

PROTECTED AREAS

FOUNDATION OF
A BETTER FUTURE
RELATIONSHIP
WITH ENERGY

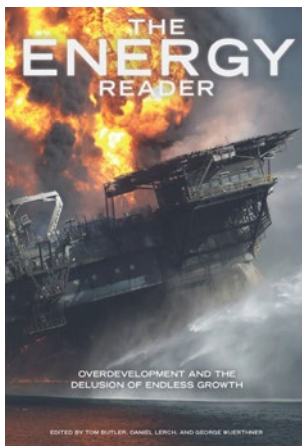
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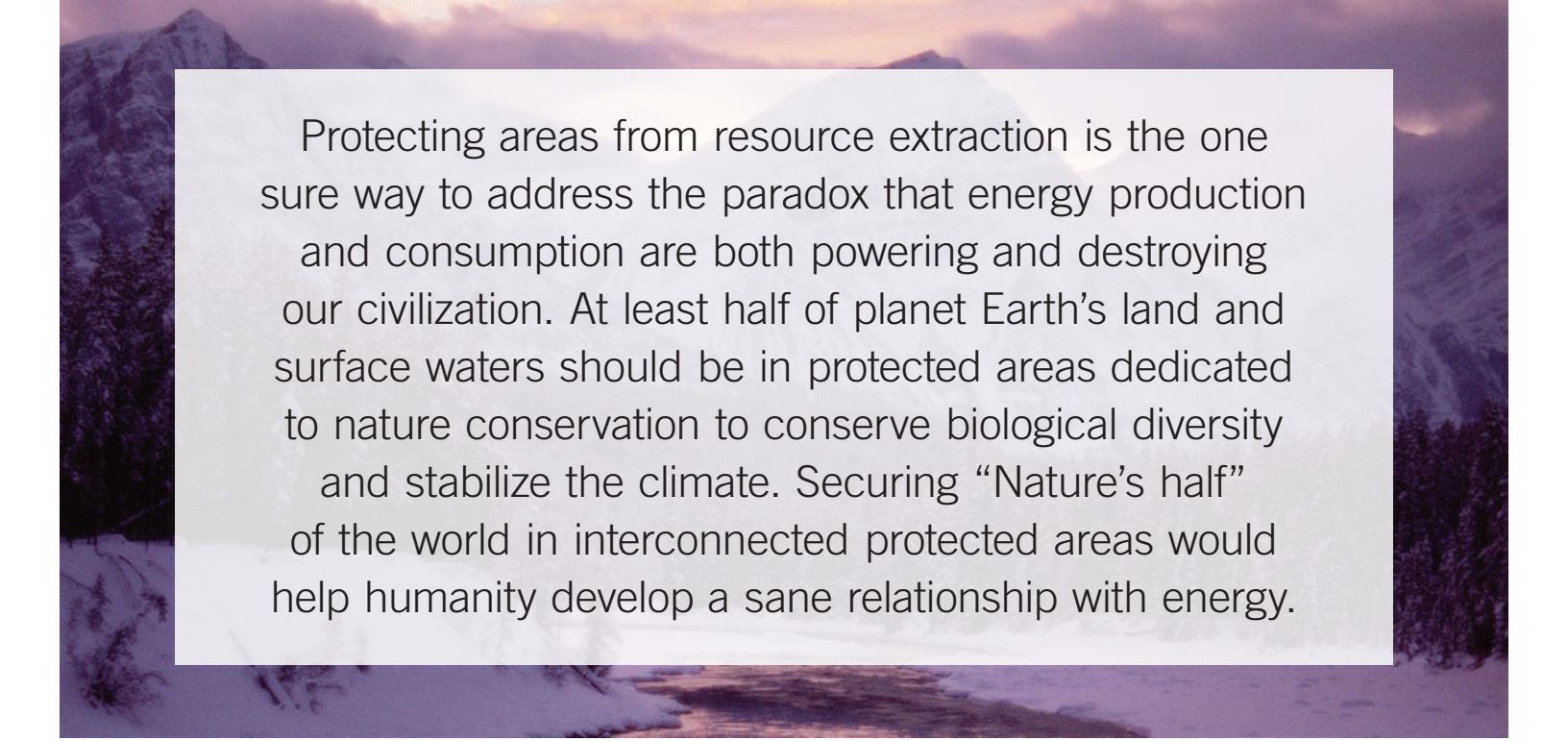
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Protecting areas from resource extraction is the one sure way to address the paradox that energy production and consumption are both powering and destroying our civilization. At least half of planet Earth's land and surface waters should be in protected areas dedicated to nature conservation to conserve biological diversity and stabilize the climate. Securing "Nature's half" of the world in interconnected protected areas would help humanity develop a sane relationship with energy.

Vast energy consumption powers modern civilization and has brought humans many benefits; it is also serving to destroy wilderness, a stable climate, and the conditions for human well-being. Thus we have created a paradox: Energy production and consumption are at once powering and destroying our civilization. There is one sure method to shift this dynamic that is good for both nature and human well-being—protecting areas from resource extraction. And I mean lots of protected areas: protected areas that are interconnected; protected areas on land and sea; protected areas that conserve at least half of the land and water on planet Earth. We should do this because human life depends on it, because the rest of life depends on it, and because it is the right thing to do.

We and the rest of life are made up of carbon. Carbon comes in several forms: living (you and me, trees, sea organisms), ancient (coal, oil, natural gas, limestone), and gas (carbon dioxide, methane). There is a dynamic exchange between these forms of carbon. Trees pull carbon dioxide out of the atmosphere. We breathe it out into the atmosphere. Some of it settles into the oceans to become limestone or is taken up by living things like phytoplankton, kelp, and mangroves. When brackish seashore environments get buried, their carbon-rich vegetation is eventually compressed and turns into coal. Organisms become oil and gas through a similar process. This transformation from living carbon to carbon stored in rocks takes a very long time.

Carbon in various forms is the dominant source of energy for humans. Humans have long burned living carbon from trees in campfires and thus converted it to gas. We also burned oil from living things such as whales for lighting, heating, and cooking. In the eighteenth century we significantly increased wood burning and began burning coal for a new purpose, industrial development. But it wasn't until the last half of the nineteenth century that we learned also how to burn oil from rocks. (It was originally called "rock oil" and was once drunk for its alleged health benefits; "petroleum" refers to rocks.) This incredibly efficient energy source that we now know as oil laid the foundation for the industrialization of the world and modern transportation systems. These activities also radically altered the dynamic exchange among forms of carbon, which is called the "carbon cycle."

In the last two hundred fifty years we have removed and burned so many forests, we have converted so many grasslands and wetlands, and we have disturbed so many mangroves that we have converted an enormous amount of living carbon into atmospheric gas (carbon dioxide). One-quarter to one-third of the great rise in carbon dioxide in the atmosphere since 1750 that is driving climate change has come from converting living carbon to gas. Most of the other two-thirds of the great rise in carbon dioxide since the Industrial Revolution has come from burning ancient carbon for

energy and a small portion that comes from burning limestone to make cement. Today the ratio is more like 20 percent of all carbon dioxide coming from converting living systems and 80 percent from burning ancient carbon. All of this is radically transforming the climate in dangerous ways.

The net effect of this conversion of living and ancient carbon to atmospheric gas was neatly summarized by the Intergovernmental Panel on Climate Change in 2007: “The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land use change, pollution, overexploitation of resources).” In other words, business as usual is a disaster for nature, which is also a disaster for us.

Humans depend on nature for life. We do not know how to make water or air. It comes from nature. All the food we eat comes from nature. While we know how to manipulate life to increase yields, we simply do not know how to make life. Ecosystems and their interaction with the atmosphere, freshwater and salt water, and the minerals from the Earth are the foundation of human life. We definitely do not want to overwhelm them. Yet that is exactly what we are doing.

Young people know this is happening. The generations of humans that have been in positions of power and leadership during the past thirty years have done something that is very intergenerationally unfair. We have compromised our children’s future. We have deprived them of hope for a better life. It doesn’t matter that we did not mean to do it. We did it. And we continue to do it despite the overwhelming evidence that it is self-destructive. We don’t seem able to stop ourselves. Young people will have to live with the consequences.

There is an obvious solution that can materially address for the better every aspect of this nasty problem that we have created: protected areas, where industrial-scale extraction of living or ancient carbon and other minerals is not permitted. Examples are national parks,

wildlife reserves, watershed protection areas, municipal nature parks, tribal sacred areas, and wilderness areas. They can be owned by the public, private individuals, or associations, or be tribally controlled.

Protected areas work because they stop land use change, they stop overharvesting, and they do not contribute pollution. They prevent greenhouse gas emissions in two ways: They end the destruction of natural ecosystems immediately, which prevents greenhouse gas emissions from living carbon; and they keep the Earth’s ancient carbon in place, which keeps it out of the atmosphere. Protected areas also provide for resilience through allowing ecosystems to adapt to climate change, especially if they are large and interconnected across elevations and latitudes. They are the single best tool we have to conserve ecosystems and reduce carbon emissions. And they are beautiful.

Canada, the United States, Australia, Argentina, countries of the European Union, South and East Africa, and many others have long histories of setting aside exceptionally beautiful places as protected areas. Protected areas have worked well, but we do not have enough of them and they alone are not sufficient to secure the future of life. They must protect the full variety of habitats (not only the exceptionally scenic) and be connected across the landscape to allow species to move and find mates and to allow plants and animals to adapt to climate change.

To date we have protected less than 15 percent of the planet’s land. Even less of the sea is protected. While countries like Australia and the United States have made some important recent advances in creating marine protected areas, many more are urgently needed to curtail the continuing widespread decimation of fish populations and destruction of reef structures by industrial fleets and conversion of coastal mangroves to shrimp farms. By committing at least half the world’s lands and waters to protection of nature and ensuring they are interconnected, we can largely overcome the problems of over-exploitation, fragmentation, and isolation of plant and animal species, while effectively keeping huge amounts of living and ancient carbon out of the atmosphere.

Of course civilization today depends on access to and use of ancient carbon. So we cannot stop burning it immediately; a transition will be necessary. We could, however, move to protect at least half of the Earth now, where carbon extraction is not under way. Antarctica is an area of unclear or shared sovereignty; all of it should be protected forever. The Arctic Ocean is an area of disputed sovereignty; let's solve the problem by agreeing to protect it. The same applies to the high seas where through international actions we could protect at least half right away. Countries with vast *de facto* wilderness like Canada, Australia, and Russia could act immediately to protect at least half of their landscapes and seascapes. Similarly we should protect at least half (and probably much more) of Patagonia and all of the remaining tropical rainforests on Earth.

Why protect at least half the world? The science is clear that what is necessary to allow for ecosystems to retain all their species, continue the natural processes they support, and be able to adapt to environmental change is to protect at least half of a given ecological system in an interconnected manner. So let's do what is needed.

Creating protected areas at this scale is already under way. Australia recently announced that it will protect nearly half of its southeastern coast. Ontario and Quebec, the two largest provinces in Canada, have formal plans to protect half of their northern regions (in Quebec alone this means that 135 million acres, an area roughly the size of France, will be protected from all industrial development). In the North American west, the Yellowstone to Yukon corridor is showing that protecting and interconnecting a vast area can be done while people prosper. Suriname has protected a vast area of tropical rainforest.

In western Europe and eastern North America there has actually been a recovery of forests that were previously cleared. Following the model of Adirondack State Park in New York, we should protect them now and allow them to grow "forever wild" to fix more carbon and house more life. In places that have been more radically transformed by humans, we should vigorously pursue ecosystem restoration and then protect the areas we

restore. Coastal mangroves and sea grass beds—among the most biologically productive ecosystems and largest carbon storehouses on Earth—are a particularly good place to start. This will take considerable time, as mangroves, once cleared, are slow to recover.

People like me who propose simple solutions to intertwined problems are often attacked for failing to understand "reality." This is a shame. Sometimes the answer to complex problems is really simple: Stop focusing on all the facets of complexity and instead address the bigger underlying problems. Protected areas work because leaving nature intact is the single most important thing we can do. We know how to establish protected areas and how to manage them. We can create alternate economic opportunities for local people who are affected by them. Further, protected areas don't cost much to create. They will force us to do more with less. And they will help solve the problems in our relationship with energy that we can't seem to solve otherwise. We just need the will to act.

We should act immediately to protect at least half the world in an interconnected manner. This would show we are serious about making the twenty-first century a good one for life. It would help us develop a sane relationship with energy. It would provide an agenda of hope for future generations. To secure at least half of the world in interconnected protected areas with sustainable development on the rest would be a project worthy of a great civilization.

