income, in 2004-5, and even in the most profitable farming situations and sectors the payments have represented a significant proportion of total annual receipts, for many years (Jones, 2004). The implications of a shift to area payments, averaged for three broad zones across England, were for significant cuts in subsidy among more intensive businesses (*e.g.* most productive arable, beef and dairy farms). At the same time, there would be subsidy increases among less intensive sectors, or those previously ineligible for payments (*e.g.* extensive beef and sheep farms, and horticulture). In its submissions to Defra when the proposed SPS system was subject to consultation in 2003-4, the National Farmers' Union presented numerous

cases to illustrate the scale and significance of the proposed gains and losses for specific kinds of farm business (NFU, 2004). The basis of the argument for a slow phase-in of the new system was as follows.

1) *Cashflow and expectations* – if farmers were to experience very significant increases or falls in their income from subsidies, this could generate important cashflow problems for the "losers" from the change, in particular. Their business planning and operations would all be structured around the current distributional pattern for aid, and it would not be simple to transform these rapidly if this changed suddenly.

2) *Length of planning cycles* – particularly for grazing livestock enterprises, the typical planning cycle for production decisions is multi-annual; animals are reared and fattened over several years and breeding stock take time to establish and replace. Also, for a range of more skilled farming operations such as landscape and stock management, input handling and efficient and safe use of chemicals, wastes and other hazardous materials, the workforce needs to be trained and experienced, and this also takes time to achieve.

3) *Indebtedness* – modern farm businesses commonly operate with a significant level of bank borrowings including loans for major capital purchases such as tractors, grain drying equipment, milking parlours, etc. These kinds of loan represent medium to long term commitments requiring repayment over many years, at rates that will have been negotiated on the basis of anticipated income over a similar period.

These factors led the NFU to press Defra to adopt a phase-in for the SPS change to an area payment, which would operate for 'as long as possible', and start with payments in the first year that would be 100 per cent based upon historic receipts. The Union was clear that it was not against decoupling itself and indeed, it took the view that this was both desirable and necessary. The argument was, rather, with the type of decoupled payment offered, and most significantly, the redistributional impacts of the shift from a historic to an area-based payment.

In response it seems that Defra accepted these arguments and thus opted for the seven-year transition which represented almost the full period of the agreed new EU budget (2007-13). However, it was decided that the so-called 'hybrid' payment (part historic, part area-based) would start in year 1, rather than in the second year of the transition.

The three-year 'safety net' transition in the form of Less Favoured Area (LFA) aid offered to producers in marginal areas, 2001-3, was introduced for similar reasons. In this case, LFA aid commonly represents a smaller percentage of marginal producers' incomes – around one-sixth, on average (Defra, 2006a). However, these farms are almost entirely grazing livestock enterprises and they are farming in parts of the country which have few alternative options for production systems – with poor land quality, restricted growing seasons and usually relatively remote from centres of population and markets. It is also recognised that farming in the LFA provides important landscape maintenance: many of these areas are popular for leisure and tourism and important for biodiversity, and these assets depend upon continuing extensive management by livestock grazing. As Defra explained in its Rural Development Programme for England:

> *"The change to an area-based system of payments as required under Regulation 1257/1999 will have a significant impact on the distribution of compensatory allowances, with a very large number of eligible farmers losing a significant proportion of their current levels of payment. In view of the current low levels of*

hill farm incomes… such rapid changes would risk destabilising fragile farm enterprises and undermine the basis on which agriculture is practised in the uplands. This could not be justified in terms of the social, economic or environmental objectives of the scheme" (Defra, 1999).

A safety net mechanism was therefore introduced on a degressive basis, to cushion the transition from headage-based aid (the Hill Livestock Compensatory Allowance or HLCA) to area-based aid (the Hill Farm Allowance or HFA), for all those who stood to lose as a result of the change, as follows. In 2000, farmers continued to claim for, and receive, HLCA aid as before; then in 2001 the farmer's entitlement to HFA was calculated in accordance with the (new) Programme and they were also awarded the sum necessary to bring the total to 90 per cent of their HLCA payment in 2000; in 2002 and 2003 this "top-up" was reduced to 80 per cent ('02) and then 50 per cent ('03) of the sum payable as HLCA in 2000; and in 2004 the safety net no longer applied. Sums payable to those who gained as a result of the change to an area based system of LFA support were not 'cushioned' in the same way.

Considering the effectiveness of transitional measures used as 'cushions' in these two cases, views on their effectiveness vary. In the case of LFA aids, the transition was short and relatively simple to effect and the industry appears to have been satisfied that it provided a necessary mechanism to prevent the loss of important aspects of upland management as a result of the change in payments (NFU, *pers comm.*). The view in government is perhaps less unambiguous, but the relative increase in administration costs to introduce the transition phase was reportedly minor, and the cost of the safety net was also relatively modest. Total spending on LFA supports dropped from £173 million in 1999 to £165 million in 2001 and 2002 and then reduced to £153 million in 2004, once the safety-net had ended (Defra, 2006a).

By contrast, in the case of the seven-year SPS transition, the system has fallen into some disrepute because the agency charged with administering it has failed to implement it effectively to the anticipated schedule. Although the first year's payments (relating to the 2004-5 production year) were planned to be paid to farmers in December 2005; as late as July 2006, many beneficiaries were still awaiting payment. The Minister had written to all farmers in May 2004 to say that 'the objective is to make payment as early as possible'. By February 2005, a revised Ministerial statement claimed that "the most probably date for payments to start is February 2006", whereas by April 2006 the Minister reported that only 39% of all claimants had been paid, and by mid-May the proportion had risen to 55% of claimants and only 44% of aid (NFU, 2006). In its evidence to the National Audit Office inquiry into the SPS, the NFU believes that "Ministers' choice of a complex system, coupled with failure to allocate sufficient administrative and other resources to ensure its timely delivery" lie at the root of this failure.

Unfortunately, the NAO inquiry is still ongoing at the time of writing so it is not possible to provide a more full and independent assessment of this issue. However, if the NFU's reasoning is sound, it could call into question the value of the particular transitional approach that has been adopted. Because of the significant delays in paying SPS to date, many farmers will now be suffering from the precise problems - in respect of cashflow, business planning and debt servicing – that the transitional approach was intended to avoid. Whilst it remains unlikely that farmers organisations would go so far as to question the basic rationale of transitional measures in this instance, this case illustrates

the risks inherent in adopting rather complex approaches to cushion the impacts of change.

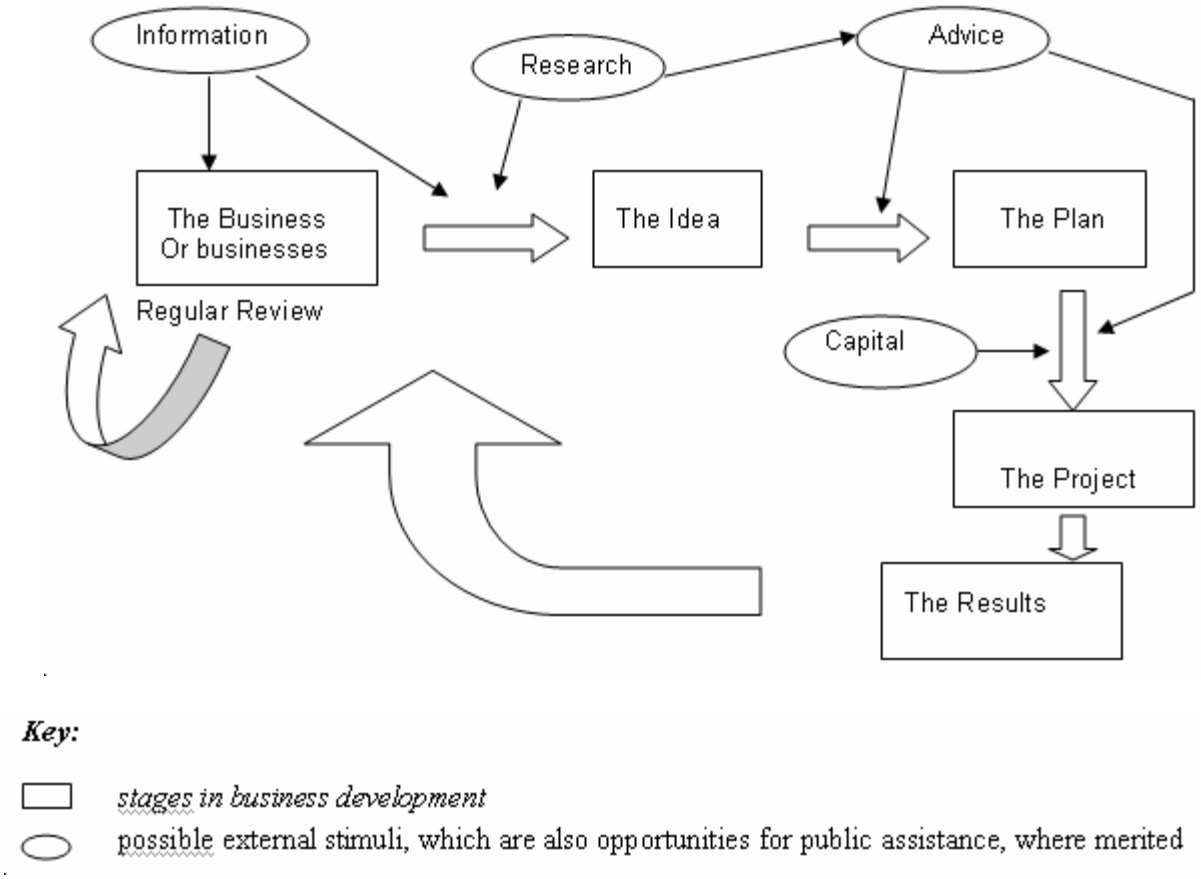
With hindsight, a simpler system could perhaps have been chosen. Also, the administrative authorities might have given themselves a longer period of preparation (for example, offering a purely historic basis for aid in 2005, then introducing the area element from 2006, to lengthen the time available for registering new claimants and calculating relevant rates – as recommended by the NFU). Notwithstanding these criticisms, it remains the Government view that this long transition period offers farmers an important opportunity to take steps to plan and manage an effective adaptation strategy, in the face of the reform (Defra, 2006b).

Adjustment "toolkits" and capacity building approaches

This discussion draws evidence from an appraisal of selected CAP Second Pillar measures and their apparent performance in "helping farmers adapt" to policy and market changes, to consider the value of these tactics in the specific context of transitional measures to assist significant policy reforms. The author led a multi-country, multi-expert rapid comparative study of policy approaches to "help farmers adapt", on behalf of the National Audit Office in England in 2003-4 (Dwyer *et al.,* 2004). The study examined the five EU countries of Denmark, Germany, France, Sweden and Ireland, and also compared the approach adopted in New Zealand, to generate options for improved policy performance in England. Similar evidence and broadly complementary conclusions have also been identified in other evaluations of EU rural development measures and these are also mentioned in the discussion, where relevant.

To consider the appropriateness and the effectiveness of the range of aids offered to assist with business adaptation, we used a conceptual model to consider how businesses would typically react to changing external circumstances and grow and develop, over time. This is illustrated as a "business development cycle" in **Figure 2**.

Figure 2. Business Development Cycle



Source: Dwyer *et al*, 2004

This diagram enables analysis of the key stages involved when a business is affected by a change in its operating environment and this necessitates or stimulates some form of adaptation. It can be characterised as a process of: initial analysis and information gathering, the generation of ideas, and then the detailed formulation, implementation and subsequent review of some kind of change. In the context of this paper, the change would be a significant adaptive response triggered by a major change in policy.

Considering the rationale for public intervention in this process, based upon previous UK and European research into the small business sector in general and farming in particular, market failures or imperfections are likely to influence different stages of the cycle to different degrees. Problems arising from public goods (joint production of economic and environmental assets); imperfect information due to lack of time and relative isolation, and poor skills or confidence among businesses may particularly affect the early development of ideas and specific plans for change. Where they exist, barriers to farmers accessing capital in order to effect changes would generally be more of a problem later in the cycle, when seeking to develop a project once an idea has been conceived and a plan drawn up. Thus in theory, public intervention to overcome these kinds of market failure or imperfection should target the appropriate stages in the chain, in different situations.

The cost-effectiveness of different strategies for transitional aid is also an important consideration. Intervention in early stages of the adaptation cycle might appear a relatively risky strategy, because not all ideas will necessarily result in concrete results, in terms of business response to an external change. However, spending resources in actions at this end of the cycle would be at a relatively low-cost per business aided, because supporting market research, advice or training will usually be cheaper than offering grant aid to help with major capital investments. When funds are focused heavily on early stages in the adjustment process, the approach tends to be much less costly, project for project. The money should therefore be able to reach a larger number of beneficiaries than a later stage of the cycle, capital-focused approach.

By contrast, when putting public money into easing the final stages in the cycle ("plan" to "results"), the risks for public funds should be relatively low because planning should have tested the viability and durability of the intended investment, but the cost per business aided is likely to be higher. Also, the beneficiary takes the burden of risk throughout the process from the initial conception to the production of a business plan, which may act as a strong disincentive to a sector which can be characterised as fairly "risk-averse".

In examining the use of second pillar CAP aids specifically to support farm adaptation, Dwyer *et al.* 2004) concluded that traditionally, the most significant share of UK and probably EU expenditure has been focused upon aid offered for the later stages in the cycle. Classically, these schemes would be farm investment programmes, which help businesses to acquire new buildings and equipment in order to improve their efficiency, often accompanied by the enlargement of holdings such that the investment enables the introduction of significant economies of scale into the production process.

Historically, this has been observed as a classic response to policy reform but it has simultaneously been claimed that a significant proportion of Europe's farms cannot make this response without external assistance, due to market imperfections (*e.g.* as in the "Mansholt plan", CEC, 1968). Also significant in a similar context has been expenditure on so-called 'processing and marketing grants', which generally offer capital investment aid to enable companies to establish new agricultural processing ventures or improve processing and marketing facilities at existing establishments.

From the evidence assembled by Dwyer *et al.* (2004), it seems that such aid has both positive and negative attributes. On the one hand, it appears to work well as a means of helping farmers to put into place new management systems that can improve the quality and standards of their production (particularly in relation to new environment and animal welfare criteria). In these cases, the work would not necessarily have been done as quickly, in the same way or to the same standards, without grant aid. On the other hand, longitudinal evaluation studies of both farm investment aids and the investment support offered to processing and marketing companies have questioned the additionality of such aid. Particularly if it relies upon applications coming forward rather than being targeted to specific priority situations or categories (as in France and Germany, where these schemes are largely demand-led), it can be difficult to show that it does more than help those businesses who could have helped themselves. Studies also indicate that while these measures may be seen as a stimulus to efficient structural change and greater market orientation, their effects may be rather different.

For example where upper limits are placed on eligible business size (in an attempt to target support to those most in need), aid may help less 'efficient' farmers improve, preventing them being out-competed by the most efficient producers, as would be

anticipated if they did not receive government help. This may have value as an approach to improve the social contribution of the sector, but its economic outcome is less clear. A recent French evaluation of investment aids also questioned whether schemes that generally encourage a higher level of indebtedness among farmers (because the government aids are frequently matched by private sector loans) are wise, in the current and prospective policy climate (cited in Buller and Kolosy, 2003).

Similar conclusions to these were outlined by Stefan Tangermann in a presentation delivered at the second European Rural Development Conference in Salzburg, in November 2002 (CEC, 2003). They tend to suggest that traditional forms of investment aid to help farmers make adjustments, for whatever reason, may not be a particularly cost-effective option, in isolation, and that instead, more effort should be devoted to alternative strategies.

In recent years, increasing emphasis has been placed upon new kinds of adjustment aid in EU rural development programmes, which tend to emphasise support for earlier stages in the adjustment cycle, and thereby seek to promote innovation in adaptive behaviour as well as more environmentally and socially sustainable outcomes. Novel approaches include projects which help farmers and/or their families to be made aware of the need or the opportunity to change – for example, challenging the wisdom of taking the apparently simplest options of tightening belts or trying to expand, when reforms take effect; prompting farmers to consider other options and generate new business ideas; and finally supporting them in amassing the skills and information to develop a robust plan from a basic idea. Three examples of such approaches are given in **Boxes 1-3**.

Box 1. Examples of front-end initiatives: Ireland

The Irish Opportunities for Farm Families Programme

This programme targets small family farms that will have difficulty surviving entirely upon farm income, in future (a particular issue in current CAP reform debates). It helps farm families to take a realistic look at their situation, explore the on-farm and off farm options and identify the best opportunities to boost income and improve their quality of life. It is based upon a similar pilot programme devised by Laois LEADER, 1994-9. Initially, a programme facilitator contacts farms that have been identified as in need (note – targeting all family members, not just the farmer: this has proved very important). Once interest is expressed, an adviser examines the current position and explores options for the family farm. Through focused group sessions and one to one advisory support, a Way Forward Guide is prepared for each participating family. There are typically 3 group sessions, which run weekly and involve 8 – 10 families per group.

The emphasis is on open discussion, and simple worksheets are used to help families work through the issues. Following this, the programme offers more detailed analysis of the development option identified. The farm family, with the help of an adviser, will carefully analyse its financial, physical and social implications. A Way Forward Action Plan is developed and while implementing this, families get the advisory support they need on a one-to-one basis and through appropriate training. A range of specially developed training modules is available. The approach is seen as an effective way of ensuring that small and struggling farm businesses get much-needed help to develop strategies for the future.

Source: after Collier, 2003 in Dwyer *et.al.*, 2004

Box 2. Examples of front-end initiatives: Denmark

Replacing former aids for agricultural investment in Denmark, the Innovation Act was passed in 2000. Investment support to larger companies was restricted, and the focus on innovation was strengthened. Whereas support was previously offered to all farmers making a specific business improvement, support under the new Act is only given to the first farmer to explore an idea. The Act also combined schemes aimed at products and schemes aimed at production methods under a single mechanism. Technically speaking, the act is a State Aid – it is not currently eligible for EU co financing, though this is being considered for the future.

The aim of the Act is to enhance innovation, research and development effort in the food/ agricultural and fisheries sectors in order to: ensure healthy, high quality products; strengthen competitive capability; enhance the development of new and innovative products, including non-food products; preserve the resource base of the sector and ensure environment, animal welfare and a good working environment; and enhance consumer access to reliable information on products and production conditions. Support is open to farmers; small and medium-sized enterprises; and research institutes. Bigger enterprises can only participate in co-operation with partners of these types. Support is given for new posts, external consultants, consumables, necessary equipment and marketing, but not for the work of the applicant, investment in fixed assets or production changes. The grant rate is normally 50% of eligible costs. The Agriculture Ministry offers subsidised advice to potential applicants up to the point when a project is approved for funding.

Although it is too early for formal evaluation, most stakeholders believe that the support given under the innovation act is very important for ensuring successful adaptation in the agricultural sector in Denmark. Nevertheless its scale is relatively small – annual spend is around 10% of the level of spending under the Danish Rural Development Programme.

Source: after Andersen, 2003 in Dwyer *et.al.*, 2004

Box 3. Examples of front-end initiatives: Germany

BUS *(Bauern- und Unternehmer Schulung - Farmer and Entrepreneur Training)*

This is a modular, stepwise learning concept. There are three main courses of seminars: BUS Basic (4 x 2 days); BUS Strategy (8 x 2 days); and BUS Synergy (8 x 2 days). An organic option, 'Biobus' has also recently been launched. The main idea of the BUS training is that the participants develop a management concept by themselves but with the support of trainers, colleagues and coaches. A main objective of the seminars is to acquaint farmers more closely with the philosophy of entrepreneurship. The participants are offered methodologies and skills to analyse and evaluate their existing business relationships and consider alternatives, enabling new strategies to be developed and skills to be strengthened.

The results of this training are two-fold. On a personal level participants report increased psychological independence, self-confidence, optimism about new projects; improved communication skills; and more rational decision making. On a business level the course enables the development of a larger radius of personal and entrepreneurial action (entrepreneurs tackle projects they would never have imagined previously); direct savings in enterprises and improvements through contact with other colleagues; increased efficiency in decision-making and the realisation of plans; and the creation of a variety of new sources of income.

The seminars are held in winter throughout Germany, Austria, Luxembourg, Switzerland and Belgium. Each two day-seminar involves about 10 to 20 participants (which must include both farmers and their partners). In 2002-3, over 800 seminars were held. Most of the trainers are farmers themselves - about 100, who have applied to be trained as trainers. The costs for the seminars are covered mostly by the participants, but the BUS-Basis seminars are one-third subsidised by the *Rentenbank* (Germany) and the European Social Fund (ESF). The member organisations of the Andreas Hermes Academy (AHA), the charity that has created and developed BUS, include farmers associations and co-operatives, and are widely spread all over Germany. These organisations promote and help to organise the seminars.

Source: after Knickel and Pölking, 2003 in Dwyer *et.al.*, 2004

In the specific context of radical CAP reform, these approaches particularly emphasise the need to take time to review the state and prospects of the current farm business, and to develop appropriate adaptive responses in ways that strengthen social capital (within and among families or in a community of interest). These tactics should therefore develop more robust and durable adaptive behaviour in the longer term and as such, they have received additional attention and policy support in debates surrounding recent CAP reforms. As the Irish example illustrates, it is also possible to target this kind of support to locations or situations that have been clearly identified in advance as particularly meriting government assistance.

Where investment support to new business ventures is also available in a combined package, putting emphasis on initial support for business development planning, advice and facilitation can offer an effective way of further "targeting" such aid. While the early stages of support (*i.e*. initial advice and information) are available to everyone, only those businesses who follow-through the advice and planning and survive the "weeding" that is informally applied by advisory services are likely to get to the stage of seeking specific investment aid. This phenomenon applies to different schemes promoting farm adjustment in England and Wales (Dwyer *et al*., 2003, Turner *et al*., 2006).

In addition, approaches that help farmers to develop non-traditional business ideas through linkage with other sectors and interests, and an emphasis upon locally-distinctive economic development, have been an apparently successful mechanism for effective adaptation in many member states. In this context, the devolution of policy design and delivery seems also to be a valuable element, in that local actors who fear the implications of policy reform are challenged to develop their own strategies for actively responding. This often results in the generation of "policy packages", where a combination of individual measures is offered as an integrated package through a single delivery process, enabling the mix of aid to be adjusted for each project or business according to needs and rationale. **Box 4** gives an example of such an approach from Germany.

Delivery systems can be an important consideration for ensuring that transitional measures have the desired effect, when offered. There is ample evidence to suggest that for many farmers, the procedures and forms for applying, approving and making claims for public-funded schemes can be complex, time consuming and potentially confusing. Delays in the processes of applying for help and making such claims can be a critical limiting factor for small businesses with limited cashflow. Some of these obstacles have been overcome by projects and initiatives which have devolved many aspects of scheme design and delivery to a very local level, enabling the administrative interface with applicants to be simpler and quicker to work with. If applied in the context of an agreed strategy between central funders and local actors, the approach can reduce the likelihood of aid being offered in ways that are locally inappropriate or wasteful, and increase the transparency of delivery processes.

The LEADER approach to rural development, which has been promoted and funded by the EU for more than a decade now, has been described as local, familiar and employing a "trusted team" of staff. It offers farmers a flexible approach, in that they can explore new ideas and unusual production or marketing concepts with the project team at early stages in the conception of an adaptive strategy. Within the LEADER method, decision-making processes and criteria are non-technical, publicly available and open to challenge if any applicant feels the process has been unfair. These characteristics are

often not held by larger and more centrally delivered government aid programmes. Recent evaluations have noted LEADER's value as a tool to help promote innovation and adaptation among rural communities (*e.g.* Lukesch, 2003), and the programmes have spawned a range of projects targeting effective farm adaptation in the face of significant policy challenges (CEC, 2003).

Devolution also offers the potential for greater on-the-ground integration between programme goals, and stronger promotion of synergy between them at sub-regional and individual project level, as different local interests become involved in considering how resources can be used to best effect. Evidence from Dwyer *et al.* (2004) and in the wider literature (*e.g.* Shucksmith *et al.*, 2005) suggests that programmes designed by a mix of local stakeholders are likely to promote complementarity and coherence between different actors in a local area, which can have benefits. As a farmer in Lower Saxony put it, when describing the value of his involvement in Regionen Aktiv: "it makes you look out beyond the farm and makes links with others in your local area, when putting business ideas together". This "reconnecting" of farming with other rural interests has been highlighted as a critical factor in farming's ability to cope with current and anticipated policy reforms, in some contexts (*e.g.* Curry, 2002, PriceWaterHouse Coopers, 2005).

Box 4. Devolved and multisectoral support: Germany

Regionen Aktiv is a national initiative in which emphasis is given to reorienting and re-integrating agriculture into regional economies. This pilot programme promotes development based upon twin themes of quality production and environmental protection. The main idea is that if companies within a region process the agricultural or forestry products of the area and these are marketed professionally within the area, in tourism and in nearby urban areas, this results in an increase in local economic power. The programme was initiated through a national competition, in which micro-regions had to prepare and present plans agreed by a wide range of key stakeholders and local communities. More than 200 entries were received. In 2002, the 18 micro-regions with the best plans were awarded a four-year grant from the Federal Ministry. The annual grant was up to a maximum of 1.5 million Euros per plan. For all 18 regions an overall total of 35 million Euros was approved. In each pilot programme a broad range of private and public bodies, companies and business sectors work together. In individual RA areas the programme is handled by a group that is comparable to Local Action Groups (LAG) in LEADER. Other similarities are the prior planning of an integrated development concept for the micro-region, decision-making by a panel representing all stakeholder interests, the employment of a small number of technical staff to support each programme (a regional management team), the importance given to the regular publication of results, and the emphasis upon public transparency in decision making and programme operation. More than 200 innovative projects are being implemented across the 18 areas. The Federal Ministry (BMVEL) provides a support framework backing up the implementation of particularly innovative projects, and the Institute for Rural Development Research (IfLS) at Goethe University in Frankfurt is carrying out accompanying research and policy development. So far, the reported results are very positive.

Source: after Knickel and Pölking, 2003 in Dwyer *et al.*, 2004

Some integrated second pillar schemes offer a *combination* of rural development measures, where the applicant has to meet agreed criteria for all projects as the first priority, and individual measure requirements are very much a secondary issue. Two kinds of integration in EU programmes appear to have proven useful in assisting adaptation:

- schemes combining a mix of measures into a single delivery mechanism with the main purpose of offering greater accessibility and flexibility to applicants; and

- schemes and approaches explicitly combining more "environmental" measures with more "economic" (either sector-specific or multisectoral) measures in order to promote both economically and environmentally sustainable outcomes.

A number of policy initiatives to aid adaptation in France share the characteristic of combining the delivery of individual RDR measures into distinct "schemes" applied throughout the French territory but delivered at a sub-regional level. The CTE – *Contrats Territoriaux d'Exploitation* or farmland management contracts – are perhaps the most ambitious example, in that they combine a farm business plan linked to farm investment, training, diversification and quality production measures, with an agri-environment element which requires a number of positive environmental management commitments. However, schemes like these also carry the potential danger of requiring additional administrative support "behind the scenes", to ensure that where locally-determined funding streams for individual measures must be separately tracked and reported on at national level, this can be achieved despite the integrated "user interface". This ultimately proved a sticking point for the French CTE, which closed to new applicants in 2002 and has since been replaced by a more focused environmental scheme – the CAD or *Contrats d'Agriculture Durable* (Dwyer *et al*., 2003).

Box 5. Integrated economic and environmental aid: Öland, Sweden

Öland is an island of c. 20,000 people off the east coast of Sweden. It has long been regarded as a place with distinct environmental assets, which are, in part at least, a product of its farming systems. Like much of remoter rural Sweden, Öland has experienced declining population and farm incomes and farmer numbers. However, it has also given rise to 'the Öland method', pioneered by Professor Urban Emanuelsson, a resident academic. Building on the dominant agri-environment component of the Swedish Rural Development Programme, a collaborative partnership has emerged between the Swedish University of Agricultural Sciences (SLU)[1] and the local community, including local authorities and businesses, as the 'Society for Research on Öland'. It promotes strategies for local sustainable development. These include the development of the 'Öland method' – support for environmental land management, awareness-raising and linked business enhancement (particularly tourism on the island), promoting community 'ownership' and increased confidence in a sustainable future. Research on agricultural history and work on integrating cultural and natural history, biodiversity and practical landscape management, have also been undertaken. The promotion of positive attitudes towards knowledge of these issues, particularly among young people, is seen as crucial in the development of strategies.

The Öland method has deepened and extended joined-up action in relation to environmental investment, capacity building and business development. It is heavily dependent on good animation and leadership that is sensitive to local people's needs and aspirations. It raises substantial evaluative challenges that have not yet been met, but the general consensus in Sweden is that the method has much merit.

Source: after Fahlberg, Olssen and Slee, 2003 in Dwyer *et al., 2004*

Taken together, this variety of schemes and initiatives, as well as the evolving understanding of how they can best be designed and delivered, constitute an important "toolkit" for assisting with the impacts of CAP reform across the varied rural territory of Europe. Whilst the policy under which they are currently offered is more broadly termed "rural development" and can therefore be used to achieve a much wider range of policy goals, it is apparent that a focus on the use of these so-called "second pillar aids" to help Europe's farmers and rural communities to successfully adapt to ongoing and future CAP

reform, is valid. In the UK, this purpose is made explicit within the rhetoric of the Rural Development Programmes which are currently being developed for the period 2007-13.

In the case of England, there is a widespread consensus now among government and stakeholders which links the seven-year transition period for the SPS payment with the new RDP and encourages farmers to use this period as an important time to take stock and plan for change, drawing upon the RDP measures to help in this process.

Conclusions

This paper has given an overview of the ways in which the EU currently offers support to farmers as they adapt to significant policy reforms, set against an analysis of the rationale for aids such as these and a brief evaluation of their performance. Looking ahead, it seems clear that the EU will continue to make use of such measures and strategies, in many forms, as CAP reform progresses. Further reforms are likely to be triggered from the planned 2008 review of policies and can be expected to be implemented by 2013.

Considering the experience gained so far, the more innovative CAP pillar 2 measures appear particularly important as tools to support effective adjustment, while the case for "cushioning aid" is perhaps less clear, although when offered in conjunction with adjustment aids it may provide valuable "breathing space", for some. Evidence appears to suggest that aids to actively encourage more balanced or sustainable adaptation to reform can be both effective and valuable, in certain circumstances, but that ongoing refinements in design and delivery would be worthwhile. In particular, targeting aid more closely to specific situations of most need; simplifying administrative processes; devolving delivery and enabling beneficiary groups to develop a sense of their own ability to direct and manage change processes, would all appear valuable. It is interesting to note that even in New Zealand, some initiatives to stimulate innovation and adaptation in respect of more sustainable farming are now supported and apparently producing positive impacts (Meister and Shakur, 2003).

More broadly, we should note that the EU faces significant issues of uncertainty in respect of the long-term prospects for its domestic agricultural support. At present, there is a lack of consensus among the EU-25 about the desirable "end point" of CAP reform – so in this respect, we are still asking the question "Transition to where?" As yet, the Member States do not collectively accept the perspective of some (*e.g.* HM Government, 2005) that the recent shift in the CAP from partially coupled to more fully decoupled support is itself a transitional step on the way to significantly reduced domestic agricultural support, in the longer term. Some believe that the enlargement of the Union to 25 and soon 27 members makes this an inevitable course, for budgetary reasons.

However, the very piecemeal implementation of decoupling following the 2003 reforms (when this was widely encouraged by the Commission but left optional for the Member States) illustrates how divergent national perspectives remain, on this issue. The current lack of progress in the Doha round of WTO talks would also appear to have reduced the external pressure for this question to be resolved, in the short term. As a result, speculation about the need to manage a more pronounced agricultural policy "transition" for the CAP may be premature for the EU-27 as a whole, even though it is already well advanced in certain of the more pro-reform countries, such as the UK.

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Chapter 4. Energy

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Introduction

Too often government interventions in markets are driven or co-opted by parochial political interests. The results can be damaging on many levels. In addition to their very large fiscal cost, politically driven subsidies can impede the attainment of social or environmental goals, and hinder the ability of new and emerging industries to compete fairly in the marketplace. Using the example of federal subsidies to the United States energy sector (in mid-2006), this paper discusses the scale and origin of the subsidy problem, and presents a number of strategies that can help address structural deficits in the current system of governance.

While subsidies are most commonly thought of cash payments to a particular person or corporation, this definition misses most of the ways that governments transfer value to private entities. A range of policies, including special reductions, commonly required payments (such as tax breaks) or risk internalization (such as through unrealistically low caps on insurance requirements) offer politicians less visible ways to provide benefits to constituent groups. The Annex provides an overview of subsidy types. As noted here, some can act either as a subsidy or as a tax depending on their specific wording or magnitude.

Assembling an integrated picture of the size and distribution of US federal subsidies to energy is a challenging undertaking. Many of the non-cash interventions are difficult to quantify, and requisite data needed to do so is often lacking. Scores of government programs across many different agencies have some involvement with the sector, compounding the measurement difficulty. The government itself currently faces no requirements to compile this information internally, and multi-fuel assessments, even by outside parties, tend to be conducted on a very infrequent basis.

These problems are even more severe at the state level, where governments are also very active in subsidizing energy. A recent review of state interventions in ethanol and biodiesel markets alone found at least one subsidy to these fuels in 38 of 50 states, and roughly 200 in total (Koplow, 2006). Yet moving from statutory language to quantified estimates of support is often impossible. Many states produce tax expenditure budgets only once every few years, or not at all. Line items often lack sufficient detail to attribute them to particular industry sectors. The value of loan guarantees or access to tax-exempt bonding is rarely recognized.

Energy subsidies in the United States

Though impossible to capture every government support to energy, even partial evaluations indicate the large scale of subsidies to this sector. In a paper for the National Commission on Energy Policy, Koplow (2004) estimated federal subsidies at between US$ 40 and US$ 69 billion per year in 2003. Two factors result in this fairly large spread.

First, primary source material does not always agree on input data or quantification methods. This can generate different subsidy values. Second, many subsidies have a higher value to recipients than their direct cost to the government. Tax credits, for example, often generate tax-exempt savings to recipients. Had a similar amount of financial support been given as a grant, the grant would have been taxed as income. Loans provide another example. Borrowers could never get the same interest rates as the US Treasury does were they to go to capital markets themselves. This generates an incremental subsidy (referred to as *intermediation value)* to the recipient firm (Koplow, 1993).

To this base, the Energy Policy Act of 2005 added an additional US$ 85 billion in subsidies over 10 years, according to consumer group Taxpayers for Common Sense (TCS, 2005), and legislative activity to bring still more continues. Earth Track's preliminary subsidy estimates for 2006 peg federal support at between US$ 49 and US$ 100 billion per year (**Table 1**). This is well above the 2003 estimate. Neither the 2003 or the 2006 estimate includes credit subsidies to energy enterprises, which would boost the totals by a few billion dollars more.

New legislation plays a part in the growth of federal subsidies over the past 3-4 years. However, it is not the only factor. Rising investment in the energy sector, and rising output, can both drive up public subsidy costs. Many subsidies are linked to production levels, and as output has surged so have the public expenditures. Similarly, capital subsidies such as accelerated depreciation are largest in the early years of new capital deployments. Rising energy prices, and the resultant investment boom, are thus contributing factors as well. A third factor involves a number of more recent scandals regarding federal resource management, resulting in large windfall gains to producers. Of note in this category are deep water oil and gas leases that were issued in 1998-99 with no royalty provisions, and that have only recently been publicly acknowledged (Andrews, 2006).

As shown in **Table 1**, the distribution of the subsidies across energy sources in 2006 continues to favor conventional energy. More than 50% of the total benefits the oil and gas sectors. Nuclear power is the next largest beneficiary at 12%, benefiting from a range of new subsidies aimed at new plant construction. Subsidisation of ethanol is on par to support of all other renewables combined (at roughly US$ 5.6 billion/year), though this may in part be due to more comprehensive recent assessments of ethanol than other renewables.

Table 1. Distribution of US Federal Energy Subsidies, 2006

	$Billions Per Year (Avg. of High/Low Ests)	% Share
Oil and Gas	39	52.4%
Coal	8	10.5%
Fossil, mixed	2	3.3%
Total Fossil	49	66.2%
Nuclear	9	12.4%
Ethanol	6	7.6%
Other Renewables	6	7.5%
Conservation	2	2.1%
Mixed Resources/Other	3	4.2%
Total, all resources	74	100.0%

Source: www.earthtrack.net

The fiscal cost of these subsidies is evident, especially in sectors such as oil and gas where historically high prices alone should provide sufficient incentives for expanded production. However, the subsidies create a range of other risks as well. For example, they can spur subsidy-driven capacity expansions, distorting the mix of supply. Subsidies seem to be an important factor in the rapid expansion of ethanol and biodiesel production facilities in the country, with overbuilding an increasing risk.

Similar dynamics are at play with nuclear power. Federal subsidies to new nuclear power plants are likely between 4 and 8 cents per kWh (levelized), and could well be the determining factor driving the construction of new nuclear power plants (Koplow, 2005a). As a result of low operating costs, nuclear plants are unlikely to close down once they open, despite some of the highest capital costs of all fuel sources. Once operations commence, these capital costs are effectively sunk, and no longer affect shut-down decisions. Thus, the subsidy decisions of today will continue to influence the structure of electricity supply for 40-60 years out.

The environmental costs of energy subsidies also warrant attention. As concern over climate change rises, spending billions to subsidize carbon-intensive energy sources makes little sense. Far more effective would be to structure the marketplace to reward the least-cost carbon reduction strategies. Similarly, existing subsidies mask important variation in supply resources – from carbon intensity to time of delivery, security of supply, and location relevant to congested distribution lines. In all of these areas, improving the quality of the price signal for particular fuels and supply options is important in fostering a more dynamic energy market, and one that properly rewards energy resources that mitigate the issue of concern.

Energy subsidies are a symptom of a larger structural problem

Energy subsidies continue to grow in part due to rapidly rising energy prices and heightened concerns over the security of supply. These factors have encouraged increased legislative initiatives, as government officials try to demonstrate action and attention to

this problem. Often these initiatives focus on deploying federal resources to one fuel or another, rather than on trying to correct baseline market and policy distortions that impede the development and entry of emerging fuels or energy sources in appropriate ways. This choice is not surprising: attacking root causes is both difficult and political risky.

Certainly the current concerns on energy issues are a contributing factor in subsidy escalation. However, it is structural weaknesses in the system of federal checks and balances on Congressional spending that seem to play the dominant role. These factors affect a wide range of economic sectors.

Rent Seeking

At the root of the subsidy problem is an economic force often referred to as "rent seeking". By manipulating the public legislative process, private parties are able to create revenue streams ("rents") for themselves. These returns can spur intensive and wide ranging pressures on the political process.

Although capture of public tax revenues (*e.g.*, through government grants) is an important source of these rents, two others venues are equally important. Policy changes that reduce mandated payments to third parties also provide attractive returns. That third party may be the government (*e.g.*, via tax exemptions), but need not be. Government policy often sets parameters for required payments to private third parties as well, such as by setting caps on required liability coverage below reasonably expected damages from a serious accident.

A third important source of rents is policies that increase the *expected value* of cash flows by reducing the probability and magnitude of downside losses. Though the policies may not boost the profit level of the enterprise should everything go properly, the reduced risk of loss generates tangible savings to the investors by reducing their risk profile in capital markets. Energy industries such as nuclear power or pipeline operations require large scale capital investments that are at great risk of loss should energy prices decline markedly during their construction period. For these types of firms, risk shifting via insurance, loan guarantees, and guaranteed purchase agreements can generate very large subsidies to particular market participants.

Political interests in subsidy generation

For rent seeking to work, a number of other factors must also be present. First, parties seeking the rents must be well organized and focused. They often have concentrated interests that are held quite strongly, enabling them to outmaneuver groups that have less riding on particular decisions financially. Subsidy beneficiaries "reinvest" a portion of their gains into the political process every year, such as through lobbying, to ensure the subsidy programs are continued and possibly expanded. The paybacks can be quite high, with some practitioners estimating 100:1 returns in policy benefits relative to lobbying expenditures (Utt, 2006).

Second, because politicians are required to pass legislation into law, they must share an interest with subsidy recipients in granting a particular subsidy. Where officials face re-election, this common interest does exist. Politicians benefit by capturing as much federal value transfer for their individual districts as possible. This spending garners the support of some of the concentrated economic interest groups, who then help finance re-

election campaigns for incumbent legislators. To the extent that federal programs create local jobs or prop up local industries, politicians may garner incremental public support as well. Because all elected officials face this same pressure, they cooperate in a general way to share spending across Congressional districts. In contrast, short of federal bankruptcy, there is no current common interest across the US Congress to control spending in the aggregate and to ensure the spending that does occur is properly targeted and efficiently deployed.

Data limitations constrain subsidy challenge

While taxpayers do have a strong interest in curbing excessive spending, their power has historically been quite limited. Each individual taxpayer has neither the time nor the money to organize effectively to oppose the concentrated interests benefiting from the subsidies. Taxpayer groups are somewhat more effective. However, they too remain at an informational disadvantage to rent seeking groups in finding and challenging subsidies. This informational challenge is compounded by the complexity of the subsidies themselves. Data are widely fragmented and many of the value transfer methods are difficult to quantify. Although the US federal government has implemented a number of checks to non-cash value transfers over the years, their associated disclosure requirements remain incomplete.

In the tax subsidy area, estimates of the magnitude of the subsidies (commonly referred to as "tax expenditures") are prepared by the Joint Committee on Taxation or by the Office of Tax Analysis at the US Treasury. Methods and scope vary, but neither provides any detail on their assumptions, model validation, or model sensitivity in any public forum. This secrecy makes critiques of estimates and methods by outside experts virtually impossible (Burton, 2000). The limited public oversight exists despite the fact that the economic impact of tax breaks is well over US$ 800 billion per year.

There have been great strides over the past 15 years in disclosure of credit subsidies through federal direct loans and loan guarantees. These gains are largely the result of the Federal Credit Reform Act of 1990. As a result of the Act, the losses on credit programs are more clearly estimated and reported, and loan subsidy rates are estimated at the programmatic level. Nonetheless, gaps remain. There is no ability to sort individual loans (and losses) by category of recipient (rather than just governmental unit) to see the impact of these programs on various market segments. This would help tremendously in tracking disbursement bias in the energy sector. If there are confidentiality issues regarding release of recipient names, one should at least be able to get totals by subcategories that are more refined than what is currently available.

A second major improvement would be to more accurately track lending subsidies. Administrative costs are generally excluded from the calculation of loan subsidy values. In addition, credit subsidy calculations make no attempt to assess the value of the loan to the recipient by comparing their private cost of capital to what they are actually being charged. This would require assigning borrowers credit ratings, but would provide a much clearer picture of the actual subsidies flowing to high risk endeavors such as oil drilling in unstable regions of the world, or high risk infrastructure projects such as new nuclear power plants or a natural gas pipeline from Alaska.

Factors contributing to a worsening of subsidies in recent years

Rent seeking behavior in terms of energy subsidies is not new. However, there are a number of signals that the problem is worsening. This is evident in rising incidence and magnitude of earmarked spending in many legislative bills; via a declining use of Presidential vetoes; and through the expiration of spending constraints such as *Pay-as-You-Go legislation* that required budget reductions to offset spending increases from new initiatives.

Rising use of earmarks

The number of Congressional earmarks grew tenfold between 1990 and 2005 (Fund, 2006). Growth in particular budget areas have been even higher. A survey of Highway Reauthorization bills, for example, showed an increase from 10 earmarks in 1982 to nearly 6 400 in 2005 (Utt, 2006). Earmarks as a share of total appropriations have also been rising (**Table 2**).

Table 2. Growth in Federal Earmarks, Selected Appropriation Areas

Legislation*	Number of Earmarks		Earmarks as % of Total Appropriation	
	1994	2006	1994	2006
Commerce, Justice, State, the Judiciary, and Related Agencies	253	1,722	11.5%	21.8%
Defense	587	2,506	1.8%	2.3%
District of Columbia	0	95	0%	17.3%
Energy and Water	1,574	2,313	24.8%	17.3%
Foreign Operations, Export Financing, and Related Programs**	38	427	54.5%	73.2%
Department of the Interior and Related Agencies	314	568	3.6%	3.9%
Military Construction	895	504	37.4%	66.1%
Transportation and Related Agencies	140	2,094	2.4%	5.5%

*Includes only appropriations bills where earmarks exceed 1 percent of authorized spending.

**Includes hard and soft earmarks. Soft earmarks "urge" or "recommend" particular spending, rather than "directs" or "allocates".

Source: Congressional Research Service (2006).

In the US system, separate legislative bills are passed in the Senate and in the House of Representatives. The bills often differ, and a Conference Committee is set up to standardize the language across the two parties, so a common bill can be signed into law. With increasing frequency, these committees are inserting entirely new language into

bills rather than simply reconciling differences in the House and Senate versions. An estimated 95% of recent earmarks were slipped into conference reports, rather than having been included in the original House or Senate bill (Fund, 2006). The Conference Committees have also tried to exclude minority party members from debates entirely, a practice that according to legislative historians, did not occur previously (Babington, 2003).

Expiration of budget enforcement provisions

A number of other factors that in the past have helped to constrain spending have also weakened of late and are likely contributors to the current spending challenges. For example, Presidential vetoes have historically played a role in curbing Congressional power. The current administration has used its veto only once less than any other President in the past 150 years. The Bush administration has vetoed no appropriation bills, in comparison to 6 for Ronald Reagan, 8 for George H.W. Bush, and 14 for Bill Clinton (Kosar, 2006). Without actual vetos, there is also little threat of a veto to legislators. Both help to constrain spending.

Facing rising budget deficits in the 1980s, Congress implemented a number of constraints on itself to control the growth of aggregate spending. Fixed deficit reduction targets were established in the Balanced Budget and Emergency Deficit Control Act of 1985, more commonly referred to a "Gramm-Rudman" after two of the Senators that sponsored it. Aimed at reducing the deficit over a pre-set number of years, the law set up automatic sequestration procedures that cut federal spending by an equal percent across the board. The mandated cuts were often bypassed by Congress, but did provide general spending constraints and forced Congressional compromises to control spending (Rauch, 2005).Ultimately, low economic growth rendered the targets unattainable (CBO, 2003).

Gramm-Rudman was replaced in the Budget Enforcement Act of 1990 by caps on discretionary spending and pay-as-you-go (PAYGO) requirements on new mandatory spending and revenues. PAYGO required increased deficits to be offset by spending cuts or increased revenues in other areas of federal activity. Although the provisions were extended twice, they were ultimately eliminated in 2002. Some elements of PAYGO remain through 2008 in Senate procedures, though there is no comparable provision in the House (CBO, 2003; Keith, 2005). As with earlier attempts at control, the Congressional Budget Office noted that in practice "nearly all mandatory spending was exempt from a PAYGO sequestration" (CBO, 2003). Despite this, CBO does conclude that the laws were effective in curbing deficits through the mid-1990s, but became less effective as economic growth boosted tax revenues, and with them, the pressure to boost federal spending (CBO, 2003). The CBO viewed the threat of sequestration as a useful inducement for forcing compromise.

Reform Options

Subsidy reform in the energy sector will most effectively come from broader reforms that address the structural weaknesses in the existing legislative system in the United States. Three lines of attack seem promising: 1) subsidy contestability, forcing multiple recipients to compete for access to subsidy programs; 2) increased transparency on subsidy amounts and beneficiaries from within the government; and 3) increased transparency from outside of the government. Given the increasing importance of state

policies, it is important that strategies be deployed at the state as well as at the federal level. Each approach is discussed in turn below.

Subsidy contestability

When subsidy funding can be more easily contested, and options for achieving a particular policy outcome competed against each other, subsidy programs can be made more efficient. The approaches described below are not entirely new ideas, but rather new applications of approaches used elsewhere in government.

Subsidy impact assessments

Recognizing that government regulation can generate large costs and competitive impacts on affected industries, a fairly complicated set of procedural guidelines have been developed to ensure the regulatory process if open and fair (Koplow and Dernbach, 2001). These include a variety of steps to publicly justify the action to be taken.

Publication of a proposal in the *Federal Register*, for example, includes the basis and purpose of the proposal; its estimated costs and effects; and a consideration of regulatory alternatives to achieve similar social goals at a lower cost. Preparing this package takes substantial effort, and supporting materials usually provide much detail on the assumptions being made. The proposal is subject to public comment, and those comments must be responded to in writing. Final rules are also published in the *Federal Register*, and subject to court challenge. No such requirements apply to fiscal policies, which include most forms of subsidy. In fact, the requirements to publish in the *Federal Register* expressly exempt agency decisions "to adopt binding and future rules involving loans, grants, benefits, or contracts, the primary routes of subsidization" (Koplow and Dernbach, 2001).

Environmental impacts are another area of disparity. Administrative regulations with a potential effect on the natural environment are required to prepare an environmental impact statement and to evaluate less damaging alternatives (Koplow and Dernbach, 2001). Acts of Congress (including tax expenditures) are normally exempt from such review, though Congressional actions can certainly trigger quite wide environmental impacts.

These differences matter, as legislative action and tax policy can, and regularly do, conflict with environmental goals. Policies to reduce greenhouse gas emissions, for example, can be undermined by a single tax bill subsidizing carbon sources. Requiring a level playing field for fiscal policy can help stem this problem. As noted in Koplow and Dernbach (2001), Congress could implement a subsidy justification analysis to mirror what is required for regulatory proposals. A similar impact cut-off of US$ 100 million per year could be used, below which detailed analysis would not be required. Extending environmental impact analysis to fiscal policy would help ensure that fiscal subsidies were not inadvertently working at cross-purposes with environmental goals and laws. These requirements would dramatically change the dynamics and incentives of Congress, altering the types of policies that even get proposed. Not only would subsidy justification and environmental impact analyses require a level of examination subsidy policies rarely get now, but they would be open to challenge (both via peer review and the courts), enforcing greater rigor in the analytic work that is completed.

Competition

As noted above, just at there are multiple options for regulatory action, so too are there many ways to achieve the policy goal associated with government subsidies. Recognizing this fact can make a big difference in what types of programs are implemented and how subsidy funding is targeted. Recipients often favor narrow, tailored language that ensures they get the funding regardless of efficiency or merit. Taxpayer and policy maker interests should be the exact opposite.

By defining the policy *objective* rather than narrowly stipulating the *method* of achieving that objective, far more options are available. Including the demand side as well as alternative supply is critical in achieving these gains. For example, most subsidies to domestic oil and gas are justified on the grounds of energy security. But if the policy objective is defined as "reduce demand for imported oil" rather than "allow percentage depletion on domestic oil production," domestic producers would have to compete for their pork with demand options that may have a lower cost per dollar of imported oil displaced. Calwell and Gordon (2004) for example note that the cost per gallon saved by investing in lower rolling resistance tires is less than the subsidy cost of boosting domestic oil supplies.

A similar situation exists with nuclear power. Tens of billions of dollars have been earmarked for the nuclear sector on the grounds that it is the only large scale, currently available, low carbon power source. Yet defining the objective as "energy services with a small carbon footprint" would likely generate scores of faster, cheaper, and lower risk carbon reduction options that in the aggregate greatly reduce or eliminate the need for nuclear (Lovins, 2005).

Achieving cost savings can be done by grouping spending on the existing subsidies that support a given policy objective and forcing all potential recipients to compete against each other for the funding. The bidders able to achieve a given objective at the lowest per-unit taxpayer cost would be the winner. This approach is routinely used in meeting renewable portfolio standards (RPS). A recent study by van der Linden *et al.* (2005) indicates that when the RPS is structured properly, the competition helps to bring down the incremental cost of supply. For large subsidy programs, such as those associated with spurring construction of new nuclear power plants in the United States, auction approaches have the additional benefit of constraining the scope of action of bureaucrats in how limited funding is distributed, thereby reducing the risks of corruption (Koplow, 2005b).

Reintroduce spending constraints

A third option is to reintroduce some form of spending constraints, similar to those in effect during the 1980s and 1990s. These did work to some degree, though a variety of approaches were also developed to bypass the legislative constraints. (A useful summary of these can be found in Fletcher and Hamilton, 2005). Closing these gaming strategies would be necessary if the constraints were to be binding. Improved budgetary information to integrate the variety of ways governments transfer value (*e.g.*, tax breaks, credit and insurance subsidies, regulatory exemptions, as well as standard cash spending) would provide important supports to making spending constraints work.

An alternative approach would be to improve the linkage between budgetary balance and Congressional pay, along the lines of compensation packages to private sector CEOs. The Pay-for-Performance approach could provide clearer incentives to lawmakers for

fiscal discipline, but would also require supporting information on value transfers and a careful balancing of social welfare against fiscal goals (Koplow, 1996).

Structural reforms from inside government

A variety of changes in the availability and accessibility of information from within the government, and the procedures by which involved parties operate, could all play a positive role in curbing harmful energy subsidies. Internal change would be beneficial not only because this is where the most timely and accurate information resides, but also because the improved data would enable the government to function more effectively over time.

Improving transparency of legislative activities

Practices with regards to legislative earmarks and conference committees have been identified as important factors in the recent uptick in government subsidies. A handful of procedural changes could greatly improve the situation. Requiring that all committee members be allowed to attend committee meetings is a simple step that would codify common practice prior to the current administration, and address concerns noted in Babington (2003).

Providing a minimum amount of time to review conference reports would reduce the incentives to cram new, unvetted materials into the bill at the last minute. The required review time could be related to the length and complexity of the bill, or to the number of changes made. Advance knowledge that this review period would be required would create pressures to have bills come out in a more orderly fashion.

Procedural changes to improve the transparency of bill modifications would supplement these efforts by making both the sponsors of bill modifications and the modifications themselves, more visible to the public. Text-markup software is a simple addition to the legislative process, already widely used by lawyers in the private sector, and by many states. Requiring simple language explanations of what proposed changes are supposed to accomplish as a hyperlink would add to this visibility and help eliminate earmark programs that are little more than windfall payments to constituents. A final step to mandate that spending earmarks contain the name of the legislator introducing the language, and identify the beneficiary constituent(s) by name, would both help to fill the accountability vacuum that too often exists now.

Some aspects of this transparency have been proposed in the *Federal Funding Accountability and Transparency Act of 2006*, S. 2590, which passed the US Senate in September 2006 (U.S. Congress, 2006). That Act would establish an internet-based searchable database for recipients of federal funding through contracting, loans, grants, and cooperative agreements for the first time in US history. However, the Act has many gaps. For example, reporting applies only once earmarks have been passed, not at the point they are inserted into legislation. In addition, the Act requires much disclosure on the recipient, but little to none on the legislator that inserted the earmark into the bill. Finally, the language is fairly loose with regards to what types of value transfer will be captured. Loans are listed, but tax expenditures, loan guarantees, indemnification, and other non-cash based ways to reward constituencies are not explicitly mentioned.

Improving the transparency of tax expenditures

Subsidies through the tax code are both large and complex. In addition, the current procedures for estimating them are subject to virtually no public oversight making it impossible to gauge the quality and accuracy of the estimates produced by the US Treasury and the Joint Committee on Taxation.

Unlike budgetary expenditures where cash flows are visible and monitored by many government officials, the magnitude of tax losses can accelerate with little or no warning. Small changes in statutory language that create or expand eligibility to a broad array of new recipients can be nearly invisible to taxpayers and lawmakers alike. The Energy Policy Act of 2005, for example, opened eligibility for production tax credits under Section 45 of the tax code to electricity tax credits produced from "municipal solid waste." One might conclude that this expansion benefits a few score plants in the country generating electricity by burning residential waste. However, Act incorporates a specific definition of municipal solid waste that goes far beyond residential trash, though the Act itself, as is commonly done, incorporates this definitional sleight of hand by reference only. A single clause in the Act now defines municipal solid waste as almost any hazardous or non-hazardous waste stream in the country. It includes:

> *"any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 1342 of title 33, or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended" (68 Stat. 923) (42 U.S.C. 2011 et seq.)*

All eligible resources for Section 45 credits (and the list is growing rapidly) are captured in a single point estimate prepared by JCT. It is impossible to tell from this estimate whether all sources, including the wide range of industrial waste streams, were estimated in the values or not. Nor can one gauge whether the assumed market growth for each eligible resource fits generally with outside views on market trends.

More accurate prospective evaluation

The Joint Committee on Taxation is responsible for most evaluations of prospective legislation, though the Treasury also produces estimates for existing law. As a result, this section focuses on the JCT. Opening the tax expenditure cost estimation models and their associated assumptions to public review and validation is an important first step in establishing discipline and transparency to the world of tax subsidies. While Congress may have a legitimate need for confidentiality when they are costing out proposed legislative action, the public interest in accurate estimates trumps that interest the moment a hypothetical legislative change is introduced as a bill.

More resolution on the tax loss estimates are also needed, so that the beneficiaries – at least at the industry sector level – can be discerned from the summary tables JCT produces. Note also that evaluations of non-tax elements of prospective legislation is done by the Congressional Budget Office, and that improved resolution to identify key industry beneficiaries, and greater cost attribution to specific parts of legislation, would also be an important reforms for CBO.

A number of other reforms in the tax expenditure process would be helpful. As with the legislative language itself, evaluating tax expenditures can be very difficult. Sponsors may benefit by not giving JCT enough time to properly vet a bill. Implementing mandated scoring, and minimum time windows to do so that increase with the complexity and cost of the bill, are both important changes to reduce potential gaming of the process. A related reform to calculate the present value of proposed subsidies (this is already done with existing law) would address back-loading of subsidies towards the end of 10-year evaluation window used by JCT.

Recent decisions that have eliminated outlay equivalent estimates from tax expenditure reporting should be reversed. The outlay equivalent approach incorporates the fact that many tax expenditures are themselves tax-free. It is a better measure of market distortions caused by tax breaks than the revenue loss measurement of the subsidy's direct cost to the Treasury. Sunset language, phasing out tax breaks automatically after a stipulated period of time, would be helpful. So would assigning each special tax break a unique tax subsidy number that could be easily tracked in tax filings. This approach is already used by the Internal Revenue Service to track tax shelters.

Retrospective evaluation

The degree to which JCT and Treasury actively compare actual usage of tax breaks to what they had predicted in their models is difficult to discern. Staff at JCT has informally told me that they do conduct such assessments to improve their model accuracy. However, as with the prospective estimates, these comparisons are not publicly available. Stipulating the method and frequency that such evaluations are conducted would be helpful in ensuring that ex post evaluations are done with adequate regularity, and in a statistically justifiable manner. Similarly, both groups should be required to issue a formal variance report on their estimates versus actual on an annual basis. This report would be available to the public and document the cause of any prediction errors in excess of $100 million.

Improving transparency in credit and insurance programs

Credit and insurance programs are tracked to some degree by each agency. Special reports also tally projected credit subsidies across agencies. However, the link between aggregate exposure and losses and beneficiaries needs to be greatly improved. Listing the corporate and cooperative recipients of these federal programs is an easy solution. It can be modeled on what has been proposed in S. 2590, though must explicitly include loan guarantees and subsidized insurance programs. New commitments, and the performance of past ones, need to be published in a disaggregated, standardized way.

Current reporting requirements need bolstering to provide a more useful evaluation of the degree of subsidization. For example, administrative costs need to be incorporated into the pricing of the credit or insurance product. So too, financial risk modeling should be used to estimate the intermediation value of the commitments to recipients in order to be able to more accurately gauge the market distortions from government interventions. This is important since federal lending and insurance programs often have a selection bias in what types of activities receive access to the lower cost products.

Finally, a great deal of additional disclosure is needed regarding contingent liabilities, such as caps on nuclear accident or oil spill liability. Mandated disclosure of implicit insurance and liability caps generated by statutory actions should be standard and

centralized. The federal government should be required to estimate the expected value of exceeding these caps on an annual basis. In the energy sector, liability caps generate quite large *de facto* subsidies to particular fuel cycles.

Instituting transparency from outside of government

Past evidence suggests that effective internal reforms are likely to be heavily opposed by Congressional and industry beneficiaries. Thus, consideration of options to institute improved transparency from outside is also necessary. The core objective of external action is to develop enabling tools to see policy interventions more clearly, in near real-time.

Such tools are necessary. They aim to establish much improved baseline analytical capabilities. In many arenas, new capabilities are necessary to move NGOs or citizens from reactive to proactive; and to successfully challenge the concentrated financial interests of subsidy beneficiaries. However, the task is not easy. Successful implementation will require a higher level of coordination across non-governmental actors (and possibly some governments as well) than has currently been the case. Many of the reforms relate to tracking and are procedural in nature, not the normal glamour projects that are often attractive to funders. A dialogue with funders to convey why such tools are important will need to be established.

Longer-term, however, the tools should be self-sustaining. This would avoid a continued need for financial recharges from funders. Perhaps more importantly, however, establishing a viable revenue model will help to focus these tools on what is most useful; and to allow them to grow organically across geographic and topical areas of focus. A phased approach can speed payback and optimize incremental learning. Some of the tools that would be useful in the early phases are below.

Legislative versioning and comparison tools

While tracking changes as they are made is the most desirable, there is no reason this capability can't be added retroactively to released bills. Text comparison applications could be tailored to federal legislation. Not only could this application highlight changed language in different legislative releases, it could compare that language to a library built up over time of legislative proposals introduced in earlier sessions, or proposed by particular interest groups. The application could provide enhanced search and text compare functions, and could autogenerate links to statutes referenced in the bill, or being changed by it. Legislative language could also be linked automatically to a variety of external databases, such as on campaign contributions or emissions.

Because federal legislative proposals contain so much arcane language, definitions, and references, a large number of specialists are often needed to interpret various sections. A single organization is unlikely to have all of these specialists on staff. However, a broader network of organizations will likely have many of them. Developing a function to allow integrated commenting on legislative language would enable the specialized expertise interpreting each section to be quickly captured for the benefit of the whole, into an integrated commentary. Furthermore, it will provide a structured format to solicit and capture iterative interpretations or comments on particular clauses, gradually improving the understanding of what the legislative proposal or statute will engender.

Financial modeling and automated data integration tools

In the absence of internal reforms in tax expenditure and credit subsidy reporting, a number of innovations warrant development from the outside. Rule-based allocation of tax expenditures by sector could be developed for a variety of the larger tax expenditures, or with a focus on a particular sector or problem area. Core baseline data on capital investment, research and development expenditures, construction, and a handful of other economic activities, could be generated and maintained by a consortium of non-governmental users. These tools could also help highlight situations where official government estimates seem particularly inaccurate.

Similarly, credit and insurance risk pricing models to adjust the risk-based subsidy based on geography, industry, firm type, or firm size could also be generated by a consortium. Much of this core data already exists in financial firms and universities. Contracts with these data providers, combined with the development of translation routines to apply the data as needed in subsidy evaluation, would likely be a cost-effective way to proceed.

A central element of the *Federal Funding Accountability and Transparency Act* was the establishment of a searchable database of earmarks. A broader effort to make the entire federal budget searchable would be extremely valuable as well. Current searchable versions of the federal budget tend to be at a fairly high level of aggregation. Much more useful would be the ability to search topically at a disaggregated level of all of the federal agency budget submissions. Standardized search routines should be able to quickly generate cross-government spending patterns on particular areas (*e.g.*, ethanol, or coal), incorporating all methods of value transfer rather than just budget allocations. The tools would also allow one to drill down from high level totals to see details on program components.

Bringing in the States

Most states have their statutes on the internet, often in a searchable format. External groups could build integration utilities that search and compile data on these statutes to present a state and federal perspective on subsidies to particular sectors. To the extent that budgetary and other (*e.g.*, tax expenditure) data are available electronically, the federal tools could be gradually extended to the state level.

Conclusions

Energy subsidies remain a large factor in US energy markets, worth an estimated US$ 49 to US$ 100 billion per year from federal policy alone. The support is distributed unevenly across energy resources, with oil, gas, nuclear, and ethanol being large beneficiaries. Subsidy policies often conflict with social or environmental goals from other government agencies.

Rising subsidies to energy and other sectors in recent years reflects a lack of core checks and balances in the legislative and appropriations process. Addressing these structural problems will be vital in achieving spending reforms that help curb distortions in the energy sector. Three promising approaches to subsidy reform include 1) making subsidy recipients compete against one another and against market substitutes; 2) improving information availability and procedural transparency within government; and 3) improving these factors from outside of government should internal reform be blocked.

The objectives of all three approaches are similar. *First*, the approaches aim to provide much greater visibility on who is getting subsidized, which legislators enabled the policy, and how much subsidy particular groups are receiving. In addition to visibility, the methodological approaches to measure subsidies would be scrutinized and improved over time. *Second,* the approaches aim to more efficiently gather specialized knowledge on what particular legislative actions are putting in place, so that the policies can be more effectively challenged. *Finally*, the reforms would bring down the subsidy cost per unit of policy objective achieved, possibly to zero in some areas.

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ANNEX: TYPES OF GOVERNMENT SUBSIDIES

Intervention Type	Description
Access|	Policies governing the terms of access to domestic on-shore and off-shore resources (e.g., leasing).
Cross-Subsidy| *	Policies that reduce costs to particular types of customers or regions by increasing charges on other customers or regions.
Direct Spending*	Direct budgetary outlays for an energy-related purpose.
Government Ownership*	Government ownership of all or a significant part of an energy enterprise or supporting service organization.
Import/Export Restriction|	Restrictions on the free market flow of energy products and services between countries.
Information*	Provision of market-related information that would otherwise have to be purchased by private market participants.
Lending*	Below-market provision of loans or loan guarantees for energy-related activities.
Price Controls|	Direct regulation of wholesale or retail energy prices.
Purchase Requirements|	Required purchase of particular energy commodities, such as domestic coal, regardless of whether other choices are more economically attractive.
Research and Development*	Partial or full government funding for energy-related research and development.
Regulation|	Government regulatory efforts that substantially alter the rights and responsibilities of various parties in energy markets, or exempt certain parties from those changes.
Risk*	Government-provided insurance or indemnification at below-market prices.
Tax*|	Special tax levies or exemptions for energy-related activities.

*Interventions included within the realm of fiscal subsidies.
| Can act either as a subsidy or a tax depending on program specifics and ones position in the marketplace.

Source: Koplow, D. (1998). *Quantifying Impediments to Fossil Fuel Trade: An Overview of Major Producing and Consuming Nations.* Prepared for the OECD Trade Directorate.

Chapter 5. Fisheries

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Introduction

The fisheries of the European Union (EU) provide an example of how fisheries subsidies applied within a weak management system can be environmentally harmful. Furthermore, given the long history of EU fisheries subsidies, they present a pertinent case study of subsidy reform.

Fisheries subsidies reduce the costs or raise the incomes of fishers, either directly or indirectly. In the absence of effective fishing restrictions, subsidies subsequently lead to an increase in fishing effort and/or fishing capacity. While catches will increase in the short term, the long term effects are to reduce fish stocks. Other impacts, on the wider marine environment caused by fishing, will also increase. These may include bycatch of species such as birds, mammals and turtles, disturbance of the seabed and killing of benthic organisms. Wider environmental pressures include oil pollution, generation of litter and energy use.

EU fisheries subsidies were introduced in 1970 with the aim to support and encourage increased fish production, primarily by supporting investment in larger and more "efficient" fleets, and adapting production and marketing conditions. The result was that engine power of the fishing fleets increased threefold between 1970 and 1987 and the industry became increasingly capital intensive and technologically productive (Coffey, 1999). This build up in capacity has been a key factor in stock depletion. Only 18% of the 113 North East Atlantic fish stocks assessed by the International Council for the Exploration of the Seas (ICES) in 2001 being inside safe biological limits (ICES, 2003). While overfishing is not restricted to the EU, fish stocks in European regions are considered to be in greatest need of recovery globally (FAO, 2004).

Since 1970, the EU subsidy regime has evolved significantly. In recognition of the role of subsidies in the build up of overcapacity, and thus overfishing, there has been a shift in focus towards balancing fleet sizes to available fish stocks. The aim of this paper is to consider the drivers behind this evolution. Firstly the history of the subsidy regime is briefly discussed. The following three sections then discuss the role of integrated assessments, whole of government decision making and stakeholder involvement; all areas of interest to the work of the OECD. Wider economic and political factors are then discussed before drawing final conclusions.

The focus of the paper is on the EU framework for direct financial transfers to the fisheries sector, and so does not include wider subsidies such as public expenditure on third country access agreements or research and management. Implementation and uptake

of the subsidy regime is not discussed, although developments within the UK are considered as an example of Member State level developments. The paper is based on literature reviews, policy analysis and discussions with stakeholders and government officials. The discussion is mainly on developments and drivers in the last decade.

Subsidy regime evolution

EU Framework Level

Discussion of EU fisheries subsidies take us back to the very origins of the EU's Common Fisheries Policy (CFP). Fisheries subsides were established some 35 years ago in response to demands from the Member States, Italy and France, for assistance to modernise their fleets and infrastructure, and so to improve their relative competitive positions both within the EU and outside it. From 1970 onwards, financial assistance has primarily been delivered through one of the EU's "Structural Funds", the main EU financial instruments to promote 'structural adjustment' of the fisheries sector (Box 1). Initially this was the European Agriculture Guidance and Guarantee Fund (EAGGF). Since 1993 the Financial Instrument for Fisheries Guidance (FIFG) was the main fisheries structural fund, which is to be replaced by the European Fisheries Fund (EFF) as of 2007.

Box 1. EU Structural Funds

EU Structural Funds are established by a series of Council Regulations. They establish the framework for Community and Member State funding for a number of years (currently and recently for seven year periods). They define what can, and therefore what can not, be funded by Member States. The current period runs from 2000-2006. The next period is 2007-2013 and the previous period was 1993-1999.

Member States are required to develop multi-annual programmes that set out how they plan to spend their funds in line with the Regulations. These programmes are subject to approval by the European Commission.

The FIFG and EFF Regulations were established through the process known as the 'consultation procedure'. The European Commission proposes the Regulation to the Council and European Parliament. The Council decides on the final text. While it must wait for the opinion of the Parliament it is under no obligation to follow it. While the EFF is not technically a structural fund it largely follows the same principles.

As noted, the primary aim of the EAGGF was to increase fish production by supporting capital investment. The aims of the FIFG evolved towards to achieving a sustainable balance between resources and their exploitation. In terms of detail this included provisions for the adjustment of fishing effort; reducing the excess capacity of the fishing fleet; early retirement schemes and individual compensatory payments for fishers made redundant as a result of vessel decommissioning; and development of marine protected areas. Vessel modernisation and rebuild support still remained however until this was phased out in 2002 as part of the CFP reform.

The EFF objectives do not deviate greatly from these, although they are certainly "greener": to support the CFP so as to ensure exploitation that is compatible with

economic, environmental and social sustainability; promote a balance between resources and fishing fleet capacity; strengthen the competitiveness of the sector; foster protection of the environment and natural resources; and encourage the sustainable development in areas with activities in the fisheries sector.

The FIFG was established in order to simplify and consolidate the various financial mechanisms available to the sector, and thus enable a more strategic approach to be applied to EU funding for fisheries. Placing fisheries funding within the programming framework also provides greater potential for integrated social and economic development in remote coastal regions of the Member States. The EFF builds on this and further requires Member States to develop national strategic plans for their fisheries.

In summary, some of the notable changes in the fisheries Structural Funds are listed in **Table 1**. Given space limitations and the focus of the paper, these are limited to some key changes, drawn on to illustrate the trend in the subsidy regime rather than to present an exhaustive analysis of developments. For further discussion the interested reader is directed to Coffey (2005). To provide an indiction of the magnitude of the public funds to the fisheries sector, the EU contribution to fisheries subsidies via the FIFG during the 1994-1999 period was €2.126 billion. Coupled with national contributions, the total financial aid in this period was €3.103 billon. A detailed analysis and discussion of how this money has been spent across the EU can be found in Earle (2006). During the 2000-2006 period the EU alloction to fisheries subsidies via the FIFG is €4.119 billion, although at the time of writing it is too early to evaluate uptake and Member State contributions (CEC, 2005).

Table 1. Key developments in EU fisheries Financial Structural Funds

Date	Development (✓= positive ×= negative environmental development)
1999	1999-2006 FIFG agreement ✓ Environmental safeguards *e.g.* cross-compliance with MAGPs, provisions for environmental projects involvement of environmental interests
2002	Amendments to FIFG regime ✓ Phase out of vessel rebuilds ✓ Extra vessel scrapping funds made available
2006	EFF agreement ✓ Building on 2002 reforms ✓ National Strategic Planning × Introduction of modernisation support

National level: UK case study

While the focus of the paper is on the framework of the subsidy regime rather than its implementation, the Member States can not be ignored in this discussion. They play a significant role in the Council in agreeing the final text of the Regulations. The positions of Member States are reflected in national implementation, which can itself evolve within the seven year duration of the Regulations. The UK is a Member State that has generally supported subsidy reform, including the phasing out of direct capacity enhancing subsidies such as vessel construction and modernisation. The role of integrated

assessments, whole of government decision making and stakeholder involvement in reaching this position are therefore discussed further in the analysis.

Integrated assessments

The EFF impact assessment

In June 2002, the Commission established an internal system of integrated impact assessments for its major proposals (**Box 2**). The 2004 proposal for the EFF was therefore the first fisheries subsidy regime to be subject to a Commission impact assessment (CEC, 2004) and thus the first formal "integrated assessment".

Box 2. Integrated Assessments of Commission Proposals – the Impact Assessment Procedure

In May 2002, the Commission established an internal system of integrated impact assessment for all major Commission proposals (CEC, 2002). This was to bring together in a single integrated system all existing internal Commission procedures for impact assessment. In particular, reflecting commitments in the EU's Sustainable Development Strategy, impact assessments were to address "the full effects of a policy proposal" (including) "estimates of its economic, environmental and social impacts inside and outside the EU".

Prior to this, several *ad hoc* studies had been commissioned by the European Commission examining the role of the FIFG, including its role in fisheries dependent regions in the mid 1990's and early 2000's (*e.g.* Nautilus Consultants, 2003; Goulding *et al.*, 2000), and mid-term and end of term evaluations of the FIFG programmes (*e.g.* Ernst & Young, 2004). However, neither these nor the Commission impact assessment could be considered a strategic analysis of subsidies, in terms of their role or impacts, as a basis for justifying the EFF. Indeed, the Commission impact assessment was lacking in detail and process and was written only in French. These shortcomings were reflected by the fact that it was used very little in negotiations of the EFF, with many Member States officials and stakeholders unaware that it even existed.

One of the most common criticisms of impact assessments is that they are undertaken too late in the policy cycle for them to be of any value. The impact assessment should be a process rather than a one off event, beginning with an analysis of the issue/problem that a policy intervention should be addressing, and then clarifying the policy objective. From this the different policy options should be identified and their positive and negative impacts evaluated. Stakeholder consultation should also be an integral part of this process. Currently, impact assessments are instead used more often by the Commission to justify a policy proposal rather than assess and develop the options (Wilkinson *et al.*, 2003). Two years on from the establishment of the Commission's impact assessment guidelines, the EFF proposal is another example of this practice.

Another general criticism of Commission impact assessments is that they are undermined by the political decision making process that follows Commission proposals, with the Council and Parliament perceived as commonly disregarding the outcomes. This is the case with the EFF proposal, which underwent a number of significant changes,

including the inclusion of provisions for capacity enhancing subsidies (*e.g.* for engine replacement) subject to questionable requirements.

In its defence against criticisms of the poor quality impact assessment, some Commission staff question how well suited the EFF proposal is to an impact assessment. It is argued that the impacts of the EFF are very much dependent on its implementation and uptake at a Member State level. While this may be the case, this does not make an impact assessment superfluous. The impact assessment process can still be used to determine the framework and support the implementation by Member States. Indeed, The Commission's argument is also questionable as other Commission DGs do not use this argument as a basis for inadequate impact assessments.

The inadequacy of the Commission impact assessment of the EFF proposal is not necessarily a case of maladministration however. Four factors working against the role that impact assessments could have played in further reforming the subsidy regime can be identified:

1) the subsidy regime has been in place for over 30 years and is largely taken as a given, particularly by Member States;
2) there has been a lot of political pressure on reintroducing capacity enhancing subsidies, in particular from the high expectations of new Member States;
3) there was a weak political case for impact assessments at the time that the EFF was proposed as the process had been in place for only two years; and
4) the Commission was in the learning phase of developing impact assessments.

These factors go someway to explaining why the impact assessment process received little profile and hence resource allocation from the Commission, which focused instead on defending and building upon the 2002 subsidy reform package.

These four factors can be expected to diminish so that in seven years, when the EFF expires, the context is expected to be more conducive to impact assessments supporting subsidy reform. While the EU will continue enlarging, it should be politically more stable. There is also expected to be a poor uptake of subsidies in the 2007-2013 period, supporting the Commission's case for a more thorough reconsideration of the role of fisheries subsidies. Finally, the impact assessment procedure should be better established within the Commission, with greater capacity and experience in its application.

Indeed, despite the widespread criticisms of the DG Fish impact assessments, there is a belief amongst those in government that they have a role to play in sustainable development broadly, including fisheries subsidy reform. If developed properly and early enough they should support evidence based policy development and so depoliticise decision making to some extent. As a long term process they are therefore welcome. In any event, impact assessments are required of the Commission and are receiving more attention within DG Fish so will be undertaken for future subsidy regimes.

While impact assessments can be expected in the future, these points highlight that their value is context specific. It also supports the argument that impact assessments are most effective when decision makers buy into them. While the push on DG Fish from the rest of the Commission has been important in ensuring impact assessments are undertaken, their value is undermined when administrators and decision makers in the Commission and other EU institutions do not accept the concept.

UK assessments

Integrated assessments in the UK take several forms, primarily Regulatory Impact Assessments (RIAs) and Strategic Environmental Assessments (SEA) (**Box 3** and **Box 4**). No formal RIA was done on the EFF or earlier FIFG proposals. However, an RIA and SEA is planned for the EFF National Operational Programme, a document that Member States are required to develop setting out how they intend to allocate EFF funds.

Box 3. Regulatory Impact Assessment

Regulatory Impact Assessments (RIAs) are employed in the UK to assess the effects of proposed regulations, normally on a national level. Traditionally, their main focus has been on economic impacts, but with the sustainable development agenda gaining ground they have started to cover social and environmental aspects as well. Examples of the application of RIA in the UK fisheries sector include an assessment of the Statutory Instrument prohibiting pair trawling for bass in the inshore waters of south-west England (Defra, 2004) and the PMSU report recommendations (PMSU 2004a). While wider than fisheries alone, a more recent RIA was conducted for the UK's Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2006 (Defra, 2006).

Box 4. Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is a procedural tool used by Member States for assessing – *ex ante* – the impacts of plans and programmes (and in some countries also policies) on the environment. Since the introduction of the EU SEA Directive in July 2004, EU Member States have been required to undertake a number of SEAs. While implementing the Directive does not guarantee specific decisions, SEAs help to change processes, cultures and attitudes. They result in a more informed and transparent decision-making process – by integrating environmental considerations, and providing a clear audit trail of decisions made. New legal obligations and the potential benefits of the process have shifted increasing attention to the application of SEA in the UK, not least in the fisheries sector.

As with the EFF at the EU level, there have been a series of *ad hoc* evaluations of the national fisheries subsidies programmes (*e.g.* Poseidon, 2003). These have largely related to EU reporting requirements, conducted at mid-term and end of programme points. They have not however been "integrated" in the sense that the evaluations focus more on the administration of the funds and level of uptake rather than the social, economic or environmental impacts. Again, similar to EU level trends, while formal integrated assessments have not played a role in subsidy reform the past, they are expected to play a greater role in implementation through RIAs and/or SEAs. The information contained in the assessments, and inclusion of stakeholders (*e.g.* industry and NGOs) should itself support future subsidy reform as it increases transparency and supports evidence based policy making.

Whole of government decision making

The College of Commissioners

The College of Commissioners represents whole of government decision making, with all formal Commission outputs (*e.g.* proposals and Action Plans) requiring agreement across all DGs (**Box 5**). This process however is not without its critics. In practice, disagreements between two Commissioners are typically left to be settled bilaterally, and only when two or more Commissioners are affected does the College tend to intervene.

Box 5. European Commission Processes

Commission initiatives, whether in the form of general Communications or more specific proposals for Regulations, Decisions or Directives, are prepared by the relevant technical DG. They are then discussed with other relevant Commission DGs and amended if necessary in a process known as interservice consultation. Proposals for legislation are then checked by the Legal Service. Once the proposal is fully ready, it will be put on the agenda for a forthcoming Commission College meeting by the Secretary-General, who reports directly to the President of the Commission. If there is agreement, the College will adopt the proposal and send it to Council and the European Parliament for their consideration. The decision to adopt a proposal by the College is made, in most cases, by simple majority voting.

Even when the College does intervene, some perceive it as now being too large following EU enlargement to be effective. A consequence of enlargement has been that the scope for internal bargaining has increased, allowing proposals to pass through the College that perhaps otherwise should not. This creates room for flexibility and therefore policy incoherence. In relation to fisheries subsidies, DG Trade for example accepted guidelines from DG Fish on expenditure of State Aid on engine modernisation (CEC, 2006) in return for maintaining the EU's position on fisheries subsidies in the WTO, which was under threat from the diverging direction of the EFF negotiations. While DG Trade could be criticised for this, it could, on the other hand, be credited with helping drive the EU position on fisheries subsidies as it maintained a pro-reform position on subsidy reform in WTO negotiations, pulling up the EU on the international scene and so providing pressure for internal reform.

Furthermore, the influence of any joined up approach of the College diminishes with Council negotiations. This is particularly the case the longer that negotiations continue, which was the case with the EFF proposal, originally proposed in July 2004 by the Commission and agreed by the Council in June 2006. Commissioners are largely left to manage their own portfolios unless developments in the Council seriously undermine wider Commission positions. In practice therefore the College represents whole of government *proposal* making more than *decision* making. In the case of fisheries subsidy reform, this is particularly the case as it is a politically contentious issue. However, given the interests of DG Trade in subsidies, the whole of government decision making within the College appears to have played an important, and probably positive, role in the evolution of the subsidy regime.

The Council of Ministers and Member States: The UK case

Following adoption within the Commission College, proposals pass to the Council for legal adoption, which typically follows a period of negotiation amongst Ministers from the 25 Member States. These negotiations are between the Ministers from the respective Member States responsible for fisheries. When considering whole of government decision making at this stage, one's attention is therefore turned to the Ministers of the Member States. As would be expected, this varies widely. Germany is considered a Member State with a high level of joined up decision making generally, while environmental considerations are often maintained across policy areas by Sweden for example.

In considering the degree to which whole of government decision making has played a role in the UK's position there are a number of conflicting arguments. Defra chooses to spend money on vessel decommissioning, despite objections from the Treasury that it does not represent value for money as the least efficient vessels leave the fishery first. Beyond this, the Treasury reportedly takes very little interest in Defra spending, suggesting that whole of government decision making plays a limited role in subsidy reform. This said, the way in which Defra spends fisheries subsidies does not significantly conflict with the overarching government position on trade and market liberalisation, providing little to attract the attention of the Treasury or other departments. Spending and positions are argued to be moving in the same direction across government because of external pressures rather than internal pressures. While this may be a factor, whole of government decision making could nonetheless be considered as playing an implicit role, in that Defra could expect to be picked up were it to excessively contradict wider government positions.

While whole of government decision making is typically perceived as referring to coordination between departments, the arrangements and mandates of individual departments can also play an important role. In 2001 the responsibility for fisheries management and policy changed from the Ministry for Agriculture, Fisheries and Food (MAFF) to the Department for Environment, Food and Rural Affairs (Defra). This evolution has played a role in a greater consideration of the environment and cross-sectoral approach being taken in fisheries management, including subsidies. While positive for fisheries subsidy reform, it would be interesting to examine whether this led to environmental issues receiving less attention in the Transport Department, from which environment was moved (previously the Department for Environment, Transport and the Regions (DETR)).

Fisheries Commissioners

Over the period of the CFP reform, Franz Fischler was the responsible European Commissioner, holding the post of Commissioner for Agriculture, Rural Development and Fisheries. He is widely perceived as being instrumental in securing the phase out of subsidies for constructing new vessels in 2002 because of his strong political leadership. This is attributed to several reasons, including his personal commitment to reform; having no domestic ties to fisheries as an Austrian; and, not least, jointly holding the agriculture portfolio, so being experienced in leading more complex reforms than in fisheries. This last argument is also applied to Emma Bonino who led reforms of the 1999-2006 FIFG programme when she was Commissioner for Consumer Policy, Fisheries and the European Community Humanitarian Office (ECHO).

Following EU enlargement in May 2004, which coincided with the end of the five year term of office period for Commissioners, fisheries was separated out from DG Agriculture and Fisheries into DG Fisheries and Maritime Affairs (still referred to as DG Fish). Dr Joseph Borg, a Maltese politician, was appointed as Commissioner for Fisheries and Maritime Affairs. With these changes there have been several changes in approach from DG Fish. In contrast to Fischler, Borg is considered to be a more consensual in his approach, reflecting his cultural background of listening and consulting with all parties.

In relation to subsidies, the softening on the EFF package, an increase in the level of State Aid that may be paid to industry with notifying the Commission, and allowing Member States to support vessel engine replacement, is all upheld as examples of this shift in approach and positions since Borg took up his post. These changes are in the context of growing political attention to the EU's competitiveness and job creation, as set out under the 'Lisbon Agenda', with the environmental pillar of sustainable development being softened. It is difficult to attribute the changes in fisheries subsidies to this changing political context however as subsidies to the fisheries sector undermine the EU's economic as well as environmental commitments. This suggests that whole of government decision making is not leading to DG Fish taking forward subsidy reforms that contribute to the Lisbon Agenda any more than the EU's environmental commitments.

National Ministers

At the Member State level, there are mixed views on the role of individual Fisheries Ministers in subsidy reform in the UK. It is often pointed out that there has been a reasonably seamless transition between the last two Ministers, with both maintaining the policy line. This is attributed by some to the domestic and international political context. That said, the last two Ministers have not been as sympathetic to the industry as their predecessors, with the current Minister, Ben Bradshaw, taking a particular interest in the environment. In this respect the personal views of the Minister are considered by some to be vitally important, with the evolution of MAFF to Defra to include environment being a contributing, rather than the sole, factor.

Looking beyond Defra, the fisheries sector received high level political attention in 2003 from the Prime Minister's Strategy Unit (PMSU). On the request of the Prime Minister, the PMSU examined the issues facing the sector and proposed a long-term strategy for the UK fishing industry (PMSU, 2004b). This included recognition of the role of capacity enhancing subsidies in undermining the sustainability of the industry and so added further impetus to the direction of the government's position on fisheries subsidies and a commitment to sustainable fisheries more broadly. It is worth noting that the PMSU is considered by many, including industry, one of the best cases of joined up government in respect to fisheries, with a holistic approach taken in its analysis and recommendations.

This prompts the question of what initiated the PMSU review. The fishing industry had been calling for a thorough review of the way in which UK fisheries are managed in advance of the PMSU review. However, the review followed in the wake of the December 2002 CFP reforms, which coincided with heavy cuts in the fishing opportunities for UK vessels in the North Sea cod fishery. This sharpened the attention of the UK government on the failure of the management system to sustain its fisheries, leading one to conclude that the PMSU review was to a large extent prompted by crisis.

The common tendency to assign causality of the direction of the fisheries subsidy reforms solely to politics and politicians is therefore an oversimplification of reality. While strong political leadership is a necessary condition for subsidy reform, and has been important in the FIFG and EFF evolution, it is not sufficient in itself, but depends also on other factors such as the institutional context, the availability of tools and evidence for reform. In the case of the UK, crisis has also been an important factor.

Stakeholder involvement

Over the last decade the fishing industry and environmental NGOs have increasingly engaged in the development of fisheries policy, including subsidies, at both the EU and UK level. This has been facilitated through – at the instigation of outgoing Commissioner Emma Bonino – the opening of the Commission Advisory Committee for Fisheries and Aquaculture (ACFA) to NGOs in 1999; the establishment of Regional Advisory Councils (RACs) in 2004; and efforts in the UK to consult industry more extensively and engage NGOs.

More specifically on subsidies, and following on the process developed by the Commission for the consultation on CFP reform, a series of stakeholder conferences were held at the EU level in advance of the EFF proposal, involving industry, NGOs and governments. While some stakeholders would have liked to have seen more listening on behalf of the Commission and Ministers, the meetings were nonetheless welcomed across the board. Both NGOs and the industry felt that they successfully influenced the EFF proposal from their own perspectives.

As a rule the fishing industry is considered better organised and placed than civil society in lobbying in the EU fisheries scene. It tends to have better access to politicians and more resources at its disposal. The NGOs working on EU fisheries policy have become more coordinated, working together more as a network and coordinating positions, including on the EFF. They also work in a variety of ways, some responding to policy proposals alone, others working closely with Member States to develop trust and support political positions (*e.g.* WWF), and others focusing on taking a long term approach through the building of evidence and technical arguments (*e.g.* BirdLife). In supporting all of this activity, they generally have better media skills than the fishing industry for gaining profile and public support for their positions.

Views on the degree to which stakeholders have actually changed the outcomes of subsidy decisions however are divergent. Some individuals within the industry and NGOs claim that the environmental movement is increasingly effective in steering the subsidy debate. The industry could be said to be complaining about the situation, however, while the NGOs could be considered to be making a statement of effectiveness (**Box 6**). Some individuals within NGOs however are more self critical and view their role as marginal. In response to this, the industry is quick to point out that such statements are made to bolster the NGO case that more needs to be done in supporting the environmental agenda.

Box 6. Determining the role of civil society in subsidy reform

On the basis of some environmental NGO statements, strengthening civil society and increasing its role in the policy process should be a central strategy in reforming subsidies:

Thanks to WWF's 2002 Stop Overfishing Campaign, the EU has stopped providing subsidies for building new boats.

WWF, 2006

www.panda.org/about_wwf/what_we_do/marine/our_solutions/sustainable_fishing/improving_management/reducing_capacity/index.cfm

Some within government take the view that stakeholder contributions do not help further policy decisions as the divergent views of industry and NGOs simply reflect the divergent views of Member States. While such a parallel may be drawn, it is not appropriate to write off the role of NGOs as they raise public profile of fisheries subsidy issues and so increase political pressure for reform. Indeed, in some quarters there is an acknowledgement that their pressure has been effective, and is even welcomed in developing and maintaining pro-reform positions.

Subsidy reformers are often quick to advocate stakeholder engagement as a means of bringing NGOs into the reform process. This inevitably means including the fishing industry in discussions. This raises the question of whether it would be better to bring the industry into the process, since they have traditionally resisted fisheries subsidy reform, or whether reform discussions should take place behind closed doors, especially where institutions may be weak or sympathetic to industry. Despite the concerns that including the industry in the process could raise, the idea of taking a closed approach is rarely supported in practice by those in government at the EU or national level.

Although subsidies do not need the buy-in from industry to the same extent that technical measures and catch limits are argued to need to be effective, they are a part of the wider management system. Not only would it be inappropriate to give special treatment to subsidies, support from industry is needed for the whole management package. The prevailing view is that policy decisions need to be legitimate, accountable and have as much support as possible, which is especially important for EU policy given that the EU institutions are increasingly removed from its citizens. Consultations are also considered good practice, if not a requirement, both at the EU and UK level. Added to this, greater stakeholder participation is considered an important element of the new approach necessary to manage fisheries in the face of the poor state of fish stocks, the industry and the legitimacy of the management regime. The 1998 Århus Convention on Access to Information, Public participation in Decision-making and Access to Justice in Environmental Matters and the FAO Code of Conduct for Responsible Fisheries have both added momentum to improving stakeholder participation and transparency in fisheries management.

Supporting the inclusion of the industry in subsidy reform is the fact that the language of the fishing industry has recently changed markedly, most especially in northern Europe. Although this is somewhat in recognition of the problem of stock decline and

overcapacity, and the role that subsidies play in this, through being engaged the industry understands and increasingly accepts the hard line response of the Commission and some Member States to calls for vessel rebuild and modernisation subsidies. The industry approach in some Member States (*e.g.* Denmark, UK, Netherlands and Sweden) is now geared more towards obtaining a level playing field and supporting a phase out of capacity enhancing subsidies as their governments move away from financially supporting their industries. Arguably, involvement of the industry has been important in changing its positions, and for ensuring government is aware of how and why they have evolved, and so supporting the reform process.

Political and economic context

In discussing the role of integrated assessments, stakeholder engagement and whole of government decision making within the reform process of EU fisheries subsidy regime, it becomes clear that there are other factors driving and inhibiting the process. The most important of these are the wider political and economic context. The key factors are detailed in **Table 2**, listing in approximate descending order of importance the supporters and inhibitors of the changes noted at the three recent stages in the evolution of the subsidy regime. The absence of inhibitors in some cells does not suggest that there were none, but rather the focus is on the key supporters and inhibitors during the period.

Table 2. Wider drivers and inhibitors in evolution of the EU fisheries subsidy regime since 1999

Date	Development (✓= positive ×= negative environmental development)	Drivers	
		Supporters	Inhibitors
1999	1999-2006 FIFG agreement ✓ Environmental safeguards *e.g.* cross-compliance with MAGPs, provisions for environmental projects involvement of environmental interests	Part of 'Agenda 2000' reforms 'Cardiff Process' of environmental integration Declining budget	
2002	Amendments to FIFG regime ✓ Phase out of vessel rebuilds ✓ Extra vessel scrapping funds made available	Commissioner Fischler could 'make his mark' High expectations and wide public scrutiny of CFP reform Short-term change Part of wider package – could be traded off with TACs and other concessions (?)	
2006	EFF agreement ✓ Building on 2002 reforms ✓ National Strategic Planning × Introduction for modernisation support	Post 2002 CFP reform WTO subsidy discussions	EU enlargement – new Member States had high expectations of modernisation support Poor economic climate: rising oil prices and declining catches focused attention of industry and governments Borg came in 'after the party' of reform Borg was dealing with a proposal picked up from his predecessor Declining budget (?)

A persistent inhibitor to reform is the fact that the subsidy regime has been in place since it was first established in the 1970's. It has become an accepted, if not expected, part of the management regime. When the financial periods have ended, they have therefore been considered an exercise of renewal rather than removal or active reconsideration of its rationale. Subsidy reform has therefore taken the form of gradual progress in making provisions for vessel decommissioning, transition support, environmental projects and a phase out of the most direct form of capacity enhancing subsidies.

An ongoing driver of reform has been the wider political context, with a general increase in attention to environmental integration. This was particularly the case at the time of agreement of the 1999-2006 FIFG programme. This is also the case for the positive changes in 2002 that were a part of wider CFP reforms. As well as driving this progress, it is also possible that the agreement was helped by being part of a wider package, enabling trade offs. While Commissioner Fischler favoured such packages, others question the extent to which this was the case for the FIFG amendments.

More recently, there is widespread agreement that the biggest factor inhibiting subsidy reform has been EU enlargement. As touched on, the ten new Member States that joined the EU in 2004 were poorer than the existing EU15 and had high expectations of support for their sectors. Added to this has been the poor economic outlook, with rising oil prices and falling revenues from stock decline squeezing the industry. Although oil price rises have affected all industries across the EU, this has led to heavy lobbying from an ageing and fuel intensive fishing industry, which has generated political desire to assist the industry and so impede subsidy reform.

In the case of the UK, an important factor (if not the key factor, argued by some) behind the government not wanting to provide its fishing industry with subsidies, and so arguing for EU wide subsidy reform, is the UK's EU rebate. Approximately two thirds of the amount by which UK payments into the EU exceed national expenditure of EU funds are returned to the UK. This creates a disincentive for the UK to draw down on EU funds and hence subsidise its fishing industry.

Conclusions

As is the case in the analysis of any policy reform processes, determining the drivers and approaches in reforming the EU fisheries subsidy regime over a long period of time is difficult because outcomes are neither simple nor attributable to single factors. The people involved in the processes change over time and in discussing the issues with people in government, industry and NGOs, it is difficult to maintain a focus on the issue of subsidy reform. It is often not possible to separate the issue of subsidies from broader policy reform issues. Furthermore, institutions tend to defend and promote themselves, with self criticism and objectivity typically uncommon.

Despite these limitations making it difficult to confidently identify drivers and inhibitors in the evolution of the EU fisheries subsidy regime, it can be concluded that integrated assessments, stakeholder engagement and whole of government decision making have each played a varying, but nonetheless important role.

Whole of government decision making, and more so proposal making, has played an important role in mitigating the regression in the EU's subsidy regime to support vessel rebuilds, at least in the last two years. Based on UK experiences, a joined up approach in

government has probably played a background role, rather than leading role, in its pro-reform position. With 25 Member States, the EU decision making system is particularly complex and drawn out, creating room for policy incoherence. This supports the case for whole of government decision making, although it is difficult to envisage how this could be achieved beyond rationalising the size of the College and improving workings within individual Member States. Probably more important, though, is the matter of political leadership, although it is even more difficult to envisage what proactive steps the EU institutions could take to strengthen its politicians.

There is a growing case for evidence based policy development at the EU level and an increasing number of Member States. This only supports the role of impact assessments, both generally and in subsidy reform. To date impacts have not formally played a role. Assessments have not been integrated, considering mainly issues of social and economic impacts and administrative issues such as uptake. These can be expected to support future impact assessments, together with a more conducive political context. This will in particular require support for this process from Member States, which in part depends on the Commission allocating sufficient resources to do a meaningful job.

Stakeholder engagement is central to the Commission impact assessment process and so can also be expected to increase in future subsidy reforms, or at least become more formalised. As part of bringing evidence and arguments to the table, NGOs play an important part in subsidy reform. The work of policy researchers, such as academics and the OECD are also important in this respect. Stakeholder engagement is also an important part of policy development generally, and helps increase legitimacy and public support. This is particularly important for EU fisheries policy, although there is room for improvement in this respect, not least in the area of subsidies.

While the EU fisheries policy framework is moving in the right direction, the ultimate evaluation of EU progress is on how much money is spent, by area. In this respect, Member States are not *required* to allocate funding to direct capacity enhancing subsidies. Indeed, some Member States, such as the UK, focus more on decommissioning programmes with a view to reducing over capacity. The UK could be criticised for not going further. However, it is remains sensitive to the issue of the level playing field. It argues, with some validity, that phasing out subsidies further would disadvantage the UK industry and that it would risk losing the support that it currently has from some parts of the industry.

As noted, many of the issues identified in the fisheries subsidy reform process are not specific to subsidies, but are issues of good governance generally. Given the limitations of the analysis, it would not be appropriate to consider the conclusions as definitive, but rather the subject of discussion and debate. Indeed, areas that warrant further consideration and research include identifying which factors support whole of government decision making, as is considered the case in Germany, and the role of the Commission's impact assessments in the development of the other EU financial instruments for the 2007-2013 period that were developed at the same time as the EFF.

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Chapter 6. Forestry

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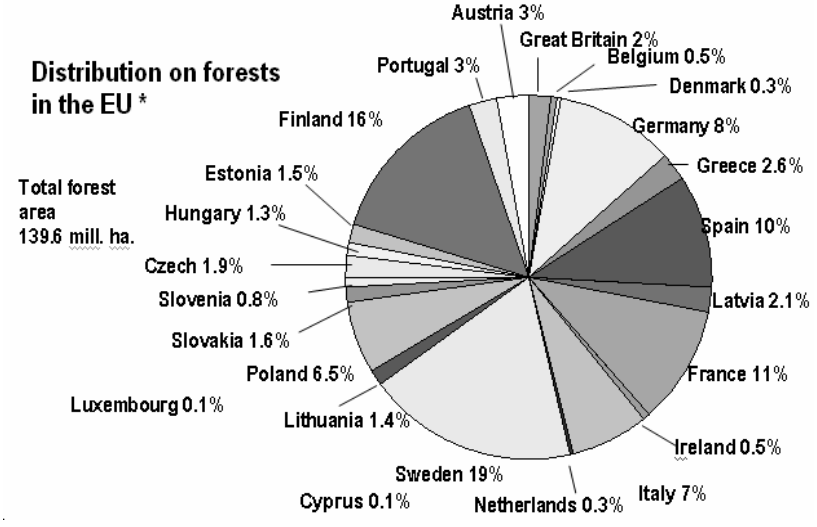
Introduction

Prompted by the Rio Summit in 1992, Finland revised its forestry legislation to emphasise sustainability aspects. In earlier legislation, sustainable forestry meant mainly sustainability in terms of timber production and generally ignored environmental and social impacts. The most recent Forest Act considers ecological and social sustainability to be as important as economic sustainability.

Forestry industry production and exports

Forests cover about 2/3 of the country and Finland accounts for 16% of the forests in the European Union (**Figure 1**). By tree species, forests in Finland are 47% pine, 34% spruce, and 15% birch. Forestry industry production has continually increased in the period 1960 to 2004, comprised of paper and paperboard, woodpulp, sawn softwood, and to a lesser extent, wood-based panels (**Figure 2**).

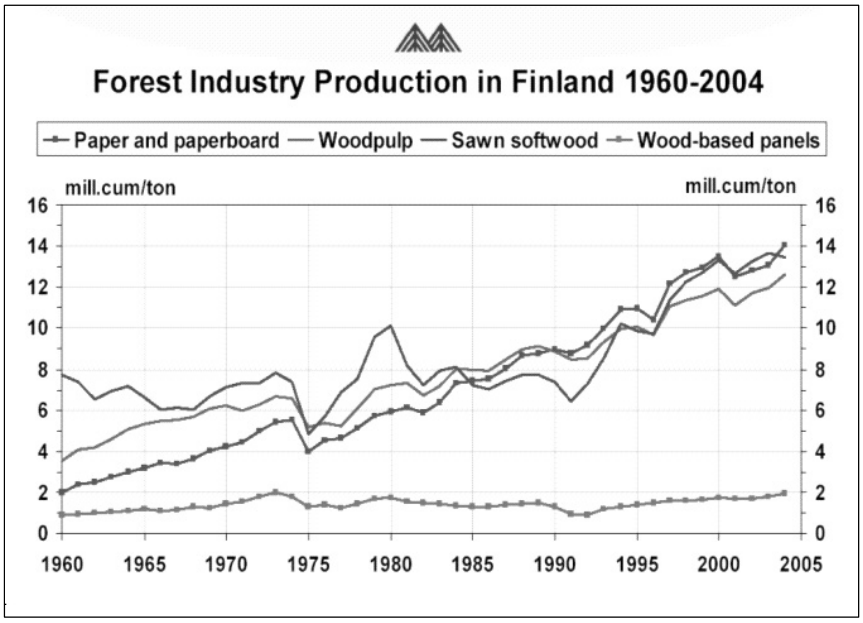
Figure 1. Distribution of Forests in the European Union



*Crown cover of forest stand over 10% and size of the area over 0.5ha

Source: Finnish Forest Research Institute, 2005.

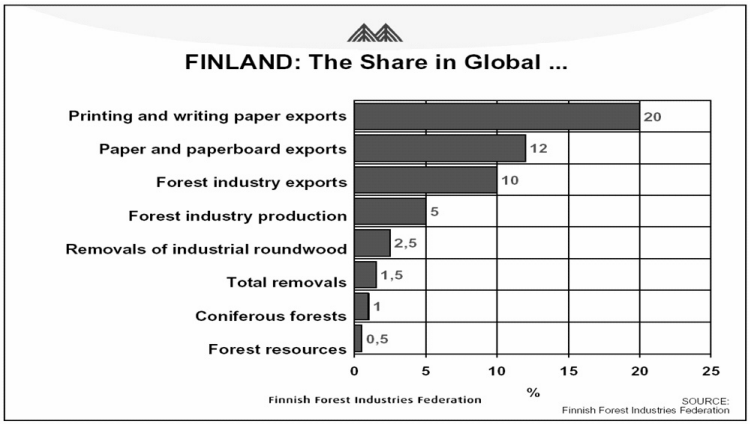
Figure 2. Forest Industry Production in Finland, 1960-2004



Source: Finnish Forest Industries Federation

Finland holds a 20% share of global exports of printing and writing paper (**Figure 3**). It also accounts for 12% of global paper and paperboard exports, 10% of global forest industry exports, 5% of global forest industry production, and 2.5% of global removals of industrial roundwood. Forest exports account for 25% of total Finnish exports compared to 30% for the metal industry, 25% for the electronics industry, and 20% for other industries. Paper accounts for more than 50% of the value of Finnish forest industry exports, followed by paperboard products, sawn goods, pulp, roundwood and other production.

Figure 3. Finnish forest industry exports as share of global exports



Maintaining forestry communities

Finland, which is a large country with scarce population, relies on the forestry sector to maintain social sustainability and communities in the Finnish countryside. Most Finnish forests are owned by private, non-industrial parties (58%) followed by the state (29%), private sector companies (8%) and other (5%). About 4/5 of domestic wood originates from private family forests. There are about 300 000 private forest holdings with an average size of 35 hectares. Most forest owners are wage-earners, pensioners or farmers. Motivating these forest owners in active, sustainable management of forests is one of the main goals of Finnish forest policy.

The average rotation period in the boreal coniferous forests of Finland is 80 to 120 years. The government encourages private forest owners to invest in silviculture (the long-term development and care of forests) with an annual investment target of €250 million set in Finland's *National Forest Programme 2010*. In the past few years, private investments in silviculture have been about €150-170 million. Voluntary agreements on forest conservation are made between the state and the forest owner, usually for 10 years. By the end of 2005, these agreements covered 14 500 hectares of forest.

Forestry subsidies

Finland has had an active forest policy since the 1960s, when it became evident that forest production and removal was exceeding the incremental growth of forests. This prompted increasing investments in silviculture, beginning in 1965, and resulted in an increase in the annual increment of forests from 55 million to 83 million cubic meters. State incentives to forest owners led to increasing investments in silviculture until 1975. With the economic recession of the 1990s, state supports to forestry were reduced by 50%.

A number of pieces of legislation were introduced to address problems in the forestry sector, including the 1996 Act on Forest Centres, the 1997 Act on the Financing of Sustainable Forestry, the 1999 Act on Forest Management Associations, the 2000 Act creating the Finnish Forest Research Institute, the 2003 Act on Jointly Owned Forests, and the 2005 Act on the State Forest Enterprise Metsahhalitus.

According to the *1997 Act on the Financing of Sustainable Forestry*, subsidies can only be granted to ensure generally the sustainability of timber production, to maintain the biological diversity of forests, and for forest ecosystem management undertakings. More specifically, subsidies may be given for forest regeneration, prescribed burning, tending of young forests, harvesting of energy wood, forest remedial fertilisation, renovation ditching and forest road construction. But sustainable management of forests is the prerequisite for each forest subsidy.

State subsidies to private forest owners total about €60 million per year. The share devoted to forest ecosystem management has risen steadily, and accounted for 10% of all forest subsidies, a total of €5.7 million, in 2005. Approximately €3.1 million contributed to the conservation of about 3 100 hectares of forest. Other environment-related financing was granted as follows: €1.4 million for forest ecosystem management projects, €0.3 million for mapping of key habitats, €0.2 million for other forest ecosystem management, and €0.4 million for the *Forest Biodiversity Programme for Southern Finland*.

Forest Biodiversity Programme for Southern Finland

The *Forest Biodiversity Programme for Southern Finland* (METSO) (2003–2007) relies on forest owners' willingness to protect forests on a voluntary basis with total public and private funding of €62 million over the five-year period. METSO is jointly administered by the Ministry of Agriculture and Forestry and the Ministry of the Environment. It is aimed at the restoration and management of habitats in nature conservation areas.

Natural values trading, competitive tendering and forest biodiversity co-operation networks have been piloted in different areas in Southern Finland. In the programme on natural values trading, landowners enter into agreements to maintain or improve specified biodiversity values of the forest and in return receive a regular payment from the State as buyer of these natural values. These payments will total about €0.4 million in the period 2003-2007.

In competitive tendering, the environmental authorities invite landowners to submit tenders on areas to be protected based on the conservation of biological criteria and the price at which they are willing to offer their sites for protection. Forest biodiversity is also protected at the local level on the basis of voluntary co-operation between landowners. These networks include participation by local authorities, non governmental organisations (NGOs) and other stakeholders.

Experiences with the METSO programme are encouraging as forest owners and other stakeholders have been active in the pilot projects. The programme should increase the social acceptability of forest biodiversity protection and decrease environmental conflicts in forestry. While there may be a time-lag in the positive effects on forest biodiversity, the programme benefits from better landowner attitudes in regard to biodiversity protection. The results of the programme will be collected and analysed during 2006 with political decisions on the future of the programme to be made in 2007.

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Subsidy Reform and Sustainable Development

POLITICAL ECONOMY ASPECTS

Unsustainable subsidies are pervasive in the industry, agriculture, transport and energy sectors of most OECD countries. They are expensive for governments and can have harmful environmental and social effects. Eliminating these supports requires comprehensive approaches which are supported by top political leadership, transparent in their potential effects on all parties, consistent over the long-term, and often accompanied by transition supports. This volume uses sectoral case studies to illustrate that achieving change in structural policies such as subsidies depends largely on good governance practices.

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