Effects of Global Warming
Signs Are Everywhere

The planet is warming, from North Pole to South Pole, and everywhere in between. Globally, the mercury is already up more than 1 degree Fahrenheit (0.8 degree Celsius), and even more in sensitive polar regions. And the effects of rising temperatures aren't waiting for some far-flung future. They're happening right now. Signs are appearing all over, and some of them are surprising. The heat is not only melting glaciers and sea ice, it's also shifting precipitation patterns and setting animals on the move.

Some impacts from increasing temperatures are already happening.

- Ice is melting worldwide, especially at the Earth's poles. This includes mountain glaciers, ice sheets covering West Antarctica and Greenland, and Arctic sea ice.
- Researcher Bill Fraser has tracked the decline of the Adélie penguins on Antarctica, where their numbers have fallen from 32,000 breeding pairs to 11,000 in 30 years.
- Sea level rise became faster over the last century.
- Some butterflies, foxes, and alpine plants have moved farther north or to higher, cooler areas.
- Precipitation (rain and snowfall) has increased across the globe, on average.
- Spruce bark beetles have boomed in Alaska thanks to 20 years of warm summers. The insects have chewed up 4 million acres of spruce trees.

Other effects could happen later this century, if warming continues.

- Sea levels are expected to rise between 7 and 23 inches (18 and 59 centimeters) by the end of the century, and continued melting at the poles could add between 4 and 8 inches (10 to 20 centimeters).
- Hurricanes and other storms are likely to become stronger.
- Species that depend on one another may become out of sync. For example, plants could bloom earlier than their pollinating insects become active.
- Floods and droughts will become more common. Rainfall in Ethiopia, where droughts are already common, could decline by 10 percent over the next 50 years.
- Less fresh water will be available. If the Quelccaya ice cap in Peru continues to melt at its current rate, it will be gone by 2100, leaving thousands of people who rely on it for drinking water and electricity without a source of either.
- Some diseases will spread such as malaria carried by mosquitoes.
- Ecosystems will change some species will move farther north or become more successful; others won't be able to move and could become extinct. Wildlife research scientist Martyn Obbard has found that since the mid-1980s, with less ice on which to live and fish for food, polar bears have gotten considerably skinnier. Polar bear biologist Ian Stirling has found a similar pattern in Hudson Bay. He fears that if sea ice disappears, the polar bears will as well.

Important Considerations that Guide Decision-Making

Regulation development is not a straight-forward process. Our job is to produce quality regulations that are scientifically sound, cost-effective, fair, and successful in achieving environmental goals. We routinely take diverse and often complex issues into account before making final decisions. Some of the most influential factors in our decision-making are:

Using Sound Science

EPA works to incorporate the most current and credible scientific information available into our regulation development process. Information from EPA's own research facilities is combined with literature reviews to arrive at the best possible conclusions.**Following Regulatory Process Requirements**

Several laws and executive orders (E.O.s) direct EPA to consider issues of concern to the President, Congress, and the American public.

Providing Flexibility

By pursuing innovative approaches and insisting on strong accountability for results, we are finding ways to build more flexibility into regulations.

Involving the Public

Stakeholder comments can illuminate issues that EPA has not yet considered, allowing us to benefit from the knowledge and experience of the concerned public.

Energy efficiency is inevitable

Policy makers have understood the importance of producing energy, but have been much slower to promote measures for energy efficiency. This has to change.

Though saving energy has massive potential, it is users who are assumed to be responsible for choosing efficient appliances, and usually the policy makers and power utilities are considered to have little to do with it. However, this is not true. Consumers face many barriers in adopting efficient equipment, which have been identified since decades, but continue to exist even today. The most basic barrier, which has now been recognised and is being tackled, relates to a lack of information.

Most consumers simply don't know which model of an appliance will save them energy, a lacuna that is being remedied by labeling. Major appliances now have to be sold with labels that indicate their electricity consumption, in order to allow prospective buyers to make an informed choice.

Though labeling is increasing sales of efficient appliances, awareness by itself is not sufficient. Three-fourths of Indian consumers are poor, and pay a low tariff for electricity, called a lifeline tariff. For them, saved electricity translates into much lower reduction in electricity bills. Hence, they do not find it beneficial to buy efficient appliances, which are usually costlier than ordinary ones. It is imperative that planners intervene here.

Electric utilities buy power at a much higher price, usually thrice the rate of the lifeline tariff. Since electric utilities will save money if the poor use efficient appliances, these utilities can pay part of the higher cost of such efficient appliances. Moreover, the poor are short of cash, which is seen in their willingness to take loans even at prohibitive interest rates of 4 percent per month! Naturally, paying more upfront to save on electricity bills in the future is not attractive for them. In contrast, electric utilities get loans at an interest rate of only a percent per month. Utilities can thus extend loans to poor consumers for buying efficient appliances, and recover them through electric bills. Cost sharing and low interest loans can dramatically alter the behaviour of consumers, and benefit both utilities as well as consumers.

Those consumers who have information and money may not have control over the design of what they own. Take the example of large office complexes. Their builders are interested in reducing initial costs or making their construction look more impressive. Buyers are then stuck with the design of the building and its performance. Offices with a glass façade function like a solar cooker, and require intensive air-cooling systems. To make things worse, windows may be leaky, which wastes precious energy. The commercial air-conditioning load is rapidly increasing in metropolises.

This can partly be addressed by mandating that all buildings abide by 'building codes' and efficiency norms. But ensuring implementation of this is a difficult task. To supplement this, the quantity of electricity that new commercial complexes can take from the grid should be

limited. If the electric load exceeds a norm, dependent on the size of the building, the builder should be mandated to install solar photovoltaic (PV) panels to bridge the gap. Cost-conscious builders will then ensure that their architects adopt an efficient design for the building. And once clients start seeking efficient designs, architects can do wonders!

Some of our planners also add to the barriers, one of the barriers they add relates to the prestige. Large power plants of thousands of million Watts, or thousand megawatts (MW), are considered prestigious. But ironically enough, energy efficiency is not considered worthy of much attention, as it leads to seemingly small savings counted in a few Watts or kilo watts of saved electricity. Here, we should not forget that millions of few watts together also add up to thousands of megawatts (MW).

One comes across another irrational belief that saving energy is less important than generating more! Let's consider a super efficient refrigerator that would save 300 units of electricity each year compared to a normal one. It would continue saving electricity for the fifteen years or so that it remains in service. This is very similar to a power plant, which produces electricity only until it lasts, typically twenty to thirty years. So an efficient appliance serves the same purpose as a mini power plant. Though the life of an efficient appliance may be a little less, it avoids using coal or gas. Besides, the additional cost of building an efficient appliance is usually much less than that of building a power plant.

The threat of climate change now has become much more acute, and it clearly implies that we cannot continue unlimited use of fossil fuels. Even India has started giving a massive boost to renewable energy. The recently announced Solar Mission envisages a subsidy of more than a hundred thousand crore rupees. Such a green push has popular support, and people are willing to pay more for green power. These subsidies are seen as investing in the future, which is necessary to improve renewable technology, which in turn is expected to lower future costs.

Isn't it only obvious though, that the same correct logic applies to energy efficiency as well? Super-efficient appliances can extend the service from the same quantity of energy to two or three times as many consumers! However, if the existing efficient products do not sell, why will appliance manufacturers invest money in inventing more efficient products? In order for technology to develop, efficient appliances also need the same kind of boost as renewable energy.

Instead, millions of inefficient fans, televisions, refrigerators, and air-conditioners continue to be added to the grid. Once installed, they will keep sucking electricity, forcing us to build several more mega power plants, deal with the associated displacement of lakhs of people, burn millions of tons of coal, and allocate scarce water to cool these plants. Faced with such a crisis, it is critical that we shed myths about energy efficiency and act decisively on the key barriers, before time runs out.

Having trouble being Green....

Decomposition time for some throw-aways

& HOW LONG DOES IT TAKE TO DECOMPOSE

Banana Peel-	3-4 weeks
Orange peels-	6 months
Apple Core-	2 months
Paper Bag-	1 month
Cardboard-	2 months
Milk Cartons-	5 years
Newspaper-	6 weeks
Paper Towel-	2-4 weeks
Cotton Glove-	3 months

All very well&. Till we go to packaging / synthetic material

Tinned Steel Can-	50 years
Aluminium Can-	200-500 years
Disposable Diapers-	550 years
Plastic Bags-	20-1000 years
Glass-	1-2 million years
Cigarette Butts-	10-12 years
Leather shoes-	25-40 years
Rubber-Boot Sole-	50-80 years
Plastic containers-	50-80 years
Monofilament Fishing Line-	600 years
Foamed Plastic Cups-	50 years
Wool Sock-	1-5 years
Plywood-	1-3 years
Plastic Bottles-	450 years

So do Reuse and Recycle whenever possible There’s not much left for our grandchildren