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The Weekly Planet: The choices we face

By ALAN BETTS

So far it has been another rainy summer. The springs on my hillside have not dried up as they usually do by this time of year and the weeds in my garden are hard to control. Walking down past the hayfields to the covered bridge in the early morning, I often see fog blowing off the forested hills and evaporating in the sun. Water on the trees and grass evaporates as well, forming more clouds and on many afternoons more thunderstorms — returning the water to the earth in a nearly continuous cycle.

With all this cloud cover, which reflects the sunlight back into space, afternoon temperatures in June and July have been 6 degrees cooler than normal, until this past week.

Last month the U.S. government published a report on the impacts of global climate change in this country. Based on research by thousands of scientists, this report has taken many years to complete. It's long — but readable with excellent graphics — and presents two basic scenarios that our children and grandchildren will face. The first is likely if we ignore the problem and continue to burn fossil fuel as our main energy supply. And it is a grim prospect. The second scenario, more hopeful but still very troubling, is possible if we push through legislation nationally and draft global treaties to move towards an efficient global society, powered by renewable energy. This report is well worth reading because we all need to understand the possible futures we face. Then the crucial decisions we make as individuals, or our towns and governments make for us, will be better informed and wiser.

Clearly a different strategy is required. The growth of human population, energy use and consumerism have all been encouraged — to the point where humanity is now using or polluting an unsustainable fraction of the earth's natural resources. The oceans are filling with plastic waste, and the atmosphere with greenhouse gases. Mercury from burning coal accumulates in fish, and nuclear waste simply piles up.

All human activity uses energy and materials and produces waste. When we make or use things, we need to ask two basic questions: "Does this use the least amount of materials and energy?" and "Do the waste products have a short lifetime in the natural environment?"

The first question speaks to the need for greater energy efficiency in both manufacturing and use. And it also addresses the importance of minimizing waste itself by redesigning things so that they can be recycled or remanufactured easily and cheaply when their useful life is over. This "sustainable engineering" is the kind of challenge that engineers enjoy.

The benefits from remanufacturing are huge — large reductions in energy use and raw materials, and a much smaller waste stream. But legislation is required to ensure products are built to be remanufactured or recycled at the end of their life. Such laws are already in place in the European Union.

Minimizing the lifetime of wastes in the biosphere is the second big issue. The invention of plastics was amazing, but plastic products last so long that they must be recycled. And we've had to redesign all our refrigeration to reduce the damage to the ozone layer from the long-lived chlorofluorocarbons that were used as refrigerants. Now we must shift away from burning fossil fuels that increase the burden of long-lived greenhouse gases in the air that are transforming the earth's climate.

We have a long way to go — but at least we know what direction to take. We can all be grateful that the era of throwaway consumerism is coming to an end.

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