A Plan

Note: This issue of MuseLetter is chapter 3 of the forthcoming book, The Oil Depletion Protocol: A Plan to Avert Oil Wars, Terrorism and Economic Collapse. *Please do not republish this material in whole or part without explicit permission. –RH*

When a resource becomes scarce, modern societies typically address the problem in one of three ways. All are, strictly speaking, forms of *rationing*—which is the controlled distribution of resources and goods.

First, resources and products can be rationed by price. In this case, the market handles distribution. Those who have the most money (or other assets) and who want a resource or product the most can obtain the largest quantity. In the case of luxury goods, or in instances where shortfalls are minor and temporary, this presents no problem. However, in the case of serious, lingering shortages of necessary resources and goods (water, food, housing, and energy), rationing by price can result in a situation where a resource becomes so expensive that many cannot afford even to meet basic needs, while others with plenty of money experience no hardship and consume much more than they actually require. In some instances, this in turn can create the conditions for civil or international conflict. Historically, even in free-market economies, price rationing has sometimes been rejected in wartime (when domestic unity is at a premium) and in cases of food scarcity.

Price controls represent another way of dealing with scarcity. In this case, the effort is to combat the negative consequences of price rationing by simply preventing sellers from raising prices. Price controls are intuitively appealing to consumers for obvious reasons. However, such controls do not increase the quantity of resources or goods available, and do not reduce demand (which prices effectively do, up to a point); in fact, artificially low prices actually encourage demand, which cannot be satisfied by the available supply—a situation that creates long queues and general frustration. Experience shows that price ceilings discourage producers from investing more in production, a situation that can actually exacerbate shortages. Thus economists generally oppose this strategy, except in very brief emergency situations. An especially relevant example: During the oil crisis of 1973, the US government instituted controls capping the price of "old oil" (already discovered) while allowing the price of newly discovered oil to float; this resulted in a withdrawal of old oil from the market. The rule, which was intended to spur more exploration, simply exacerbated the existing oil scarcity.

Finally there is rationing by quota. In Britain during World War I, panic buying prompted quota rationing first of sugar, then meat. During World War II, quota rationing was practiced in many countries, including the US. Books of ration coupons were issued to citizens, who could present the coupons at stores (food still had to be paid for). Many people were actually better nourished under these rationing programs than previously: infant mortality due to poor nutrition declined in both Britain and the US during World War II. More recently, in the summer of 2001, when low water levels threatened the nation's hydro-dependent electricity grid system, Brazil instituted electricity rationing, with cuts of 20 percent mandated for domestic users and businesses and stiff penalties for non-compliance. The rules were eased in November with the arrival of the rainy season. With quota rationing, the government must undertake the difficult job of adjusting rations to reflect fluctuating supplies and the needs of individual consumers. While an equal ration for each consumer makes sense in a few cases—bread in a city under siege is the classic example—most

rationing programs must face the problem that consumer needs vary widely. In the case of fuel, some motorists need to drive more because they commute long distances and thus require more gasoline, while others need drive very little.

In the current case, we are considering the impending global consequences of our use of oil—a depleting, non-renewable resource. A substantial reduction in usage will require coordinated effort. Because we will in effect be collectively managing whatever petroleum resources remain, the strategy we adopt will constitute a form of rationing. We have already (in Chapter 2) argued that, as petroleum becomes scarce, price rationing will lead to a range of catastrophic consequences. Classic price controls have historically been ineffective and even counterproductive, and so we need not waste much time in the exploration of that option. Nor is quota rationing imaginable on a global scale (although, as we will discuss in the next chapter, it could work well at the national level).

Clearly, there must be other ways of approaching the problem, but the following questions quickly arise: How would a global rationing scheme work? How would it be enforced? Should it concern just oil, or all fossil fuels? Should it treat all nations similarly, or should it favor nations that have previously had less opportunity to enjoy oil-fuelled industrialization?

Let us sort through the options.

Emissions-Based Proposals

In the mid-1990s, widespread concern about the looming climatic consequences of emissions from the burning of fossil fuels led to the negotiation of the Kyoto Protocol, which mandates a reduction in the emission of greenhouse gases (principally carbon dioxide) to levels 5.2 percent below those in 1990; this is to be achieved by industrial countries by the year 2012. Non-industrial nations would be exempted for the time being, though negotiations are intended to begin soon on cuts to be made by the developing world.

The Kyoto Protocol does not represent an instance of rationing in the usual sense, since the objective is not to distribute a scarce resource, but to reduce the negative environmental consequences of the use of a certain kind of resource. Nevertheless, it can be seen as a form of rationing in the broadest sense of the term, as it works by first creating emissions rights and then controlling their distribution.

While nearly the whole world has embraced the Kyoto Protocol, the US—which emits more greenhouse gases than any other country—has refused to ratify it, as has Australia. For the past several years, this led many analysts to conclude that the Protocol was, in effect, dead. However, in December, 2005, at the Conference on Climate in Montreal, negotiators from over 180 nations agreed to begin work on tougher emissions targets to come into force after 2012; the US, isolated in its opposition, agreed at the last moment to join industrializing nations like China in an "open and non-binding" dialogue about how to make their own contributions to reducing carbon emissions.

Negotiators of Kyoto (and whatever follows) have three mutually contradictory constituencies to satisfy:

- those who complain that implementation will curtail economic growth;
- those who say that the mandated emissions reductions are insufficient (climate scientists say that cuts of up to 80 percent by mid-century will be needed in order to avert catastrophic climate change); and

- those who say that as long as the more industrialized nations continue to use fossil fuels at a higher rate than the rest of the world, less-industrialized nations should not be required to reduce their emissions at all.

According to a press release from the United Nations Environment Programme,

> The Kyoto Protocol is an agreement under which industrialized countries will reduce their collective emissions of greenhouse gases by 5.2% compared to the year 1990 (but note that, compared to the emissions levels that would be expected by 2010 without the Protocol, this target represents a 29% cut). The goal is to lower overall emissions from six greenhouse gases—carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs—calculated as an average over the five-year period of 2008-12. National targets range from 8% reductions for the European Union and some others to 7% for the US, 6% for Japan, 0% for Russia, and permitted increases of 8% for Australia and 10% for Iceland.

Each country agrees to limit emissions to the levels described in the Protocol, but in the case of many countries those limits are above their current production. These "extra amounts" can be traded or sold to other nations on the open market. Russia, for example, which can easily meet its targets, can sell its carbon credits for millions of dollars to countries that will have more difficulty meeting their targets—such as Canada. This provides a financial incentive for nations to meet their targets as soon as possible. Countries also receive credits for various shared "clean energy" programs, as well as for providing "carbon dioxide sinks" in the form of forests or other systems that remove carbon dioxide from the atmosphere.

Some organizations believe that the Kyoto Protocol, while a step in the right direction, could be improved upon. Perhaps the most widely discussed alternative proposal is Contraction and Convergence (C&C), which is promoted by the Global Commons Institute. C&C envisions "CO_2 Emissions Entitlements" consistent with an outcome of CO_2 concentrations in the atmosphere of 450 parts per million (ppm) by the year 2100 (the CO_2 level was just 278 ppm in pre-industrial times, while the current concentration is about 380 ppm). Where C&C especially differs from Kyoto is in the allotment of emissions entitlements not to nations, but to individuals worldwide on an equal per-capita basis (though this is not an immediate requirement but rather a target to be achieved by mid-century—hence the term "convergence"). The reasoning is simple: the Earth's atmosphere is a "global commons" of which each human being, regardless of nationality, has an equal share in terms of rights to pollute.

The Global Commons Institute thus sees its plan as a way of solving two problems at once—global climate change and global economic inequity.

The Foundation for the Economics of Sustainability (FEASTA), based in Ireland, supports Contraction and Convergence goals, as well as the strategy of issuing equal per-capita tradable emissions rights. However, FEASTA argues that this system of allocation, while equitable, would still not be sufficiently fair, as people living in some parts of the world have challenges to overcome before they can live as comfortably on their emissions allocation as people elsewhere. In a departure from the Global Commons Institute's version of C&C, therefore, FEASTA proposes that for the first two decades after C&C commences, everyone should receive the same allocation each year but at the rate appropriate for year 20.

The difference between the total amount of emissions permits available for any particular year and the amount distributed to individuals would go into a "convergence fund" to be allocated to national governments according to an internationally-agreed, transparent set of criteria. National governments could sell their emissions permits to raise funds for projects that enabled their countries to make the transition to lower fossil energy use.

FEASTA also supports the creation of an emissions-based global currency unit (the Ebcu), whose use would at once stabilize the global economy, wipe out poorer nations' debts, and encourage a transition to renewable energy sources. Here is FEASTA's summary of its proposals regarding currency reform:

Global

- A genuine world currency should be established.
- This new world currency should be issued by being given into circulation rather than lent.
- The initial distribution of the new currency should be on the basis of population rather than economic power.
- Over the years, the supply of the new currency should be limited in a way that ensures that the overall volume of world trade is compatible with whatever is considered to be the most crucial area of global sustainability. In our view, this is the world climate.

National

- Each country or monetary union should operate two currencies, one for normal commercial exchanges, the other for savings and capital transfers. Each of these currencies would have its own floating exchange rate with the new international currency, and hence a variable exchange rate with the other.
- The new national exchange currencies would be spent into circulation by their governments rather than being created through the banking system on the basis of debt.

Local

- The establishment of regional (i.e. sub-national) and local exchange currencies should be encouraged.

Finally, FEASTA also advocates the creation of a fossil fuel buyers' organization that would negotiate with oil and gas producing countries for supplies. The club and the producers would agree on a fixed price for whatever amounts of coal, oil, and gas could be produced and exported each year. The buyers' club would set up a system to share out the amount of the fuels purchased among the participating countries using t**he** Contraction and Convergence allocation method.

A Depletion-Based Proposal

In our view, any proposal that reduces fossil fuel dependency and greenhouse gas emissions is a step in the right direction. Thus in proposing an Oil Depletion Protocol we are not arguing against any of these emissions-based proposals; we are instead merely offering another option—one that begins from a different premise, and that thus may offer some distinct advantages.

Most emissions-based proposals (with the exception of FEASTA's) assume that enough fossil-fuel resources exists to continue fuelling industrial societies far into the future at current rates of demand growth. The problem, again in the view of the proponents of such proposals, is that continued use of fossil fuels yields emissions (CO_2) that are destabilizing the Earth's climate, a process likely to lead in turn to ecological and economic catastrophe within the current century. Thus the strategy adopted is voluntary curtailment to avoid environmental harm. However, some plans also seek to apportion this curtailment in such a way as to foster global economic equity.

The present depletion-based proposal starts with the recognition that the most important fossil fuel from an economic perspective (petroleum) is going to become scarce and expensive within the foreseeable future. Thus the nations of the world *will* reduce usage of at least some fossil fuels whether they do so deliberately or not, because available supply will not be sufficient to feed the demand that would exist were prices to remain at historic levels; indeed, the available supply in terms of deliverable flow rates will begin to shrink, and the scale of the cumulative decrease over the course of, say, two decades following the peak is likely to be substantial. This in itself presents the world with an enormous economic problem, one that will likely lead to serious political and geopolitical dilemmas. The challenge in this case, then, will be to reduce petroleum dependency in national economies cooperatively and systematically so as to avert economic collapse, civil unrest, terrorism, and war.

The climate change movement has been advocating for many years a reduction in fossil fuel usage; Peak Oil means categorically that such a reduction is not optional—it will be forced upon us by nature at some point; if we do not plan for that event and reduce our dependency now, the consequences then will likely be dire. While it is true that we will be able to replace petroleum to some extent with fuels synthesized from other fossil sources (using coal-to-liquids and gas-to-liquids technologies, as well as extra-heavy oil, oil shale, and eventually perhaps even methane hydrates), it will probably not be possible to increase the extraction and conversion of these materials fast enough to make up for likely declines in global oil production rates; thus in dealing with Peak Oil the nations of the world will have to rely primarily on strategies that emphasize demand reduction. The implementation of such strategies is almost certain to result in a substantial reduction of greenhouse gas emissions.

Further, while emissions-based proposals focus on the economic benefit of burning fossil fuels and thus seek equity by demanding the largest reductions from those using the most, an Oil Depletion Protocol is likely to highlight instead the economic vulnerability created by oil dependence, and mandate equal cuts in production and imports for all countries that participate, recognizing that countries that make the transition away from petroleum sooner will be at a great economic advantage over those that put off the effort until later. This being the case, requiring a slower transition by poorer nations would actually offer them no advantage in the long run: whatever infrastructure they were to build using additional fossil fuels would likely only create more fossil-fuel dependency that would have to be dealt with later, when the means for doing so might not be as readily available.

Throughout the remainder of this book we will understandably devote most of our attention to the possible terms and outcomes of an Oil Depletion Protocol, rather than emissions-based proposals, because more information on the latter is available elsewhere (links are provided). At the end of this chapter we will briefly discuss how emissions-based and depletion-based proposals might complement one another in practice.

Basic vs. Ancillary Provisions

The title of this book might give the impression that there is only one oil depletion protocol, and this is true in the sense that so far only one has been seriously proposed—the one proposed by Dr. Colin J. Campbell, founder of the Association for the Study of Peak Oil. Any depletion protocol must consist essentially of a cooperative plan to reduce oil imports and production. Ways of reducing dependency might include taxes and fees on petroleum consumption, or subsidies and other incentives to encourage investment in other energy sources. The transformation of urban infrastructure to reduce the need for transportation and to support mass transit systems might also be encouraged using fees and incentives. In addition, it is possible to imagine complex subsidiary agreements to reform currencies, dismiss past debts, or foster global economic equity. Once again, however, the core of the agreement must be clearly and simply to reduce world oil dependency.

How much and how fast? One can envision a range of formulas for the percentage of reduction in oil usage (production and exports). Clearly, the best formula would be one that is not seen as arbitrary (otherwise negotiations could be endless), and one that is easy to understand.

Colin Campbell, in the Rimini Protocol, has suggested a formula based on depletion rates, which would work quite simply as follows: importers would reduce their imports by the world oil depletion rate, while producing countries would agree to reduce their rate of production by their national depletion rate.

The concept of the depletion rate is simple to grasp given a little thought. Clearly, each country has a finite endowment of oil from nature; thus, when the first barrel has been extracted, there is accordingly one less left for the future. What is left for the future consists of two elements: first, how much remains in known oilfields, termed remaining reserves; and second, how much remains to be found in the future (termed yet-to-find). How much is yet-to-find may be reasonably estimated by extrapolating the discovery trend of the past. The depletion rate equals the total yet-to-produce divided by the yearly amount currently being extracted.

Let us take a hypothetical producing country with 1000 million barrels of oil yet-to-produce and that is extracting 30 million barrels per year. This yields a depletion rate of 3 percent. By the second year of the agreement, that nation's reserves will have declined by 30 million barrels to 970 mb. Our hypothetical nation could produce 3 percent of that amount, or 29.1 million barrels, or exactly 3 percent less than the previous year. (New discoveries or reserve upgradings would not affect the situation appreciably, as future discovery estimates are incorporated into the depletion rate from the beginning).

Thus the depletion rate is also the amount by which production would be *reduced* each year. For importing countries, this would be similarly true with regard to the world depletion rate (currently calculated by Dr. Campbell at 2.6 percent per annum): this would also be the percentage by which importers would reduce their imports each year.

Again, other formulas for reducing world oil dependency are imaginable; however, because Campbell's formula is non-arbitrary, intuitively graspable by the layperson, and within the range of percentages that would likely be negotiable in any case, we shall use it as the basis for the remainder of our discussion regarding the likely content of an Oil Depletion Protocol.

Advantages

Reducing production and imports in this fashion would yield a number of advantages, not all of them immediately obvious.

First, it would conserve the resource. Petroleum engineers are keenly aware that oilfields that are depleted too quickly can be damaged, resulting in a reduction in the total amount eventually recoverable. Voluntarily and systematically reducing the rate at which the world's oilfields are depleted would extend their lifetimes, so that future generations could have access to a resource of which there is a finite quantity and that is useful for a wide range of purposes—both as a lubricant, and as a feedstock for the production of pharmaceuticals, chemicals, and plastics—other than simply as a fuel.

Second, from the standpoint of reducing carbon emissions, the cumulative reduction in oil consumption globally would be substantial—in ten years, a total of approximately 25 percent reduction.

Third, from the standpoint of the participating nations, the reductions would be gradual and foreseeable. Nations, municipalities, and businesses would be able to plan their economic futures with minimal concern for dramatic price variations for oil and oil products, since there would likely be more world spare petroleum production capacity than would be the case without a Protocol, and thus a greater ability to adjust to short-term causes of shortages—including geopolitical conflict, accident, and natural disaster.

The Secretariat; Enforcement

Who would keep track of proven reserves, production, imports and exports, estimate each country's oil yet-to-be-found, and prevent cheating? Clearly, if a Depletion Protocol were to be enacted, an international agency would have to be empowered to do these things. But this raises further questions: How big an organization would be required? Who would set it up? How would it be financed? What powers of enforcement would it have? And how would it avoid outside political influence?

These are difficult questions to answer, but they are the kinds of questions that must be dealt with in the creation of any international accord. For example, The Montreal Protocol on ozone-depleting chemicals (1987) and the Convention on Long-Range Transboundary Air Pollution (LRTAP, 1979) are notable for having developed institutional structures that have allowed additions to and refinements of their original agreements. In the case of LRTAP, this structure includes an Executive Body, which meets annually; a Working Group on Strategies, which is a unique mixture of scientists and policy-makers; a monitoring program, EMEP; and a secretariat. This structure has facilitated the adoption of five protocols to the Convention, with further protocols in the pipeline.

Clearly, in the current case the preference would be for the smallest structure possible that has the power to do the things required of it. In view of the importance of the Protocol and the benefits accruing from it, the financing of a secretariat and a monitoring agency should not pose a problem: member nations could pay for both according to a simple formula based on the scale of their consumption. The secretariat would have to be empowered by member nations to assess and enforce financial penalties for countries that refuse data or cheat.

Calculating Depletion Rates

The following are some provisions that the Protocol, even in its most parsimonious form, would likely contain.

The first job of the secretariat would be to undertake a systematic audit of global oil reserves to enable the calculation to the world depletion rate. It is important that this be done using a transparent and consistent methodology.

The secretariat would publish statistics annually, updating the world depletion rate as new data became available.

Member nations would have to agree to complete transparency regarding reserves, discovery, and production. It would make sense for them to agree to be required to submit to an initial audit upon signing. This would facilitate not only the calculation of the world depletion rate, but also the national depletion rate for each producing country.

While national depletion rates would be initially calculated to take into account likely future discovery (based on extrapolation of past discovery trends), any producing nation could request (at its own expense) a new audit and a recalculation of its depletion rate based upon new discoveries.

How to Define "Oil"?

Not all oil is the same. As well as regular conventional oil, there are several categories of non-conventional petroleum resources capable of being turned into synthetic liquid hydrocarbon fuels—including deepwater oil, heavy and extra-heavy oil (including oil sands), oil shale, polar oil, natural gas liquids and condensates, as well as coal and natural gas processed by means of coal-to-liquids and gas-to-liquids technologies.

These non-conventional resources may have characteristics quite different from those of regular conventional oil. For example, oil shale exists in vast deposits in western North America, as well as in Australia, Brazil, China, Estonia, France, Russia, Scotland, South Africa, Spain, and Sweden. However, the name "oil shale" is somewhat of a misnomer, in that the organic material present is not oil per se, but kerogen, and the "shale" is usually a relatively hard rock called marl. Oil shale is burned directly as a very low-grade, high ash-content fuel in a few countries such as Estonia. Properly processed with heat, kerogen can be converted into a petroleum-like substance. While most historic efforts to do this on a commercial scale have failed, Shell has recently announced a successful experimental program to produce synthetic oil from marlstone by cooking the rock in place with underground heaters. If Shell's process can be scaled up, then with good geological and other favorable conditions, oil shale may begin to make a modest contribution to the world's energy supply.

Clearly, however, including global shale oil deposits in a Depletion Protocol in the same category as regular conventional oil would dramatically and unrealistically skew depletion rates, reducing the world depletion rate from 2.6 percent to some small fraction of 1 percent. Similarly, treating the production from coal-to-liquids facilities like regular oil would require including some substantial portion of global coal reserves as potential petroleum reserves, again skewing depletion rates downward.

The arguments for excluding deepwater and polar oil from treatment in an Oil Depletion Protocol are not as strong, as these resources are substantially similar to regular conventional oil, but exist in environments that are more difficult, expensive, or environmentally hazardous to access.

Nevertheless, the simplest course of action would be to define "oil" or "petroleum," for the purposes of the Protocol, as meaning only regular, conventional oil.

It might be objected that excluding non-conventional petroleum sources from the Depletion Protocol would privilege them, leading to a dramatic increase of production of liquid fuels from coal, natural gas, oil sands, and shale oil, defeating the purpose of the Protocol and resulting in increased carbon emissions into the atmosphere.

However, with the Depletion Protocol in place, prices of regular conventional oil will be kept stable and relatively low, so that demand for non-conventional hydrocarbon liquid fuels

(which typically cost much more to produce and whose production rates are in most cases constrained by physical factors such as availability of fresh water) will be restrained. In any case, the other main check on non-conventional production must be robust global agreements to reduce hydrocarbon emissions into the atmosphere.

Technical Explanation: Examples of How the Protocol Would Work

It may be helpful to examine some real-world examples in order to see better how the Depletion Protocol would work.

Norway is a country that reports exceptionally accurate reserve estimates. The total produced to-date is 18.5 billion barrels (Gb), and 11.3 Gb remain in known fields, with about 2 left to find, giving a rounded total of 32 Gb. It follows that 13.5 Gb are left to produce. In 2004, 1.07 Gb were extracted, giving a depletion rate of 7.4 percent (1.07/13.5). This is a comparatively high rate, typical of an offshore environment.

In the case of the US (considering only the lower 48 states and excluding deepwater), the corresponding numbers are: produced to-date, 173 Gb; remaining reserves, 24 Gb; yet-to-find, 2 Gb—meaning that there are 26 Gb left. Annual production in 2004 was 1.3 Gb, giving a depletion rate of 5 percent (1.3/26).

For the world as a whole, 975 Gb have been produced; 772 remain in known fields; and an estimated 134 Gb is Yet-to-Find, meaning that 906 Gb are left. Production of conventional oil in 2004 was 24 Gb, so the depletion rate is 2.59 percent (24/906).

It must be stressed that current reserves estimates in the public domain are grossly unreliable, and one of the purposes of the Protocol is to secure better information. The assessed depletion rate for each country, and eventually for the World as whole, is subject to revision when better information becomes available, but the resulting correction of the depletion rate will not be large, probably causing it to vary by less than one percent.

The Depletion Protocol would require importers to reduce their imports by the world depletion rate (i.e., 2.6 percent) each year in order to put demand into balance with world supply. As stated earlier, producers would reduce their production according to their national depletion rate. Thus Norway would be required to reduce its production by 7.4 percent each year. However, that country's production is already declining at an even higher rate, and so the producer's restrictions in the Depletion Protocol would impose no burden on that country whatever.

This is far from being a unique situation: the imposition on most producing countries would be minor, since few can now increase their rate of production in any case and many are experiencing declining production for purely geological reasons, as is the case with Norway, the US, and over two dozen others.

Agreeing to produce less oil would not inhibit exploration because new finds would lower the national Depletion Rate, and thus permit a higher rate of export than would otherwise be the case.

The main thrust of the Protocol would be to require importers to cut imports, but the inclusion of producers in the provisions would stimulate greater cooperation between the two factions. Any indigenous production in a country that was a net importer would not be likely to provide that country with an unfair advantage, as production within most importing countries is already declining at a rate higher than the world depletion rate.

How users (both producers and non-producers) would deal internally with having less oil would be up to them. But since this is a vital and relevant subject, we will offer some suggestions in the next chapter.

How Emissions-Based and Depletion-Based Agreements Could Work Together

The Oil Depletion Protocol will be far more effective in achieving its goals if it works in tandem with a strong emissions-based accord—one, that is, that includes all nations and requires emissions reductions from all participants. Without such an agreement, many nations would be tempted to replace their reliance on oil with an increased use of coal. This would be especially likely in many poorer nations that currently burn oil to produce much of their electricity. However there is the possibility of even wealthy nations turning to coal-to-liquids technologies to replace conventional gasoline, kerosene, and diesel for transportation fuels. While clean coal technologies are being developed (using carbon sequestration methods), concern for the added financial costs might lead some nations to forego them. The transition away from petroleum is essential, but it must not be undertaken in a way that would result in a climatic catastrophe.

Just as a strong Kyoto accord is necessary to guide nations in implementing the Oil Depletion Protocol, the former would benefit from the addition of the latter. That is because the Oil Depletion Protocol acknowledges another powerful motive for the energy transition in addition to the threat of climate change—the non-negotiable fact of depletion, peaking, and decline of world petroleum extraction. The world's climate experts tell us that we should reduce fossil fuel usage in order to avert future environmental catastrophe; experts in oil depletion inform us that this reduction is not a matter of choice: it will occur sooner or later for purely geological reasons, and weaning ourselves from oil dependence voluntarily, cooperatively, and gradually now will be much less costly and disruptive than waiting until shortages arise.

The Depletion Protocol would make the implementation of the Kyoto accord much easier than would otherwise be the case. If the world becomes mired in economic disaster and resource wars following the global oil production peak, the emissions reduction programs mandated by Kyoto will be undermined: nations will seek every possible means of maintaining economic growth, and will likely turn back to fossil fuels for that purpose; in addition, nations' intense competition for remaining supplies will weaken the spirit of international cooperation required for Kyoto agreement to function. An Oil Depletion Protocol could provide a platform of economic and geopolitical stability on which nations could carry out the difficult work of emissions reduction, energy transition, currency reform, and debt relief.

Kyoto as currently structured is less than optimal because it excludes the nations with the largest and the fastest-growing emissions rates—the industrializing nations of Asia: these less-industrialized countries have not agreed to emissions reductions because they don't want to forego fuel-fed development and because they demand fairness in the face of decades of preferential use of fossil fuels by industrialized countries. Meanwhile the world's current biggest emissions producer won't sign on for fear that the agreement will reduce its economic growth and its competitiveness with fast-developing countries. The Oil Depletion Protocol cuts through both objections by offering a simple formula for all countries to follow.

The Oil Depletion Protocol can be criticized because, in itself, it does nothing to address the problem of inequity (which C&C does explicitly, and Kyoto to a lesser degree). The objective of Oil Depletion Protocol is very simple: to reduce national and global oil dependency. This is in everyone's interest, given the fact that supplies will begin to dwindle at some point in any case, and many years of transition effort will be required in order to

avert economic turmoil in the interim. But the rate at which this transition *can* be accomplished is understandably proportional to the size of any nation's existing oil-dependent infrastructure: countries that are more dependent now will have more work to do and will require more time to achieve zero petroleum dependency. Thus to demand proportionally *faster* reductions from more-dependent economies than from less-dependent economies is unrealistic.

Further, the Oil Depletion Protocol recognizes that oil dependency is itself a problem (not just the emissions from the burning of oil or other fossil fuels). Thus encouraging more dependency on the part of less-developed nations does them no favor—even though they might be able to derive economic growth from using proportionally more oil for a short time. If they have proportionally more access to fossil fuels than other nations, they are likely to use those fuels to build more of a fossil-fuel dependent infrastructure, which will almost immediately become problematic once global oil flows peak and there is less available for everyone—less-industrialized nations included. While it is true that some nations have benefited economically from a greater use of fossil fuels until now, thus helping to create enormous global economic inequity, it would be a mistake to attempt to redress that inequity at this point in time, as Peak Oil and climatic crisis loom, by granting preferential access to hydrocarbon fuels to the countries that appear to have been left behind. A better way to help those nations would be to provide them with open access to new renewable energy technologies and subsidies for their adoption.

FEASTA's approach—which attempts to solve at once a series of global crises (climate change, economic inequity, the less-industrialized nations' debt crisis, and Peak Oil)—is admirable, and currency reform will indeed be essential to maintaining global economic stability following the oil peak. However, the downside of attempting to solve all of these problems with a single plan is that if that particular plan is not adopted (perhaps due to opposition by the nations that use the largest amounts of fossil fuels, who would have to reduce hydrocarbon emissions proportionally much faster than other nations under C&C), then nothing at all may be accomplished.

Therefore just because the Oil Depletion Protocol does not address all of the global problems that need attention, this does not mean that its contribution is unnecessary or unimportant. We must make progress where we can, and the Oil Depletion Protocol would offer tangible benefits for *all* nations, even if it left other work yet to be accomplished. Moreover, its implementation would set an example of global cooperation on an important and potentially contentious issue and would buy time for the nations of the world to focus their attention on other issues.

A Note to Subscribers

This month marks the beginning of *MuseLetter*'s fifteenth year. During the entire time of its existence, this publication has operated on the smallest of scales: each month, I wrote the essay, laid it out on computer, took the original to the printer, hand-stamped return addresses on envelopes, then (with volunteer help from a few friends, named below) folded, stuffed, and mailed the copies. I also maintained the mailing list and bought office supplies and stamps.

From the start, MuseLetter was an unusual, if not unique, publication. It has never carried any advertising, and *MuseLetter* was itself advertised only a couple of times (in *Utne Reader,* back in 1994). All of its content, with the exception of a short essay on the etymology of the word *muse* in issue 3, has been the production of a single author.

The direct profit from publication has been minimal: the margin on each copy was small, and that margin didn't get multiplied many times: during most years, the subscriber base was about 250, which meant that *MuseLetter* realistically constituted a 10 hour per week hobby that just about paid for itself. The last time I raised subscription rates was in 1994; at that time, a first-class US postage stamp cost 29 cents.

However, the indirect benefits have been enormous. I have written six books during this period, with most of the chapters of those books appearing first as *MuseLetter* essays. I was hired to teach at New College primarily because of *MuseLetter*. And now I seem to have acquired a career as public speaker—again, largely because of ideas and writings that were first tested on a small, loyal audience of subscribers.

Today, the subscriber base is closer to 900 (and growing), with two categories—electronic and print. Postal fees are about to go up. I am hard at work on yet another book, and my travel schedule has become punishing. It seems time for a few changes.

This *MuseLetter*, if all goes well, will be folded, inserted, stuffed, stamped and addressed largely by machines and hired hands. And, starting next month, I am asking my subscribers to pay more to offset postage increases and the increased cost of production. My assistant Susan Williamson of Post Carbon Institute will be shepherding the production process, including maintenance of mailing lists.

The price increases now will be modest. Starting February 1, 2006, subscriptions will be $20 a year instead of $15 for U.S. postal subscribers, $24 a year instead of $18 for Canadian and Mexican, $27 a year instead of $20 for elsewhere in the world. Email subscriptions increase to $12 a year from $10. As always, I can accept payment only in US dollars (my bank charges me $15 to process a check in Canadian funds!); this can be in the form of $US denominated check, international money order, or electronic payment via PayPal.

I am at once excited, relieved, and nostalgic about changing how I send off the *MuseLetter*. For years a dedicated tiny group of close-knit volunteers have met at my kitchen table every month, folding, stuffing, stamping, and moistening envelope flaps. The conversation always made the time go by pleasantly, and there was a certain satisfaction in getting the MuseLetter sent to all you postal subscribers this way. I would like to mention especially the assistance of Mary Henderson, Ken Rose, Joy Helstien, the late and dearly missed Fred Beeman, Susan Williamson, and of course my wife Janet Barocco. Also, for several years Ben Levi offered volunteer help designing and keeping current the *MuseLetter* web site; for the past few years Jeffrey Newman has done this—again, on a volunteer basis.

Changing the production method and price seem to be reasonable decisions. I need *MuseLetter* to run itself, freeing me up to write and lecture more. This 165th issue is witnessing a deepening of my work on issues related to Peak Oil, specifically the Global Depletion Protocol project, and a heating up of my lecture schedule. I find that I need *MuseLetter* to mature and become, as it were, sustainable and self-supporting.

Thanks to you for your continued interest and support, and best wishes in the coming year!