

PRESIDENT'S MESSAGE

By Al Tucker



Are we funding our economy at the expense of ecosystem services from the environment?

In the very near future, climate change will radically alter the ecosystem and challenge its ability to provide the current level of service. Most of us want to feel financially secure. But, as with many financial decisions made on a daily basis, we make them without thinking about their long-term costs. And with most of those decisions, we give even less thought to their impact on climate. There is emerging consensus among the public that climate change will significantly affect us, but little is understood how it will impact our economic well-being within a generation. At the national level, global warming results from the CO₂ emissions from fossil fuels, clearing of land by burning, or loss of forests by development. At the local level, the critical impacts will be driven primarily by land loss from development

and sea-level rise. In each of these cases, a significant economic loss occurs from the loss of ecosystems services the land provided.

Our desire for modern technology drives the need for more energy. Unfortunately, the only immediately available form that can satisfy this demand comes from fossil fuels. Energy technologies that could supplant fossil fuels do not have the energetic quality or the economic and physical infrastructure to replace them. It appears that the demand for energy will outpace the ability of "clean energy" to stave off the effects of global warming if we continue with the business as usual approach. The economic value of land and forests that will be lost from sea-level rise and development will impose costs that will make maintaining the present level of quality-of-life difficult in future generations.

We will have to make tough choices that affect the energy delivery systems and the types of energy we consume. In 2018, the US saw the largest increase in energy consumption, in both absolute and percentage terms (~ 4%), since 2010. According to the International Energy Agency, the United States had the largest increase in oil and gas demand worldwide. The US consumption jumped 10% from the previous year. The annual increase in US demand last year was equivalent to the United Kingdom's current gas consumption.

Although it is publicly stated that the US consumed 11% of its energy from renewables, this number includes the burning of biomass. With the world-wide loss of forests to natural disasters, man-made destruction, and development, it is unlikely that the rate of biomass regeneration will ever come close to offsetting the increases in CO₂ production. The term renewable has a common perception that it includes only solar and wind, yet hydroelectric and geothermal contribute about 25% and hence only solar and wind contribute the remaining 30%, or about 4% of the total US consumption. It is highly unlikely that without a major intervention, solar and wind energy will ever have enough impact to reduce global warming to offset the anticipated sea-level rise.

The cost of the interventions and infrastructure required to change the pathway of global warming amounts to trillions of dollars. That is money that modern economies will find difficult to support unless the public demands change. To make these interventions, we will need to support national policies and be prepared to accept sacrifices.

Locally, we are paying for the loss of ecosystem services, caused by development. The stormwater fee pays for services that were previously provided by undeveloped land. Or consider the numerous failing septic fields in Anne Arundel County. (See article by Sally Hornor in this newsletter.) Individuals now bear the cost of compensating for the lost ecosystem services.

Sea-level rise will bring perhaps the largest loss of ecosystem services. Nuisance (or sunny day) flooding regularly plagues downtown Annapolis with the number of days expected to double in the next two decades. Businesses bear the costs of sandbagging and the increasing cost of their insurance premiums. Waterfront homeowners attempt to stave off sea-level rise with living shorelines or other means. These changes have hidden costs: decreased property values, reduced community investment, and lowered credit ratings, which leads to higher interest rates. Again, these costs represent direct payments of real money for services previously provided gratis by our environment.

In the near future, we will have to intervene and make hard choices. One unpalatable choice may be to limit the number of households in parts of the county and impose tighter, more costly regulations for environmental mitigation. We may need to impose stronger building restrictions where sea-level rise impacts the public infrastructure.

Keep in mind that economic well-being includes future financial security. The Council on Social Work Education defines economic well-being as:

"having *present* and future financial security. *Present financial security* includes the ability of individuals, families, and communities to consistently meet their basic needs ... *Future financial security* includes the ability to absorb financial shocks, meet financial goals, build financial assets, and maintain adequate income throughout the life-span."

We can no longer defer to future generations the costs of borrowing from the ecosystem. A presentation at the 2016 CEPA forum by Elliot Campbell estimated that the value of ecosystem services for Anne Arundel to be approximately \$287,000,000 per year. Any land taken out of service will need to be replaced by man-made interventions that cost money. As more land is removed from ecosystem service, the remaining ecosystem service land becomes more costly to replace.

Not taking into account the economic contribution of ecosystem services provided to our economy at the national, state, and local levels needs to end immediately.