CHAPTER 11

A Call for Steady Statesmen: Policies for a Full-World Economy

> *Four Chinese in five believe protecting the environment should be a priority even if it means less economic growth.*
>
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> *China will try to slow GDP growth to ease pressure on the environment following a series of unusually stark warnings from senior ministers about the country's current mode of development.*
>
> THE GUARDIAN

When a sufficient proportion of citizens and policy makers have come to recognize the everyday inconveniences as well as the extraordinary dangers of further economic growth, the time will have come for serious public policy reform toward the steady state economy. Hints of this awakening have appeared. For example, in 2011 China decided to moderate its economic growth rate from nine to eight percent. China's decision was newsworthy not so much for the intentional tempering of the growth rate, which many countries have done at times to prevent inflation. It's also true that eight percent is still a furious rate of growth. What is newsworthy, however, is that the Chinese government explicitly tied the lowering of their growth rate to environmental protection. In an online chat with Chinese citizens,

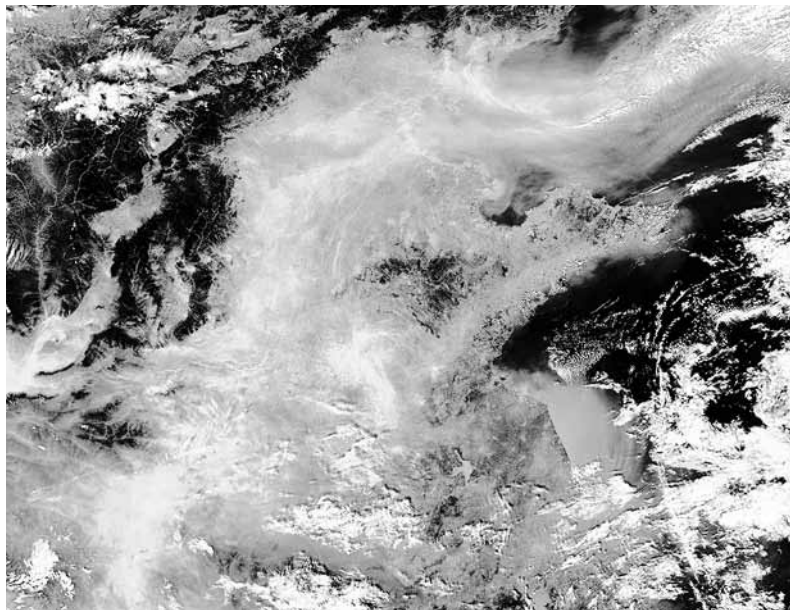

FIGURE 11.1. Dust and haze over the Yellow Sea and eastern region of China, inland to Beijing in the North, October 20, 2012. The Chinese leadership has acknowledged the conflict between economic growth and environmental protection. Credit: NASA Earth Observatory

Premier Wen Jiabao said, "We absolutely cannot again sacrifice the environment as the cost for high-speed growth."[1] This qualifies the decision as a precedent for steady statesmanship.

However, and in general, citizens and politicians worldwide do not yet identify the numerous threats of economic growth *in terms of* economic growth. Not even close. Instead, threats such as global warming, pollution and biodiversity loss are seen as technological shortcomings, diplomatic deficiencies or mistakes to be grown around. This is especially true in the US where, despite the gaudiest living standards ever enjoyed by a citizenry, and despite all the evidence for an overgrown economy, economic growth remains one of the highest priorities in the domestic policy arena. This has been true through thick as well as thin.

Although the time has not quite arrived for policy reform, the time is definitely ripe for scouting the policy options that will be

increasingly sought in the context of Peak Oil, climate change, high unemployment and financial crisis. The simple act of talking about such options creates political space for policy tables to be set. Furthermore, if these policy options are not discussed now, the danger is that we will have all the wrong responses to Supply Shock. For example, as Peak Oil triggers stagflation, and policy makers seek answers, what should we expect them to do if the only game in town is still economic growth? Of course they will push even harder for developing other energy sources. Sure, this will also quicken the development of "green growth" sources such as solar and wind power, but as we saw in Part 3, this is really a strategy for less-brown growth, and we're at the point where we can afford very little more browning of the environment. Furthermore, to the extent that economic growth is the goal, and that less-brown sources will be insufficient to maintain that growth, the obvious outcome is the proliferation of dark-brown and fast-brown sources such as coal, tar sands and shale oil. Insidiously and profoundly dangerous nuclear power will be pitched as "green" in the context of global warming,[2] while Big Money convinces millions that those who warn of nuclear danger are just tree-hugging worrywarts. Indeed we are seeing all of these trends already, for Peak Oil is real and the economic margin is a ruthless force, pushing the economy into previously protected areas and into evermore dangerous options.

So, in terms of economic policy, step one in protecting the planet, ourselves and the grandkids from the juggernaut of economic growth is adopting the right goal. Fortunately, the basic alternatives are easy to identify. With economic growth at the crossroads, there are but two alternative paths: recession and the steady state economy.

The fact that there are only two alternatives to economic growth is worth dwelling on a bit. Invariably, when the pursuit of economic growth is criticized, some will immediately question the critic's belief in mom, apple pie and (if you're an American) Chevrolet. If you're not for economic growth, you must be a communist, or an anarchist at best. Or you're for "shutting down the economy." These

kinds of responses must be anticipated and immediately revealed as reactionary in the extreme, lest the discussion be derailed in a heartbeat. When the "communist" charge is leveled, we need only point out that communists and their governments have pursued economic growth as ruthlessly as Wall Street, and with the same environmentally destructive results. It's not communism, socialism, capitalism or whatever-ism the steady stater seeks, but rather environmental protection, economic sustainability, national security and international stability. Nor is anyone, at least anyone sane, talking about "shutting down the economy." We are talking about the process of economic *growth*, not the existence of economic activity. To put it as simply as possible, when something is defined as an *increase*, whether it be in temperature, awareness or GDP, there are only two alternatives: a decrease or a steady state.

So clearly, the first step in policy development toward a steady state economy is adopting the steady state economy as a goal. Once we have the right goal, the other aspects of policy design fall into place.

Political scientists provide us with a general framework of public policy denoted as "S → A → T → G," where S is a policy statement (such as a statute or executive order), A is an agent (such as a government agency), T is a target (a group whose behavior will be influenced), and G is the goal.[3] For example, your town may have an ordinance (S) saying the police (A) will ticket you (T) if you spit on the sidewalk, in order to keep the sidewalk clean and sanitary (G). Although listed last, it is the goal that drives the formation of the whole policy framework. Without the goal, no S, A or T would exist.

But is economic growth really stated as a goal, in and of itself, or does it simply occur as a result of population growth, consumer behavior and numerous lesser economic policy goals? Sometimes it is a policy goal per se, and we will explore a few examples, but more importantly, if we take away the "per se," then it is clear that economic growth is one of the biggest goals ever to occupy the policy arena.

Going back to the sidewalk-spitting example, the ordinance doesn't state explicitly: "The goal is to keep the sidewalks clean and sanitary." It doesn't have to, because the goal of clean, sanitary public conditions are probably spelled out somewhere else in the town's code. Even if sanitary conditions are not mentioned anywhere in the town's code, such conditions are implied in policies calling explicitly for "public health." And even if there are no public health policies, frankly, it would be a matter of common sense. Certainly a very tiny minority, if any, wants to encounter spit on the sidewalk. The spitting ordinance was adopted as town council members thought with common sense about the various threats to clean and sanitary sidewalks. The pursuit of clean and sanitary sidewalks motivated the council to adopt the ordinance, which called for police to ticket spitters.

During the Reagan Administration, several federal agencies (big As), including the Army Corps of Engineers and the US Forest Service, had their missions redefined to include "economic development" per se. Although great care is taken in ecological economics to distinguish between economic development (a beneficial change in economic conditions) and economic growth (a quantitative increase in the size of the economy), such is not the case in political and bureaucratic circles. Indeed, the conflation of growth and development is the primary reason why ecological economists are so insistent on distinguishing between them to begin with. But conflated they are, and "economic development" in a mission statement is a license to encourage and contribute to economic growth.

Now when you are the commanding general of the Army Corps of Engineers or the chief of the US Forest Service, with all your deputies, assistants, other political appointees and sundry bureaucrats, virtually everything you do is geared toward achieving, facilitating or at least not obstructing economic development. That's the way it should be, given your mission, and you're not above the fray in conflating development with growth. In fact, it's likely you're not even aware of the distinction between growth and development. So when you approve a policy by which you will steer, let's say, a timber

company, you better be able to explain how it contributes to the goal, which in this case you could call not only "G" but GDP.

See what the Reaganites got away with? Growthmen at the helm can do a lot of lasting damage in a short period of time. Once economic growth or economic development is embedded in a mission statement, it's not easy to expunge. Today, the Army Corps of Engineers' mission is to "provide vital public engineering services in peace and war to strengthen our Nation's security, energize the economy, and reduce risks from disasters." "Energize" is one of those verbs that, along with "stimulate" and "spur," is often used as a synonym for "grow."

Going back to our S ➔ A ➔ T ➔ G model, in the US the biggest type of S is a statute passed by the Congress and signed by the President. Statutory law is the law of the land, trumping state and local laws and other policies. With the collective body of statutory law, the big, general A is, fittingly enough, the Administration. But of course most individual statutes identify one government agency, or a few agencies, to steer their targets toward a goal. For example, the Endangered Species Act tells the US Fish and Wildlife Service and the National Marine Fisheries Service to steer hunters, fishermen, loggers, miners and really a very long list of targets toward the goal of preventing the extinction of a really very long list of species. Good luck! (We'll get to that in a minute.)

The ESA also happens to be an example of a policy for which the goal *is* clearly explicated: "To provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved" and a few closely related aims. The goal was explicit because widespread species endangerment was a relatively new thing on the American landscape. People weren't accustomed to the idea that species might be going extinct all over, or even to the idea that it mattered in a lot of cases. Common sense hadn't yet evolved to encompass the widespread nature and repercussions of species endangerment. Unquestionably, the ESA was a progressive, precedent-setting statute. The philosopher Holmes Rolston III called it "one of the most exciting measures ever to

be passed by the US Congress, perhaps to be passed by any nation."[4] It was also one of the most nuanced, especially among environmental laws, reflecting state-of-the-art science and fine tuning after two earlier versions were passed in 1966 and 1969. The relevance of this to economic growth at the crossroads will appear momentarily.

When it comes to statutory law pertaining directly and explicitly to economic growth, the most relevant is the Employment Act of 1946, especially as amended with the Full Employment and Balanced Growth Act of 1978.[5] The original and amended versions are commonly referred to in American policy and media circles as the Full Employment Act. Among other things, the Full Employment Act calls for "full employment and production, increased real income" and "balanced growth." Although the phrase "economic growth" is used nowhere in the act, phrases such as "increased real income" and "balanced growth" are essentially synonymous with economic growth, albeit with slight additional nuance. Any remaining doubt is eliminated by numerous other phrases and clauses in the act that clearly call for an increase in the production and consumption of goods and services in the aggregate.

By using the term "balanced growth," Congress has called for economic growth under conditions of general equilibrium. This means an economy growing in concert—an efficiently allocating, circular flow of money with no major eddies of unemployment.

Seemingly, then, the verdict is in: economic growth is officially a goal of the US government. Well, it's still not that simple. The S → A → T → G model does not stop with those four components. Rather, the authors of the model (Anne Schneider and Helen Ingram) describe how "rules, tools, assumptions, and rationale" are interspersed among the S, A, T and G. The key in this case is the assumptions underwriting the Full Employment Act. One obvious assumption is population growth. With a growing population, full employment requires economic growth. Given the assumption of population growth, then, the goal in this case may be interpreted as full employment and economic growth.

In policy analysis, historical context is extremely important. The historical context of the Full Employment Act was the Great Depression, during which unemployment not only devastated American society, but shocked the pants off neoclassical economists. While they were busy pulling up their pants, Keynes strode through the mob, straight to the policy table. Of course, the British Keynes didn't literally stride to the policy table in the US; it would be more accurate to say that American economic advisors used Keynes's *General Theory* to *build* the economic policy table, at least the table where the Full Employment Act was drafted. Remember, prior to Keynes, the neoclassical economists didn't believe in a sustained or lengthy period of unemployment. They didn't believe in macroeconomic manipulation, and no one else knew any better, so there wasn't any macroeconomic policy table. Their pants kept falling down in the Great Depression, though, while Keynes's disciples were able to pull theirs up and move ahead for awhile. (Even the Keynesians' pants fell back down during the stagflation of the 1970s, but further reminders of hapless economists would be redundant given Part 2 of this book and other books such as *The Death of Economics*.[6])

The crucial point here is that population growth was a given, and given population growth, economic growth was required to achieve full employment. In other words, the real, primary goal of the Full Employment Act is not economic growth per se but full employment. "Balanced growth" might be a secondary goal, tacked on in 1978, but it is primarily a means toward achieving full employment in the context of population growth. Therefore, if population were stabilized, full employment would clearly still be a goal, while the pursuit of economic growth pursuant to the Full Employment Act would be an arguable endeavor. In fact, because too much economic growth results in collapse and high *unemployment*, the spirit of the Full Employment Act in the context of a full-world economy entails the cessation of population and economic growth. In other words, *in today's context, the Full Employment Act calls for a steady state economy!* Furthermore, it calls for a steady state economy at

a level sufficiently within ecological capacity to ensure enough resources per capita to allow for full employment.

Unfortunately, the argument that the Full Employment Act calls for a steady state economy is not accepted—if it is even heard of—by neoclassical economists or politicians, for the various reasons revealed in Chapters 5 and 9. If this reasoning were widely accepted, the Full Employment Act as written would not be a barrier to the establishment of a steady state economy. Because the argument is not widely accepted, and will be fought by vested pro-growth interests, it will be necessary to amend the Full Employment Act to explicitly incorporate the rationale, in order to bring statutory law in line with a steady state economy. This would not be a complicated thing to do, technically. For example, the name of the act could be amended to "Full and Sustainable Employment Act." Within the act, "increased real income" would be amended to "stabilized real income." "Balanced growth" would be replaced with "sectoral balance" or "efficient allocation of land, labor and capital." Language would be added to state that the goal of sustainable, full employment requires stabilization of population and per capita production and consumption.

All of this would be quite straightforward and could be drafted by a smart graduate student with a nose for public policy. Such a student could draft the amendment in a political science course, for independent studies credit, or as part of a major paper or dissertation. For extra credit, or to impress the instructor for grading purposes, the student could also meet with the appropriate congressional representative and request that the amendment be proposed. Of course, if one student in the nation drafts such an amendment, especially if the student resides in the district of a dyed-in-the-wool growthman, the effort won't bear much fruit. But if numerous students in many congressional districts draft such amendments and meet with their legislators, you can bet the conversations in the hallways of Capitol Hill will buzz with this unprecedented expression of interest by young leaders toward a new vision that exudes common sense. The Full Employment Act won't be amended

toward a steady state economy any time soon, but this new, palpable and exciting pulse of the electorate will have its effect "at the margins" as legislators adjust the fiscal policy levers, deal with the banks and negotiate international trade agreements. Their rhetoric and leadership will move away from growth at all costs toward sustainability, and perhaps toward other more healthy interests such as strengthening the family and getting along better with others in the world. Voters will be refreshed by this new focus on something other than "consumer confidence" and won't be as preoccupied with outspending the Jones. Indeed, consumer confidence will come to mean that consumers are confident in their ability to thrive without the newest gadgets, biggest cars and trendiest clothes.

Eventually, the Full Employment Act *can* be amended to call for stabilization of population, gross domestic product and jobs. Such an amendment would be of immense help in establishing a steady state economy. It is not the case, however, that the Full Employment Act absolutely *must* be amended for a steady state economy to be established. Laws of the people are important in the evolution of society but they cannot rescind the laws of thermodynamics. If economic growth remains an overriding societal and policy goal and population growth continues unabated, the Full Employment Act will eventually become patently impotent. Limits to growth will be encountered, making it impossible for balanced (or unbalanced) growth to continue. If the population is still growing at that point, runaway unemployment will ravage the grandkids as resources per worker decline, making it impossible for employers to hire more workers. At the extreme, the population will grow so large that only subsistence levels of resources will be available. At that point, with no buffer left for adjustment, a steady state economy will not be in the offing, but rather a collapse of Malthusian proportions. Some time after the collapse a steady state economy at a sustainable level may be pursued, but only if society has learned its ecological economics and retained enough governing capacity to avoid or recover from the chaos of collapse.

If society has not learned its ecological economics, then it is as doomed to repeat the pattern as lemmings in the Arctic. If it has

learned its ecological economics but lost its governing capacity, dark ages of anarchy or feudalism may persist, and whatever governance does return may not be democratic in form. Theoretically, a powerful dictator could establish a steady state economy, but a dictator that powerful is unlikely to be benign.

It is of little use speculating further on post-collapse scenarios. The point is to try to establish a steady state economy prior to collapse, and here we are considering the role of statutory law in making this happen. We have demonstrated that economic growth will be limited even if the Full Employment Act is not amended toward a steady state economy. On the other side of the coin, the best possible steady state amendments to the Full Employment Act cannot *ensure* a steady state economy. Laws are hard enough to enforce when they are designed to prevent simple acts of incivility like spitting on the sidewalk. The bigger and broader the issue, the more difficult the enforcement becomes, and few in Congress actually expect a sweeping statutory goal to be met to a T (so to speak).

Now this may come as a revelation to many, but not if you've studied this book, or even the earlier part of this chapter: if one particular statute were strictly enforced, we would already have a steady state economy in the United States. That statute is the Endangered Species Act.

The ESA is perhaps the best example for demonstrating how important ecological economics is for a sustainable interpretation of statutory law. We saw in Chapter 9 that Congress was fully aware that "various species of fish, wildlife, and plants in the United States have been rendered extinct as a consequence of economic growth…" That doesn't mean Congress was aware that the conflict between economic growth and wildlife conservation cannot be reconciled through technological progress. Congress remained noncommittal on the prospect of reconciling economic growth with wildlife conservation by adding to "economic growth" the phrase "untempered by adequate concern and conservation." Nevertheless, a careful interpretation of the ESA, along with basic ecological principles, makes it clear that the ESA, were it fully funded and enforced, would indeed result in a steady state economy.

I have the benefit (and paid the costs) of having analyzed the ESA, word by word, along with much of its legislative history, for my PhD dissertation.[7] That analysis, along with a background in ecological economics, made it crystal clear that the ESA is a prescription for a steady state economy.[8] The prescription may be implicit, it may even be unintentional, but the ESA is a prescription for a steady state economy.

Section 4 of the ESA requires that species be listed as "endangered" if they are in danger of extinction or "threatened" if they are likely to become endangered. Once they are listed, they are to be protected, with the goal of recovery and delisting. Section 7 protects them from government actions (e.g., Army Corps or Forest Service "economic development" projects), and Section 5 protects them on private property. As far as the letter of the law goes, the ESA is truly some powerful stuff. Steven Yaffee, a renowned scholar of endangered species policy, called it "one of the most sweeping pieces of prohibitive policy to be enacted."[9] Bill Reffalt, a long-time leader with the US Fish and Wildlife Service before and after the passage of the ESA, called it "the most far-reaching wildlife statute ever adopted by any nation."[10]

The problem for growthmen is this: when the causes of species endangerment in the US are scrutinized, it eventually becomes apparent that behind these causes are a veritable *Who's Who* of the American economy. The causes of endangerment can be broken down into finer categories—I used 18 in my dissertation—but roughly speaking they include agricultural, extractive, manufacturing and service sector activities, plus the development and maintenance of economic infrastructure (roads, power lines, canals, etc.), economic byproduct (pollution), and various incidental effects of economic growth, such as climate change in a 90 percent fossil-fueled economy and the introduction of invasive species in a world of international trade and interstate commerce. As noted in Chapter 1, "It *is* the economy, stupid!"

This linkage of species endangerment with economic growth is an extremely thorny problem for policy makers because a very high

proportion of citizens believe economic growth is a good thing. The ESA may be "one of the most sweeping pieces of prohibitive policy to be enacted," but that's not necessarily saying much, when one of the most sweeping policy goals ever embraced, of any type, is economic growth.

But let's assume for a moment that the ESA could be enforced to the letter. What that could mean for the American economy was showcased from the get-go when the snail darter was listed in 1973, the same year the ESA was passed. The listing of this tiny fish required the powerful Tennessee Valley Authority (TVA) to halt construction of the Tellico Dam on the Little Tennessee River, because the US Fish and Wildlife Service concluded that the dam and its reservoir would harm the snail darter. TVA dams and reservoirs had long been the backbone of economic growth in the Appalachian region of the southeastern US, providing electricity to millions and creating conditions for urban and recreational development. The congressional delegation from Appalachia didn't take the listing sitting down. They proceeded to turn the snail darter into a poster fish for purposes of weakening the ESA. As Senator Howard Baker (Republican Senator from Tennessee) said on the floor of the Senate:

> Mr. President, the awful beast is back. The Tennessee snail darter, the bane of my existence, the nemesis of my golden years, the bold perverter of the Endangered Species Act is back.
>
> He is still insisting that the Tellico Dam on the Little Tennessee River—a dam that is now 99 percent complete—be destroyed…
>
> Let me stress again, Mr. President, that this is fine with me. I have nothing personal against the snail darter. He seems to be quite a nice little fish, as fish go…
>
> Now seriously, Mr. President, the snail darter has become an unfortunate symbol of environmental extremism, and this kind of extremism, if rewarded and allowed to

persist, will spell doom to the environmental protection movement in this country more surely and more quickly than anything else.

I am seriously concerned that if present trends continue, the Endangered Species Act will be perverted from its original intent as the means of protection of endangered species and be used instead as a convenient device to challenge any and all Federal projects.

If the snail darter can be found in the Little Tennessee River, there is a snail darter or some equally obscure creature in every river and under every rock in America. Opponents of public works projects will have a virtually limitless arsenal of weapons with which to do battle.

We who voted for the Endangered Species Act with the honest intention of protecting such glories of nature as the wolf, the eagle, and other treasures have found that extremists with wholly different motives are using this noble act for meanly obstructive ends.

That is precisely what has happened in the case of the Snail Darter against Tellico Dam, and if this perversion of the law is allowed to continue, the law itself will soon stand in jeopardy—and that will be the ultimate environmental tragedy.

We must not let that happen, Mr. President. The House has given us another opportunity to set things right, and at long last we should take it. I implore my colleagues to seize this opportunity to redeem our commitment to energy production while not forsaking our commitment to environmental protection, to turn away from extremism toward reason, to save both the darter and the dam.[11]

And thus was written another chapter, albeit a cute one, in the win-win rhetoric that we can have our cake and eat it too. We can save the snail darter while damming more rivers in the Southeast. While we're at it, we can save the salmon while damming more rivers in

the Northwest. We can save the spotted owls in the Northwest too, while logging more Northwest forests, and red-cockaded woodpeckers in the Southeast while logging more Southeast forests. We can save the polar bears, tufted puffins, green turtles and picas while burning more fossil fuels. We can save all species while perpetually growing the economy.

The fact is that we can do none of these things. We saw in Chapter 8 how, due to the tremendous breadth of the human niche, the human economy grows at the competitive exclusion of nonhuman species in the aggregate.

But why spend so much time on environmental policy, indeed on one statute, when the subject is macroeconomic policy? There are two good reasons. First, it points out the crucial nature of getting the goal right. Second, it shows how a steady state economy can be brought about even without highly successful economic policies. These two reasons are closely related. If a steady state economy becomes an explicit policy goal with widespread public acceptance, then arguments such as Howard Baker's will lose effectiveness. Those who say, "We can't enforce the ESA any further because it slows down economic growth" will be overruled with the response, "Yes, of course the ESA will slow economic growth, and since the steady state economy has also become a policy goal, enforcing the ESA will help us achieve that as well as species conservation."

No one should envision full enforcement of the ESA as resulting in *Animal Planet*, though. Rather, ESA enforcement would apply the economic brakes at the margin. Where the American economy is on the verge of extinguishing another species, the relevant economic activities are not allowed to expand any further. A dam project here, a timber sale there, building permits, highway projects, oilfield development…across the country such projects would be foregone, little by little, until the human economy has settled into a certain balance with the economy of nature. It's an equilibrium in which we have a very full human economy coexisting with a long list of threatened and endangered species for whom we have drawn a margin in the sand. Such species will remain precariously perched

on the evolutionary tree of life, and many will fall to the ground of extinction, but at least we won't be chopping the whole tree down at a rate of three percent GDP growth per year. With a balance of nature established, we can count on God, Mother Nature and evolutionary ecology to keep the tree alive, with new species gradually replacing the extinct while *Homo sapiens* finally expresses its sapience in the form of restraint.

The broader point is that environmental policy *is* economic policy, and that's the way it should be in a full world scenario. It is the natural policy outcome from a realization of ecological economics. If we are serious about economic wellbeing, national security and international stability, we better get serious about enforcing our environmental laws. That goes for clean air, clean water, biodiversity conservation, environmental impact assessment, sustainable forest management, clean-up of toxic waste—all policies that contribute to maintaining and restoring ecological integrity and environmental health.

And we better couple that with reforming macroeconomic policy per se, or the pro-growth forces empowered by pro-growth policies will trump the effectiveness of environmental laws. The key is an explicit identification of the steady state economy as a policy goal, whether that be in an amendment to the Full Employment Act or with a superseding statute such as a Steady State Economy Transition Act.

Now let's take a look at some of the components—in addition to the goal itself—of a steady state policy program. An excellent framework is provided in the recent book *Enough Is Enough*, adapted from the proceedings of the first Steady State Economy Conference, held at Leeds University in 2010. *Enough Is Enough* identifies ten categories of steady state proposals, six of which are especially relevant to public policy, domestic and foreign. These include limiting resource use and waste production, stabilizing population, ensuring an equitable distribution of income and wealth, reforming the monetary system, securing employment and changing the way we measure progress. Three other categories have

policy implications too, but are addressed more directly by citizens and NGOs. These include changing consumer behavior, rethinking business and production and engaging politicians and the media, topics covered at length heretofore. A tenth category, addressing global relationships, is most applicable in international diplomacy, which I will address alongside the issue of equitable distribution.

The broad category of limiting resource use and waste production overlaps substantially with environmental laws, but also includes policies that go directly to the heart of sustainability. The general idea of limiting resource use and waste production is self-explanatory but it will help to consider a few examples in some detail. The best example is a cap on fossil fuel extraction. The word "cap" itself connotes a steady state, and a fossil fuel cap is the best example because the global economy is approximately 90 percent fossil-fueled. Therefore, capping the extraction of fossil fuels would go a very long way toward capping the size of the economy and the ecological footprint.

The simplest approach is to cap barrels of oil, tons of coal and cubic meters of natural gas, starting at current levels of extraction. If necessary—and it probably is—these caps may be gradually lowered for purposes of fitting the economy to the planet. In other words, a certain phase of *degrowth* may be required prior to achieving a steady state economy that is optimal or even sustainable in the long run. This point warrants a short digression from our technical focus on resource-capping policies. (In a chapter on steady statesmanship, expect a mix of politics and policy.)

A growing understanding of the need for belt-tightening explains the political movement for degrowth in Europe. That's right, *La Décroissance* has become the rallying cry for a growing group of scholars, students and Green Party politicians. As a political movement, La Décroissance is closely linked to steady statesmanship because there is widespread agreement that the ultimate, long-term goal is a steady state economy, and that a certain amount of degrowth is necessary first. To be more precise, and for purposes of international equity and political stability, degrowth is called for in

the wealthiest nations, coupled with economic growth in the poorest, but with a net effect of degrowth toward a sustainable global economy.

Decisions on whether to label a movement "steady statesmanship," the "steady state revolution," "La Décroissance," or something else are more decisions of political strategy than policy goals. We're all seeking the right-sized economy with social justice and efficient allocation of resources. In pursuit of these goals, surely the most politically effective choice of words depends on which part of the world you're in. However, and all else equal, labels that include the phrase "steady state" (in whatever language) are advantageous because such labels clearly identify the central, long-term policy goal. Also, when it comes to paradigm shifts, perhaps we should take them one at a time with our fellow citizens, who may not be willing to take them two at a time. When we take the step from economic growth to the steady state economy as a policy goal, it's only one more stepping stone to degrowth, and we have the momentum to get there quickly if need be. In contrast, the jump from growth to degrowth may be too daunting for the typical citizen to stomach, and in many countries it's not necessary.

Returning to the policy tool of capping fossil fuel extraction, we can also cap the amount of energy *used* to extract the fossil fuels or cap the acreage *used* for extraction. Caps are then enforced by issuing annual permits to producers who are fined if they extract unpermitted quantities, use unpermitted amounts of energy in the extractive process or use unpermitted acreage for extraction purposes. The initial allocation of permits should reflect the initial capacities and production levels of the extracting corporations or nations. This approach prevents unnecessary shocks to the market and is politically viable. Capping the fossil-fuel industry can also be kept as consistent as possible with a free market system by allowing corporations and nations to trade their permits or purchase them from one another after the initial allocation has been issued. For example, Exxon could sell some of its permits for the extraction of oil in the US to Shell. This is an example of a cap-and-trade re-

gime operating within a nation, pursuant to the laws of the nation. Broadening our geopolitical vision and pursuant to an international cap-and-trade agreement, BP could trade oil extraction permits to Gazprom, receiving in turn permits for the extraction of natural gas. Each firm would invest in resources based on market principles of supply and demand.

Of course such an international cap-and-trade agreement will not be forthcoming until steady statesmanship is well-developed in international diplomacy. Ideally, such diplomacy would be led by the wealthier countries who can most afford to undertake the transition to steady states at this point in history. To expand a bit on the horse-and-cart metaphor, the wealthy countries would be leading the international horses with carrots, or at least with a whistle of encouragement. In reality, such diplomacy will also require sticks; that is, impoverished nations calling out the wealthy to curb their unsustainable appetites while allowing for some much-needed growth among the ranks of the impoverished. Indeed, this

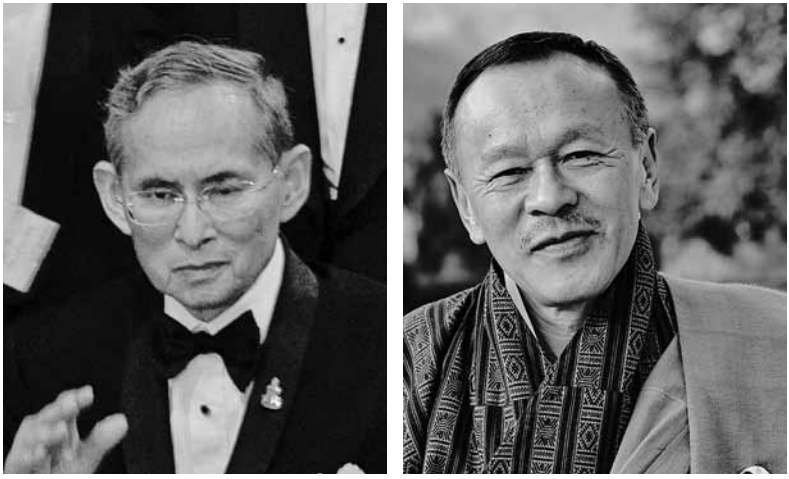

FIGURE 11.2. Precedents of steady statesmanship have been well-received in international affairs. The popular King of Thailand, Bhumibol Adulyadej (*left*) calls for the Sufficiency Economy, while Jigmi Y. Thinley, Prime Minister of Bhutan (*right*) advances Gross National Happiness, eschewing the conventional goal of GDP growth. Credits: (*left*) Government of Thailand; (*right*) Royal Government of Bhutan

trend has already commenced and is certain to intensify with global economic growth at the crossroads. This trend could eventually fit the model of the steady state revolution outlined in Chapter 10, but in this case the "castigation of the liquidating class" is carried out not by individual citizens within a country, but rather by nation states in international venues such as the United Nations.

There is something of a precedent already for a steady state revolution in international diplomacy. For example, the G77 is a coalition of non-wealthy nations that now includes 131 member states, and the G20 is a group of 20 self-described "developing" nations. These international blocs strive to improve their terms of trade with the wealthy, "developed" nations. They've had some success, too, but they haven't drawn any attention to limits to growth or the need for steady state economics in international affairs. They've basically had the attitude that "a rising tide lifts all boats, but ours should be lifted faster." No doubt they would make a bigger splash if they demanded a cessation of economic growth in the G8 and other wealthy nations in order to provide some growth capacity for nations in dire need of it. They would find support in La Décroissance and other steady-statish movements in wealthy countries.

Another problem with the G77 and G20 is that neither bloc represents exclusively steady staters. For example, both include China, which despite its recent tempering of GDP goals is this generation's symbol of national economic growth. The G77 also includes Middle East petroleum states such as the United Arab Emirates. Some of the worst examples in the world of liquidating behavior come from these Arab states, and for sustainability purposes, the ugliest example of all is the Mall of the Emirates in Dubai. The Emirates set out to become the quintessence of conspicuous consumption, and succeeded beyond their most unsustainable dreams. The Mall of the Emirates is epitomized by the Dubai ski resort, where wealthy Saudis, Swiss, Americans, Israelis, the Sultan of Brunei (who makes Schwarzman look like a tightwad) and whoever else has the money without the dignity can play in the snow while temperatures outside exceed 100° Fahrenheit.

FIGURE 11.3. Dubai, geographic icon of the liquidating class, at night.
Credit: NASA Earth Observatory

For a legitimate steady state revolution in international diplomacy, a bloc of nations with the least-damaging GDP per capita is called for. There are 195 nation states,[12] so if we started with half the nations of the world and added a few to tidy things up, we'd come up with a G100 comprising primarily African, South Asian, Latin American, Eastern European and South Pacific island countries.[13] These nations would be united in diplomatically castigating the liquidating class of nations, which we might designate the G10: Qatar, Liechtenstein, Luxembourg, Bermuda, Norway, Singapore, Jersey, Kuwait, Brunei (thanks largely to the Sultan), United States and Hong Kong.[14] The G100 could carry out the precepts of the steady state revolution in ways not possible among individuals within a nation. For example, they could designate an annual Liquidator Nation of the Year among the G10, highlighting behaviors of its citizens like skiing in Dubai, driving Escalades or building mansions. Another approach would be to publish—and circulate widely—the ecological footprints of the liquidating nations in a matter-of-fact quarterly report. Yet another approach would be a boycott on trade with the liquidating class. Far beyond tinkering with the *terms* of

trade, a G100 boycott would be announced as intending to lower the growth rates of liquidating nations (which it would) for the sake of global economic sustainability.

One of the beauties of a G100 would be its non-regional, non-ethnic, non-ideological character. The G100 would rise above historic, irrelevant conflicts such as North-South, East-West and capitalist-communist. The key, uniting variable would be sustainability of consumption. The most sustainable nations would be in, the least sustainable would be out. Sustainable nations would take pride in being so; unsustainable nations would be chastised as bad global citizens. Such diplomacy could only lead to a more sustainable global economy than the current one, in which nations race one another toward higher GDP. Certainly such diplomacy would empower the efforts toward cap-and-trade agreements, which alone would go a long way toward establishing a global steady state economy.

Cap-and-trade systems should start with fossil fuels but may also be enacted for all natural resources: timber, fisheries, minerals, etc. In fact, numerous marine fisheries are already managed pursuant to a cap-and-trade system in which the cap is called the total allowable commercial catch and the trading is of individual transferable quotas. The same key principle—limited extraction—applies whether the natural resource is renewable or non-renewable. The trade part is important for tapping into the allocative efficiency of the market and for making cap-and-trade a more politically viable solution. Powerful corporations populated by pro-growth free-marketers won't capitulate easily to capping, but the prospects for trading, at least, will appease them to some degree. The rest of the political lifting will have to be performed by policy makers who faithfully serve a public that understands the urgent need for steady statesmanship in an age of supply shock.

It will also help, especially wherever capitalism is favored, that capping is not needed throughout the economy. This follows from the trophic theory of money (Chapter 7). As long as we cap the producers at the base of the economy, manufacturing and service

sectors will likewise be limited in scale. Capping the extraction of natural resources will also allow the fans and champions of the information economy to show their stuff, to prove to us that we can have perpetual growth without using more natural resources. Don't expect to see their stuff grow very much, though. The information economists will finally come to grips with the laws of thermodynamics, and that will be a good thing for all of us.

Capping and trading is no panacea, though. Not only will capping require a strong horse (a widespread paradigm shift away from economic growth), but the trading part will entail a lot of bureaucracy. The trading part is somewhat of a carrot to corporations, but not a particularly sweet carrot. It's trading, but not "free" trading. It must be overseen by a central authority, an "A" in our S-A-T-G model, and powerful corporate targets require equally powerful governmental authorities. This kind of trading is not "free" in the fiscal sense, either. One thing you have to grant to the free marketer is that, while the free market does a poor job of allocating natural resources fairly, it does so "for free." We do pay the unfair social costs—"environmental externalities" as they say—but not so obviously or directly out of our wallets, as in paying additional taxes explicitly to enforce a trading system.

The upshot for steady statesmanship is that we should strive for two things: to institute the necessary cap-and-trade policies *and* to avoid the unnecessary ones. The most necessary caps of all are for fossil fuels, because fossil fuels have a greater effect on growth rates than any other factor of production. Fossil fuels are the limiting factor for global economic growth at this point in history. By capping fossil fuel extraction, we make it less necessary to cap anything else. However, natural resources including fisheries, timber, certain minerals and groundwater in some regions, should also be capped. One reason is that there is no guarantee that fossil fuel caps will persist politically and therefore be enforced consistently. Also, in some regions, natural resources may be liquidated even in the absence of fossil fuel availability. Ironically, this will especially be so to the extent that we are successful in developing "green" (less-brown)

energy sectors. So there should be a matrix of capping within the foundation of the economy; this will preclude the necessity of very much capping in the manufacturing and service sectors.

Meanwhile the avoidance of unnecessary capping is crucial for lowering costs, which we know (pursuant to the trophic theory of money) must be kept low enough, along with all other costs, as to be sustainable or payable. In other words, we cannot solve the sustainability problem by throwing evermore money at it—including into capping and trading administration—because increasing amounts of real money requires increasing the extraction of the very resources we are trying to cap!

This brings up the point that was first alluded to in Chapter 9—conservatives do tend to have one thing very right vis-à-vis sustainability. Deficit spending and mounting debt is unsustainable. Liberals tend to defend deficit spending, especially, on the grounds that it's good for economic growth, which in turn is supposed to be good for anything you can imagine. So we can easily envision such liberals supporting cap-and-trading in various sectors, yet inconsistently supporting deficit spending in order to enforce it all, boasting about the jobs to be created by spending a deficit, and most inconsistently of all propounding that the whole unwieldy mess will contribute to economic growth, thereby demonstrating that "there is no conflict between growing the economy and protecting the environment." Meanwhile the conservatives will be correctly railing against the mounting debt, but to what end? So far, it's all about "getting the economy back on track" and setting the stage for a renewal of economic growth. Clearly there are good intentions in both these camps; clearly these intentions are hamstrung by perpetual-growth economics (and pro-growth Big Money); and clearly the steady statesman must wed the good intentions from both camps with the implications of ecological economics to orchestrate a steady state outcome, including the judicious use of cap-and-trade systems.

While it won't be necessary to cap the production of most (if any) manufactured goods or services, it is important to cap pollutants at the other end of the pipe of economic production. By

capping natural resources, we limit the throughput from the inflow end of the economy's pipe. Limiting throughput is essentially synonymous with limiting the ecological footprint and establishing the steady state economy. But due to the political and administrative difficulties of establishing and enforcing natural resource cap-and-trade systems, we should also cap the outflow of certain pollutants. Indeed, cap-and-trading regimes have their origins in pollution control, with the prototype being the sulfur dioxide cap-and-trade system originating in 1990. This system resulted from concerns about acid rain in particular, which made sense, but as with natural resource extraction, for the general purpose of steady statesmanship the idea is to cap emissions of pollutants that stem from fossil fuels. This essentially reinforces the capping of fossil fuels—the limiting factor for global economic growth—and has the extremely beneficial bonus of capping the carbon dioxide and other greenhouse gases emitted during fossil fuel combustion.

In many cases it will be more efficient to tax emissions than administer cumbersome cap-and-trade systems, especially for widespread pollutants that emanate from myriads of manufacturing sectors. However, steady statesmanship ultimately entails a stabilized tax stream, too, so that any increase in pollution taxes would be offset by income or property tax reductions. As Herman Daly says, "Tax bads, not goods." Speaking of Daly, a more detailed description of cap-and-trade systems and ecological or "green" taxes is provided in *Ecological Economics: Principles and Applications*, the excellent textbook by Daly and Joshua Farley.

One last thing about capping and trading, which applies to steady statesmanship in general: the basic solutions are not so complicated. The technical issues are challenging (see Chapters 5 and 8), the political hurdles are high and numerous (Chapter 9) and the widespread public paradigm shift is a prerequisite (Chapter 10), but crafting policy solutions requires little more than rolling up our sleeves and using common sense to "git 'er done," as they say. For example, it's easy enough to envision a Natural Resources Cap and Trade Act that would lay out the framework for which resources

would be capped, how the caps would be set, how the permits would be allocated and traded and who would implement these regimes. This is yet another exercise that a grad student worth her salt could perform, contributing not only to her advanced degree but to the history of steady statesmanship. Likewise, it is easy to envision a Convention on Natural Resource Capping and Trading designed to address the global economy, hammered out with steady state diplomacy. The caps would first be applied in wealthier nations and the terms of trade would be designed to allow some convergence of impoverished nations toward standards of living enjoyed by the wealthy. The mostly-failed but well intentioned Kyoto Protocol would be worth revisiting as a starting point. Indeed, the Kyoto Protocol could yet be a successful tool in the policy cart, given the horse of a widespread steady-state paradigm shift.

Speaking of rolling up the sleeves and using common sense, the next policy issue for steady statesmanship is population stabilization. Nothing makes more common sense, with economic growth at the crossroads, than striving for a stable population. However, no other issue so exemplifies the horse-and-cart metaphor. Population stabilization stands no chance whatsoever of being addressed in national policies or international diplomacy as long as the overriding goal is economic growth. Recall from Chapter 5 that population growth is known in neoclassical circles as the key for perpetually increasing not only GDP, but GDP per capita, as more people must be devoted not only to consumption (for purposes of increasing GDP) but also to research and development (for increasing GDP per capita). But with the steady state economy as the goal of wealthy nations, and steady statesmanship a common theme in international diplomacy, population growth would be formally recognized as antithetical to economic sustainability, national security and international stability. Then it's time for rolling up our sleeves in the population policy arena.

There are three basic approaches to population stabilization: direct regulation, economic incentives and public encouragement. Direct regulation, such as China's one-child policy, is neither politi-

cally viable nor ethically acceptable in most cultures. Within a nation, it is coercive at best; internationally, it takes the form of war at worst. Perhaps the only place where direct regulation could play a legitimate and widespread role is neither within nor totally outside of a nation, but rather literally at the borders, where immigration policy is enforced. While open borders are conducive to freedom of choice, and constitute a generous policy of host countries, it must also be seen at this point in history that open borders allow for evermore overcrowding, or evermore overfilling of national economies. As this process of overfilling occurs in one nation after the next, these open borders are also conducive to a more-than-full world economy.

Wealthy countries are—and should be—brought to account for excess per capita consumption; likewise, overpopulated countries should be brought to account for excess demand on global resources. Many overpopulated and impoverished countries reject that charge, because often their plight has been caused or exacerbated by the plundering of corporations and governments from wealthy countries. No doubt they have a point there. The closest thing to a compromise of accountability, then, would be for wealthy countries to shut down their borders *in proportion to* their slowing of GDP growth. In other words, a wealthier country announcing and undertaking the transition to the steady state economy would be justified in shutting down its borders, and supported in international diplomacy for doing so. On the other hand, for a wealthy country to shut down its borders while pursuing globalized trade and economic growth would appear greedy with poor immigrants at the door. That's because it *would* be greedy. Such a nation would be shunned by the international community, which in today's world is ultimately a threat to national security.

Meanwhile, once the wealthier countries have undertaken the transition to steady state economies, the onus will fall upon impoverished countries to stem the rising tide of misery by doing everything ethically possible to slow their population growth and lessen the emigration pressures on wealthier countries. Because

FIGURE 11.4. An ecological footprint map of nations (*top*) and the UN Economic and Social Council Chamber, a promising venue for steady statesmanship. Credits: (*top*) SASI Group (University of Sheffield) and Mark Newman (University of Michigan); (*bottom*) Mark Garten

population growth rates decline under conditions of higher GDP per capita (the "demographic transition"), it would behoove wealthier countries to assist impoverished countries in general and especially with population stabilizing efforts such as family planning education and the education of young women. Any amount of sacrifice by a wealthy country in order to assist with population stabilization in overpopulated countries will generate goodwill—good

for goodness' sake and for generating the political capital needed for closing down borders.

Within a nation, the primary economic incentives for stabilizing population will be found in the tax code. The first step, then, toward stability in the US is to search the codes (state and federal) for existing growth incentives. The lowest-hanging fruit is the tax credit for child dependents. More than most, this is an example of a policy reform already in the cart, just waiting for the horse. The horse in this case is not only a polity supporting the steady state economy, but supporting it out of concern for the child dependents of tomorrow. Eliminating the perversely unsustainable tax credits for having more children today is a policy reform awaiting true steady-state leadership, and the first policy maker to push this reform into prominence will play a historical role in population stabilization.

Once such tax credits are eliminated, it is only another step to institute a progressive tax *debit* for child dependents, "progressive" meaning that the debit increases with each additional child. Essentially, we would be increasing the marginal costs of childbearing in order to decrease the demand on national and planetary resources. A demographically progressive tax code would not only engage economic incentives, it would also send a strong signal every year at tax time that the country found something to discourage in having too many children. In other words, it would contribute to or reinforce the country's paradigm shift toward a steady state economy.

I will be the first to admit a certain distaste for treating couples as a disembodied "T" in the S-A-T-G framework. Born and raised a Catholic, it runs against my grain to talk about any authority collecting money to reduce the propensity to procreate. It makes me uncomfortable and vaguely nauseous to think in such economic terms as increasing the marginal costs of childbearing to decrease the supply of children. Yet, also as a Catholic, I was raised to respect nature, to care about the health of the living in my home country and abroad and to be concerned for future kids and grandkids. None of those do I do well, if I don't make an ethical effort

toward population stabilization today. And what makes me more nauseous than taxes on childbearing is the fullness of the world we explored in Chapter 1.

I think it is worth mentioning that I do not have any children. There are several reasons, but at least *one* is an awareness of the damage our ecological footprint is causing. I don't particularly enjoy sharing this personal information with readers, and I'm not holier than thou, but for those who think about the consequences of having children, it's important to know that you're not alone. For those who haven't thought about it, now is the time to start, especially if you're a politician. A growing number of us don't like voting for people with four or five kids because we think that level of resource commandeering by one family is greedy. Think of the "Octomom."

This brings us to the third approach to population stabilization, which is public encouragement. As with establishing a steady state economy, the key to effective encouragement is identifying the goal with clarity to begin with. When a nation decides to undertake the transition to a steady state economy, it should simultaneously adopt a formal policy of population stabilization, with a target date for the achievement of stability at some approximate level. In other words, this population policy should be part of the amended Full Employment Act or Steady State Economy Transition Act mentioned above. Even if there are no teeth in the legislation, establishing the policy goal is itself a form of public encouragement. It will instantly legitimize each subsequent policy reform toward population stability. If it should become the case in the course of political events that population stabilization becomes a viable goal prior to acceptance of the steady state economy—for example if the information economy rhetoric leads the country to believe that economic growth is sustainable even if population growth is not—then by all means the opportunity should be taken to formalize population stabilization as a goal of the polity. To the degree that this goal is attained, at least one of the two crucial steps (the other being stabilizing per capita consumption) in steady statesmanship will be accomplished. This is highly unlikely, though. Almost cer-

tainly, stabilizing population will only become a politically viable goal once the goal of a steady state economy is accepted, and not a minute before.

Beyond setting the right goal, public encouragement toward population stabilization means political leadership and public education programs that raise awareness about limits to growth, the need for a steady state economy and the essential role of population stability for a steady-state outcome. In the US, for example, the nation's population and its growth rate should be announced in the annual state of the union address. The President should express appropriate concern about the pressures on the environment and the capacity to sustain natural resources for future Americans. Any progress toward stabilization should be commended. This alone would go a long way toward feeding the horse of public opinion, and politicians at all levels would find it much easier to encourage citizens to have one or two instead of three or four or more children.

Meanwhile, public education programs should begin during primary education and should appear in community education programs designed for social welfare and basic home economics. The primary message should be about limits to population growth and the need to save room for future generations—"breathing room economics" as Rob Dietz calls it.[15] With that message at the core, specifics about family planning, financial incentives for small family size, caring for a single child and related subjects can be added.

If this doesn't sound particularly convincing as an approach to population stabilization, it should help to recognize that it doesn't have to be, at least not in most wealthy nations where the "native" growth rate of existing citizens is nearly already stable and where most of the population growth is coming now from immigration. Therefore, with a legitimizing goal of a steady state economy, only a little progress is necessary to bring national population growth rates down to stability. But again, this also assumes that the nation has set up the "no vacancy" signs at the borders. And to help in stabilizing global population, the wealthy nation must be prepared to

participate in a full program of steady state diplomacy to address natural resource extraction, fossil fuel emissions, population growth and per capita consumption.

Which brings us to the issue of distribution; that is, the distribution of income and wealth. Recall from Chapter 6 that while the old maxim, "a rising tide lifts all boats," had some merit in an empty world economy we know this approach is defunct in a full world. The tide can only rise so far, and there is only so much material for boat-building. So we would like the wealthy owners of luxurious yachts to share a bit, especially if they haven't done much to earn those yachts. But we do not want them to be attacked by waves of poor pirates, nor do we want so much rage at sea that gunboats are sent in to settle the matter. Not only would there be innocent casualties caught in the crossfire, but none of that is sustainable; it uses a lot of boats and pollutes the seas.[16] What we want, in other words, is an equitable distribution of wealth, embraced as a feature of steady state economics. That's when we can expect a legitimate coast guard to police the relatively calm waters, arresting the occasional bona fide pirates, be they scallywags or CEOs or both.

One approach to fairness is the steady state revolution described in the previous chapter. Although the steady state revolution is mostly about lowering the liquidator's propensity to consume, it is also conducive to a more equitable distribution of wealth. Some of the income that would have been spent on profligate consumption is instead spent on public improvements (such as parks, arts and educational endowments) and direct, redistributional charities.

The steady state revolution has two things in common with a free market: it reflects consumer preferences and it comes without government intervention. That doesn't mean a steady statesman couldn't participate. Indeed, it would be hard to imagine a greater contribution than a president addressing overconsumption in a State of the Union Address. Can you almost hear it, almost see it? "This year our wealthiest citizens—the upper one percentile—reduced their consumption by seven percent. They're still doing fine, mind you. [The President grins.] Meanwhile, our consumers on the

lowest rung were able to increase their purchases by eight percent and donations to public causes increased by six percent. These are trends we should appreciate and encourage. [The President leads a round of applause.] Along these lines, there are some policies that will dovetail with these trends and help us to achieve sustainability for our kids and grandkids…"

That's when the bold president could—or we citizens could even sooner—call for a cap on income or a cap on wealth. We have already explored the concept of capping natural resources and emissions. We also know that real money represents the ecological footprint (Chapter 7). Too much money can't fit on the planet. Likewise, too much money can't fit in a country, a county, or a city—certainly not equitably for people elsewhere. Too much money here means not enough money there. All we need to do is extend this logic to the corporate board or the household and we're talking about caps on salaries and wealth.

In the US we've seen a remarkably successful system of salary capping—the National Football League salary cap. The NFL salary cap has done more to keep football, American style, alive and well than any Peyton Manning pass or Devin Hester dance. Rather than the richest CEO buying the Lombardi Trophy year after year by assembling the highest-priced players, we have legitimate competition among 32 teams. Rather than a disgruntled fan base, disgusted by unscrupulous CEOs, we have a league of fans who (for the most part) respect each others' traditions and teams. We have historical antiquities (at least by the standards of American sports) such as Lambeau Field in Green Bay, Wisconsin, which without an NFL salary cap would have been replaced by a cheese factory or a Kmart. Meanwhile the Green Bay Packers themselves—loved by many for their small-town story—would have been sent packing, perhaps literally, back to the packing plants for which they were named.

Of course precious little else about the gaudy NFL is sustainable, but at least the salary cap proves to us that not only is such a thing possible, it can be wildly successful at leveling the playing

field and keeping the fans interested, engaged and civil. We need to move from the NFL salary cap outward in American society and downward in level to most occupations. We need to get to where the ecological footprint of all that money fits within the nation's environmental capacity, while still keeping its citizens happy and healthy. We want the citizens of soccer-playing, rugby-playing, and cricket-playing countries to be healthy and happy with us, too.

Salary is only one form of income—probably the most actually earned form—and what we are really after is capping *gross* income, including rents, profits and interest. Given how tightly we track income in wealthy countries (think of the Internal Revenue Service in the US), administering such a system would be fairly straightforward. Capping can be administered by prohibiting payments beyond a certain threshold or by taxing income beyond the threshold. Tax revenues would then be used for public purposes and, where necessary, as a safety net to bolster the incomes of the poor. All the arguments about "welfare" and engendering a "welfare class" have already been made in other books, by think tanks and in political campaigns. No rehashing is necessary here, and clearly it is more important to cap incomes than to provide minimum incomes. Politicians must ensure that tax revenues go to public works that help the poor get by, even without direct welfare payments. Meanwhile, capping will invariably result in *real* trickle-down effects, not the tricky excuses used by supply-siders to lower taxes on the wealthy.

As for where to set the income caps, the key variables to consider are the ecological footprint of a real dollar and of course political viability. Earlier we noted the virtually criminal nature of impacting the planet with enormous ecological footprints. Theoretically, we can take the ecological capacity of the nation in terms of dollars, note its population and estimate a sustainable income at that population level. Then we have to decide how much variance from that income is socially appropriate and how politically viable it is to cap income at various levels. For example, there is plenty of research indicating that people are happier and cultures are stronger in societies that are more egalitarian. Some of the positive ef-

fects include better health, higher life expectancy, less problems with drugs and violence, less obesity and less incarceration. These findings provide powerful political leverage for capping incomes. Yet an absolutely equal distribution is neither desirable nor politically feasible. So the question is, how much larger than minimum incomes should maximum incomes be?

How about fifteen times as large?

See, it's not really so hard, is it? Certainly it is not hard to start with *something* on the policy table. Furthermore, it's likely that this fifteen times proposal resonates with a substantial share of readers. It somehow seems quite commonsensical, no? At least for occupations in similar sectors, right? If you're a barber working 40 hours a week, you might think it okay for another barber across town, also working 40 hours a week, to make a little more (or a little less) than you. Now maybe if you're in Pulaski, Tennessee, and the other barber is in New York City, you could understand if the other barber makes twice or even three times as much as you. Of course that barber may have other sources of income, too. He might have a mutual fund or he might rent out a room in his condo. So you can probably understand if he makes even ten times as much as you.

Now this barber, he may have also inherited money from his uncle the banker, who he always hated, or maybe he won a lottery one night on a drinking binge at the casino. Maybe when he sobered up he invested all that money on Wall Street (a somewhat safer casino, usually) and now he makes 50 times as much as you. Now you're starting to wonder how fair it is, and if you've undergone the steady-state paradigm shift you're wondering how sustainable it is, too. What's that barber doing with all that income? Is he acting like that Schwarzman fellow and pulling out the rug from your grandkid's future?

So you're thinking it's one thing if that barber makes three or five or even ten times as much as you, but 50 times as much is just plain wrong! He doesn't need anywhere near that amount, he didn't really earn it, and now he's turning into a liquidator. This is not working, not with economic growth at the crossroads, not with

Supply Shock upon us. You are a reasonable barber and one of a large majority of Americans (or Frenchmen, or Indians) who are honing in on 1,500 percent as a common sense, allowable order of difference from the lowest income to the highest, at least in a given sector. You can stomach another barber making 15 times as much as you, and you suppose somebody like an NFL player or a brain surgeon could make somewhat more than 1,500 percent of your income, but you're not too crazy about that either, and you definitely don't like the idea of bailed-out bankers and plastics CEOs making 1,000 times as much as you, or 100,000 percent of your income. To say that you're not alone is a major understatement, meaning there is plenty of political viability for caps on income and wealth.

There are many sectors, salaries and other sorts of income to consider in developing caps on income and wealth. In fact, we haven't dealt much with wealth per se and policies such as inheritance taxes. Clearly the subject matter warrants a whole book and probably numerous books. Developing detailed proposals is a job for think tanks, policy entrepreneurs, progressive politicians and, once again, grad students. We've seen enough here to serve as part of a steady state policy framework. One common theme has been the trophic theory of money, which tells us that real money supplies and flows must be stabilized to be sustainable. That almost brings us to the issue of monetary reform, but first a bit more on the role of grad students is in order.

Developing detailed proposals for steady state policies is not yet in the cards for most think tanks, policy entrepreneurs and progressive politicians. Trust me, it's tough to find funding for steady state think-tanking, much less advocacy. Big Money tends to be pro-growth, of course, so in steady-state circles there is nothing analogous to the Cato Institute, nor for that matter the Brookings Institute. This may never change to a substantial degree, even if the general public undertakes the steady-state paradigm shift, because Big Money doesn't work for the general public. But a significant share of the funding in the university system comes with no strings attached.

In academia, scholars and students left and right are recognizing the disconnection between conventional economics and the state of the planet. So far the response has been a proliferation of ecological microeconomics; that is, estimating the value of natural capital and ecosystem services. Several institutions have become especially known for such research, most notably the Gund Institute at the University of Vermont. But ecological microeconomics is only a marginal improvement over neoclassical economics. It's still limited to getting the prices right, albeit with a more complete accounting of costs. For all the reasons described in Chapter 6, getting the prices right is hardly an adequate response with economic growth at the crossroads. What we need now in academia is a flagship program for *ecological macroeconomics*, specializing in the trade-off between economic growth and environmental protection (a technical matter requiring ecology and economics) and steady statesmanship (a policy matter requiring political science and sociology). This flagship will be something of a complement to the Gund Institute (with its micro-focus) and a counter to the Chicago School (with its neoclassical pro-growthmanship). The potential for such a presence is palpable at several universities, including Michigan State University in the US, Leeds University in the UK, and the Autonomous University of Barcelona. At these universities and others, grad students can already seek degree programs geared toward steady statesmanship and can focus their masters theses or PhD dissertations likewise. Departments that are starting to sponsor such research include geography, political science, sociology, environmental science and, at some schools, even economics. The entire policy framework provided in this chapter can be fleshed out by such graduate research, and many of the graduates themselves can go on to be the steady statesmen and women we need in the political pulpits and at the helm of public policy.

Regarding the policy framework provided in this chapter, we next address the monetary sector. With the exception of population stabilization, nowhere is the principle of putting the horse before the cart more important than in monetary affairs. Monetary

policy is currently focused on preventing inflation while stimulating economic growth. The primary tools for pursuing these goals are the money supply and the interest rate. Basically, increasing the money supply and lowering the interest rate are conducive to economic growth, but also conducive to inflation. So monetary authorities (such as the Federal Reserve System in the US) attempt to stimulate the economy without causing inflation, and it's a delicate dance.

It's also a tangled web they weave, these monetary authorities, as they inevitably get caught up in the broader and wackier world of finance, private as well as public. I do not recommend Andrew Ross Sorkin's *Too Big To Fail*, as it would take too many hours of your life (as it did mine) to plow through the 600-page minutiae of incestuous dealings among financial and monetary titans such as Alan Greenspan, Henry Paulson, Ben Bernanke and (alas) the world-class liquidator Stephen Schwarzman. (In fact, *Too Big to Fail* is loaded with liquidating lore, but the marginal utility of such information diminishes rapidly.) I recommend instead that you take my word for it, along with your common sense. Stocks, bonds, insurance, mortgages and increasingly surreal derivatives with "collar," "strangle" and "iron butterfly" options constitute a shape-shifting matrix that challenges the monetary authorities' abilities to stay plugged into reality. By "reality" I mean the real economic sector with its trophic structure of agricultural, extractive, manufacturing and (non-financial) services sectors. The volume of financial transactions on such products as "rainbow derivatives" in no way reflects the actual production and consumption of real goods and services. This is why stock markets, mortgage markets and the financial markets in general can boom and bust like balloons at the county fair while the economic capacity of Planet Earth stays approximately the same, punctuated by the occasional volcano or meteor (and now threatened by trends such as climate change and biodiversity loss).

Because of the dubious connection between the real sector and the circus sideshow of the financial sector, even conventional,

neoclassical economists have long questioned the effectiveness of monetary policy to stimulate the economy. The ironies never cease, for these economists see no real limits to economic growth, buying whole hog into the information economy and perpetual technological progress. Yet even they cannot imagine that monetary hocus-pocus can stimulate an economy to grow, whether by information or schminformation. Clearly they have a point, ironically or not, because when an economy has reached its real, natural, ecological limits, it doesn't matter what you do with the money supply or the interest rate. You can set the interest rate below zero, paying borrowers to borrow money, but you can't milk a dry cow. Mother Nature is constantly verifying this, from the lowest trophic level up.

Nevertheless, in the Keynesian tradition, it is just as obvious that monetary policy does affect growth rates when an economy is *not* operating at full capacity. Monetary authorities can indeed stimulate growth by lowering interest rates or increasing money supplies. But monetary policy doesn't have to be pro-growth. Carefully tempering money supplies and keeping interest rates from going too low clearly can *slow* rates of growth. Therefore, it is absolutely crucial to get our monetary authorities on board with the need for a steady state economy. As they make decisions affecting the rate of growth, they must increasingly recognize that decisions conducive to growth are "uneconomic" and cause more problems than they solve. Rather than prioritizing growth without inflation, they can prioritize steady statesmanship without deflation. And they can start taking pride in providing leadership toward a sustainable future.

If you think the idea of monetary authorities and financial gurus becoming steady staters is entirely beyond the pale, a few examples should make you think twice. Henry "Hank" Paulson was the CEO of Goldman Sachs—a Wall Street icon—before President George W. Bush called upon him to be Secretary of the Treasury in 2006. Serving as Treasury Secretary until 2010, Paulson has been a jet-setting mover and shaker of private and public finance, nationally and internationally. No one has been more representative of the

financial sector in the 21st century. Pursuant to stereotype, we'd surmise him to be a Schwarzmanesque liquidator. But we'd be wrong, very wrong. Paulson is actually a "hard-core environmentalist" who drove (and presumably still drives) a Toyota Prius.[17] He's been a member of The Nature Conservancy for decades, has donated over $100 million to nature conservation projects and plans to donate his entire fortune to environmental causes.[18] While the Bush Administration infamously denied a human role in global warming, Paulson was a rare dissenter.[19] His family is likewise inclined toward environmental protection. His wife used to lead birdwatching tours for The Nature Conservancy. His son was on the Board of Advisors for the Wildlife Conservation Society.

While Paulson "was something of a baffling outlier"[20] by Wall Street standards, he is no less baffling by sustainability (non-Wall Street) standards. Paulson grew up on a farm in Illinois—he's *got* to know where the milk comes from. And get this: "Before college [Paulson] wanted to become a forest or park ranger. Instead he opted for a business career, getting an MBA from Harvard."[21]

I can't help thinking of my mom's certifiably Catholic admonition: "There but for the grace of God go I." Indeed, sheltered from neoclassical economics, I basically did what Paulson wanted to do, becoming a ranger, firefighter, biologist, etc. Instilled with principles of ecology, and with decades spent in the field, I wound up advocating a steady state economy when my PhD research led me to see the fundamental conflict between economic growth and environmental protection. Meanwhile, Paulson ended up instilled with neoclassical economics, Harvard-style, and devoted decades to economic growth. He eventually contributed millions of dollars to conservation, but I wonder if he ever pondered how the millions were generated. I also wonder what I would ponder with an MBA from Harvard, Stanford or the University of Chicago. In other words, I'm not standing in judgement of Paulson. Far from it, for Mom was right about "the grace of God." Rather than picking on Paulson, we should seek him out, connect on environmental matters and engage him in steady state economics.

Paulson's environmentalism is so dramatically ironic that I hesitate to offer other examples for fear of being anti-climatic. Yet every year since 1981, the Federal Reserve Bank of Kansas City has held an annual symposium in Grand Teton National Park.[22] Ben Bernanke, Timothy Geithner (Paulson's successor as Secretary of the Treasury) and a long list of other Fed and Treasury officials (many of whom are in a revolving door with Wall Street) gather in Jackson Lake Lodge to discuss the state of the monetary sector. Surely there must have been, over the 30 years of this outing, some notions of irony among these growthmen as they roamed the Teton trails after hours. Have none of them glanced at a Teton glacier and lamented its melting? Or spied a grizzly in a meadow, evoking thoughts of endangered species? Or had their peace disturbed at sunset by the sound of a Jake brake on Highway 26? Have none of these thoughtful men connected such disturbing thoughts with economic growth, the *summum bonum* of their careers? Surely some of them have, for few men are immune to soul searching. Steady staters worldwide should seek an audience with the monetary authorities and financial gurus, especially those with known Paulsonesque propensities, and solicit their steady statesmanship. Some of these authorities and gurus could surprise us with their solicitude.

Not only do the monetary authorities control money supplies and interest rates; they also have substantial control over banking regulations, including fractional reserve requirements. When you and other bank customers deposit your money, you must know that the bank doesn't keep all that money in the vault, in case you all want it back the next day. Rather, the bank assumes that few of you will need money the next day, and keeps only a fraction of all your deposits in the vault. The rest is loaned out to borrowers, at interest. It's not really the banks' money to loan, but they loan it anyway, in a sense creating money by fiat. It's all legal, this authority to create fiat money, and it nets the bank an easy income called "seignorage." This income is in addition to the interest paid by debtors.

In an empty-world economy, this was fine, at least for sustainability purposes. Most of the debtors were out working in the real

sector, starting with the farmers and extractors toiling in the sun, wind and rain to wrest more of the Earth's natural capital. Producers needed money for tractors, oil rigs and boats; manufacturers needed money for mills, refineries and canneries. These debtors would sell their goods in the market, then dutifully pay back the bank the principal and interest.

It was fine for sustainability purposes, but of course the bankers made out like bandits. They accumulated income, giving them purchasing power, political power, philanthropic power, propaganda power, in proportion to the toils of labor and the resources of the planet. It's no wonder the apical ancestor of bankers, Mayer Amschel Rothschild (1744–1812), said, "Permit me to issue and control the money of a nation, and I care not who makes its laws."[23] Abraham Lincoln said, "The money power of the country will endeavor to prolong its reign…until the wealth of the nation is aggregated in a few hands, and the Republic is destroyed."[24] Henry Ford said, "It is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning."[25]

If you're wondering how much fiat money bankers are allowed to create for themselves, that's determined by the fractional reserve requirement, which is set in the US by the Fed's Board of Governors. The reserve requirement varies by the size of bank and type of account. Reserve requirements for demand deposits (such as in checking accounts) range from zero percent (for small banks) to ten percent (for larger banks). Similar fractional reserves are required in many countries.[26]

To reiterate, banks are required to keep only a small percent of your hard-earned deposits available upon your demand. This in the wake of Enron, Bear Sterns and the incredibly unfair banker bailouts of 2008. If you're thinking this is as sustainable as a snowball in the Sahara, your optimism is reflected by the size of snowball you have in mind. The tiny fractional reserve requirement is less sustainable by the day, melting as it were in the context of global

warming and all the other signs of a full-world economy. It needs to be raised.

In fact, true steady statesmanship entails phasing out the fractional reserve system entirely and replacing it with fee-service banking. As long as banks are allowed to issue new money by fiat, they essentially put the planet in debt and require natural capital payments. In other words and all else equal, fractional reserve banking assures us of uneconomic growth.

Fee-service banking is just what it sounds like: banks charge a fee for holding your money. The banks can package loans based on the receipt of such fees. Also fair game for lending are time deposits that, by definition, are off limits to the depositor for certain periods of time. The idea with banking reform is not to eliminate the practice of lending, but rather to make the rate of lending, and interest payments, sustainable. Banking reform is part of the broader macroeconomic policy reform toward a steady state. None of this reform is intended to shut down the economy, but rather stabilize it and make it sustainable. Even in a steady state economy, sustainable amounts of infrastructure and other manufactured capital will depreciate (pursuant to the second law of thermodynamics), and lending that enables the replenishment of such capital stock is necessary. Lending may also be required when one business starts up while another completes its run, or as one sector (such as solar power) gradually eclipses another (such as fossil fuels). In the context of stable populations, caps on resource use and pollution, and other criteria of a steady state, interest rates would presumably tend to reflect the rates of capital depreciation and business start-ups.

Another widely touted monetary reform is the establishment of local currencies. These are certainly legal in most parts of the world, including the US, where nearly every state has one or more local currencies. Examples include Asheville Dollars (North Carolina), Atlanta Hours (Georgia), and the aptly named REAL Dollars (Lawrence, Kansas).[27] Local currencies, by definition, are used within local communities by all who decide to use them as an

alternative or supplement to the national currency. They have the huge advantage, with regard to sustainability, of de-globalizing the real economy, instantly lowering the energy and resource requirements of shipping, because producers and consumers are all local. As a store of value, they provide diversity and therefore resiliency in the monetary sector; no one wants to have all their "beans" in one pot. Another huge benefit is the community trust-building that occurs as the firms and households comprising the circular flow of money are actually friends and neighbors, or otherwise become acquainted as a result of local transactions. Imagine how it might feel to personally know who grows your wheat, bakes your bread, crafts your furniture and…banks your money. For most people, this knowledge adds something intangible to the quality of life. People feel more connected, together, united in advancing the welfare of the "village."

Local currencies may never become a prominent feature of steady statesmanship, because it takes a determined effort to launch and maintain them. Local currencies aren't a steady-state panacea, either; they too can be conducive to economic growth (minus the globalized aspect) if that is the community's goal. But in communities that have already adopted a steady-state policy goal, or at least undergone the steady-state paradigm shift, local currencies can be used to avoid the fractional reserve banking system with its growth imperative. Therefore, they are an important tool in the steady statesman's policy cart. Nothing will substitute, however, for steady statesmanship in the national monetary authority and in the legislative, administrative and ministerial bodies that set or influence interest rates, money supplies and banking regulations. Populating the congresses, chambers, parliaments, state houses and even the supreme courts with steady staters must be achieved; otherwise, the "margin" of the national economy will push like a bulldozer into any and all local communities, regardless of how sustainable they attempt to be on their own.

Next on our list of issues to be addressed by steady statesmen and women is employment. While some issues are more obviously

connected to the establishment of a steady state economy—such as capping resource extraction or stabilizing population—no issue is more important than the maintenance of full employment. For the vast majority of people today, employment is required not only to make a living but to maintain a fulfilling identity and social network. Without the prospect of full employment, or at least very low rates of unemployment, the steady state economy is a political non-starter.

Earlier in the chapter I proposed amending the Full Employment Act to the Full and Sustainable Employment Act. I failed to note the handy, partial acronym "Full SEA," which with a bit of nicknaming license becomes the Full Seas Act. What a fortunate acronym it is, because "Full Seas Act" would have the tremendous upside of tapping into the metaphor of the rising tide—in this case having risen as far as sustainably possible—with every single utterance of the phrase.

Recall that the focus of the Full Seas Act was on stabilizing population because a stable population is a prerequisite to any prospect of perpetual full employment, and to a steady state economy. Shortly afterward, we looked at some basic policy tools for stabilizing population. In other words, we have explored much of the necessary terrain for maintaining full employment. But there are two major nuances that will face the steady statesman, and we must face them now. One is technological progress, and the other is the transition to a steady state economy, a period during which population may still be growing.

We explored the origins of technological progress in Chapter 8. However, we did not explore all the implications. One implication of technological progress is an increase in labor productivity. If you're new to this issue, don't let the lingo fool you. An increase in labor productivity doesn't mean the workers work harder. They're already working quite hard! Rather, as workers become coupled with newer, more efficient equipment and processes, more output is produced per hour of labor. This process of increasing labor productivity, resulting from technological progress, has invariably

resulted in the layoff of workers, because capitalists have found it more profitable to substitute machine for man. Why keep a hundred ditch diggers with shovels when you can buy a gas-powered ditch-witch and hire one operator? (To put it in technical economics terms, the marginal physical product of manufactured capital has grown faster than the marginal physical product of labor, due to technological progress.)

Yet nothing physically requires the capitalist, or the government, to substitute machine for man. If the goal of full employment is to be reconciled with the reality of a full-world economy, the production of goods and services has to become more labor-intensive. Maybe it sounds bad, but just as increasing labor productivity doesn't mean the worker works harder, labor-intensive doesn't mean the labor is more intense. It simply means that the ratio of labor to capital is kept somewhat higher than the capitalist might opt for in an empty-world economy with no concern about environmental protection, economic sustainability, national security or international stability.

Clearly, we would all like machines to do the jobs, while we sit back and drink Margaritas or milk. But maybe it's not so clear if we're the ones out of a job. We—or the vast majority of us—have to recall that all that glorious, labor-saving technology is not owned by us. Wealthy capitalists own it, and while they may have nothing against you or your employment, they do have something against lowering their profit margins. If it comes down to hiring you or, more profitably, purchasing a robot, don't be surprised if the robot gets the nod.

The upshot is that it may become necessary to require a certain labor intensity of production. Such a requirement would be unfathomable in the absence of a steady-state paradigm shift. Although labor-intensity requirements wouldn't require state *ownership* (a key feature of socialism), they would entail a degree of central *planning* (the other key feature of socialism, but also of capitalism). Planning would be needed to ascertain how much labor would be required, in contrast to capital investment, to maintain

full employment during the transition to a steady state. Yet the closer an economy gets to its ecological capacity, and the more perilous economic growth becomes, the less of a sacrifice some central planning appears.

Requiring a given labor intensity may be especially important in cases where the population is still growing as the steady state economy is adopted as a policy goal. Indeed this scenario seems highly likely. Most nations (or other polities) establishing a steady state economy as a policy goal will do so because, and while, trends in population and per capita consumption are obviously unsustainable. While the transition is being made to a steady state economy, and with populations still growing, efforts to prevent widespread unemployment will be essential. Such efforts must coincide with efforts to stabilize population, and both efforts must be successful.

Of course, labor intensity requirements would not be confined to the private sector. The closest thing to a precedent for labor intensity requirements in the US is Franklin Delano Roosevelt's New Deal programs during the Great Depression. For example, the Civilian Conservation Corps (CCC) did not go out and purchase as many bulldozers and chainsaws as possible, but rather hired as many shovelers and axe-swingers as possible. The same work was done (earth moving and timber cutting), but in a labor-intensive manner that reduced the problem of unemployment. Note especially that, all else equal, this approach to getting the job done is much less harmful to the environment because machinery and their fuels are not required, and people with hand tools tend to leave less severe scars on the land. Meanwhile the workers, especially young workers, find a certain healthy exuberance in outdoor physical labor, as long as it isn't overdone.[28] Similar labor-intensive programs have been administered in China, Russia and many other countries, but the New Deal is instructive in melding state-sponsored employment programs with free-market capitalism in the private sector.

If we're serious about the steady state economy for environmental protection, economic sustainability, national security and

international stability, we better get serious about maintaining full employment with a mix of public and private sector jobs. FDR was serious about maintaining full employment, even in the midst of *de-growth*, and pulled the US out of the Great Depression. We should be serious about it too, and pull our respective countries away from the depression of Supply Shock, preferably (by far) without the equivalent of a World War II to help "stimulate the economy."

There is at least one other promising approach to the unemployment problem: reducing the time spent working. With this approach, increasing labor productivity is used to give everyone more time off, instead of laying some workers off while others continue working long hours. Unlike the approach of labor intensification, this approach is especially suited to middle- and older-aged workers. Working-time reduction is not only beneficial for maintaining widespread employment in a full-world economy, it helps with achieving that enviable and elusive goal of work-life balance. As with labor intensification, working-time reduction is a practical approach with solid precedents. The Dutch, for example, have demonstrated that working-time reduction and work-life balance can be achieved in a systematic manner with public policies that resonate with the people.[29]

No matter what the approaches to employment, however, none can be successful in the long run unless population is stabilized. Population won't be stabilized without a steady-state paradigm shift. For the steady statesman, putting the horse before the cart means providing leadership in promulgating the steady-state paradigm shift.

The final policy issue from *Enough Is Enough* that warrants attention here is changing the way we measure progress. Actually, we got a start on this subject in Chapter 2, with the stance that GDP itself should not be tampered with. The logic was that GDP is a well-established and quite meaningful indicator of one thing: the size of the economy. It is not GDP itself that needs reform, but rather our interpretation of GDP. Once again, we need to put the horse before the cart. With economic growth at the crossroads, and

pursuant to a steady-state paradigm shift, the public and polity will interpret growing GDP as an indication of growing problems, not solutions.

In Chapter 2 we considered the zoological metaphor of an elephant in a cage. Its outgrowing the cage led to a very problematic outcome. It was nothing to encourage, just as growing GDP is nothing to encourage in the age of Supply Shock. Now let's consider a medical metaphor that may lead to a more nuanced understanding of measuring progress.

If you're a doctor with an overweight patient, the last thing you should tell the patient is to throw away the scale. The patient needs that scale now more than ever. It just has to be interpreted in a different light. For example, when the patient was a little kid, it was a good, healthy sign when the scale indicated growth from year to year. When the patient became an adult and reached an optimum weight, that was a good thing too. But now, with an overweight patient, increasing size is a bad thing, and the patient needs to know it.

That's how we should use GDP. GDP is a solid indicator of the economy's size. Sure, economists of yesteryear considered GDP an indicator of welfare, not just of size. To them, a growing GDP was invariably a good thing. They were analogous to a narrow-minded pediatrician with an overweight patient, always prescribing growth. For many decades, they were right, too. But while the patient grew up, many of the neoclassical "doctors" never did, as we saw in Chapter 4.

It's time for them to grow up, but that doesn't mean throwing away their instruments. The doctor with the overweight patient should not take away the scale, but rather *emphasize* it. The patient should monitor that scale closely and, as the readings become larger and larger, become evermore alarmed. But the doctor should also make good use of the blood pressure cuff and the stethoscope, both of which will indicate declining health as the patient balloons into obesity.

Likewise, we ought to supplement GDP with other indicators such as the Genuine Progress Indicator (GPI) and the Happy

Planet Index (HPI). For the global economy and many nations, GPI and HPI will continue to decline as GDP grows beyond optimal levels. With GDP growth now coming at the expense of genuine progress and happiness, we should strive to halt the growth in GDP. That doesn't mean we should stop measuring it; quite the opposite in fact. We'll want to know how we're faring in our progress toward a steady state. GDP will be a key indicator for monitoring such progress.

Of course no metaphor is perfect, and GDP may be even more useful than the medical metaphor suggests. There's a lot of "value added" to GDP monitoring, once we put the horse before the cart. For example, all one needs to *indicate* (as opposed to measure precisely) the loss of biodiversity is GDP.[30] That's because of the fundamental conflict between economic growth and biodiversity conservation, as described in Chapter 8. For the sole purpose of indicating biodiversity loss, there's no need to consider the complex metrics of GPI or HPI.

Now the devil's advocate will ask, "Why not just count the endangered species directly, instead of looking for an indicator like GDP?" The problem is that counting endangered species is akin to counting oil spills. They don't come out and advertise themselves. A spill the size of BP's Deepwater Horizon won't escape notice, nor will the endangerment of a species like the polar bear, but the little spills and the little species are often overlooked and sometimes undetectable. Also, many forces are aligned to prevent the counting and reporting of endangered species, as I learned during my PhD research on the Endangered Species Act.[31] Even if it weren't for these forces, you'd have a hard time monitoring the millions of species on the planet.

This type of problem is why we have indicators to begin with. Although it would be nice to know exactly which species are endangered—and how many barrels of oil are spilled, how low all the aquifers are, how much topsoil is eroded, how many toxins are being emitted, etc.—we cannot know, and even if we could, we probably wouldn't find it worth the expense to ascertain. Not with the

trophic theory of money telling us that, to afford such an impossible analysis, we'd have to liquidate the very natural capital we were worried about to begin with (Chapter 7). It is important, however, to have some idea of the magnitude and trends of species endangerment—and oil spillage, aquifer depletion, etc. And it is more than feasible.

Indeed, for many indicators of ecosystem degradation, GDP has at least the following advantages: 1) it is a technically sound indicator, most notably for biodiversity loss and greenhouse gas emissions; 2) it is already calculated with due diligence by governments, saving conservation and environmental organizations the huge amounts of money they would have to spend on more direct measures of environmental impact; 3) GDP data are widely reported by the press.

Finally, there is one thing for which GDP is probably unsurpassed as an indicator. Some may argue that GDP isn't a perfect indicator of greenhouse gas emissions because the carbon intensity of GDP changes. Some may argue that the rate of biodiversity loss changes with the technological regime. Some may argue that, while some water pollutants are increasing as a function of economic growth, others are being phased out. All of them may argue it's no use trying to add up such distinct environmental parameters as climate, biodiversity, air and water in coming up with a broad indicator of environmental protection, because it's like adding apples and oranges.

Yet apples and oranges, along with bacon and bourbon, can all be placed in a basket and weighed. If you ingest a small enough basketful, you'll survive, even if it's all bacon or bourbon. If you ingest a massive pile, it can be all organic apples and you're still doomed. In matters of individual survival and social sustainability alike, size matters.

And so it seems fruitful to recall the definition of economic growth: increasing production and consumption of goods and services *in the aggregate*. GDP is a well-established, consistently calculated measure of economic growth. We also know that there is a

fundamental conflict between economic growth and environmental protection. So even if we can't add apples and oranges precisely, we can put two and two together: GDP is clearly an indicator of environmental impact in the aggregate, and may very well be the best such indicator we can hope for.

Some reformers want to dispense of GDP entirely, claiming that it's a meaningless indicator at best and a misleading indicator at worst. Yet clearly it is neither. GDP indicates how much trouble we're getting into — how "obese" we're getting with our global economy — and as an indicator, it cannot be "misleading." Any charge of misleading may only be leveled against mistaken interpreters, such as those who think increasing GDP is a positive sign no matter the historical or ecological context.

The late Donella Meadows once made the excellent point that "we care about what we measure."[32] Some have used this quote to argue for dispensing with GDP and adopting an indicator that reflects what we really care about. Certainly, if we were busy measuring the GPI, for example, we would engender more concern with genuine progress. But Meadows' full point was a little different. She said, "Indicators arise from Values (we measure what we care about) and they create Values (we care about what we measure)." She may as well have said, "First comes the horse; then comes the cart."

That leads to a well developed but simple conclusion, for the metaphor of horse-and-cart has clearly become our underlying theme. Yes, we need public policy reform in order to establish national and global steady state economies at sustainable levels. Furthermore, some may never concede the need for steady state economics without first being able to visualize the policy framework. So yes, the steady statesman must be able to propose and articulate policies such as the Full Seas Act, Natural Resources Cap-and-Trade Act, sectoral salary caps, tax reforms toward stabilizing population, phase-out of fractional reserve banking, and labor-intensive civil services. Yet it should be abundantly clear by now that not a single one of these policies stand a reasonable chance of public dialogue, much less adoption, as long as the over-

riding policy goal and social mode is economic growth. Attempting to pass any one of these heavy hitters would be a major episode of putting the cart before the horse. That's why successful steady statesmanship—the only kind that matters to the grandkids—requires honest, open, persistent and articulate leadership in raising awareness of the perils of economic growth in the age of Supply Shock.