Driving towards sustainability

Dennis Minano
Vice President, Environment and Energy & Chief Environmental Officer, General Motors Corporation

I wish here to present an overview of the challenges that we in General Motors and the automotive industry see, and then describe what we believe may become our solutions. As Chief Environmental Officer of General Motors, I focus on water issues, and the entire scope of global sustainable development. Therefore, I’d like to share our perspective on environmental and sustainability issues. First, we recognize the impact of global growth, both the benefits and the concerns it raises. But, we also believe our vision, our values and our constructive work in this area should demonstrate that we hold ourselves accountable for our performance – accountable to our shareholders, employees and the communities where we are located worldwide.

Your invitation made me think about how we in Michigan take fresh water for granted. Michigan lies in the hub of the southern arc of the Great Lakes along the U.S. border with Canada. The Great Lakes are a vast fresh water resource. As a matter of fact, if the waters of the Great Lakes were spread evenly across the continental United States, the ground would be covered with more than three metres of water. Anyone from the more arid parts of the world would certainly agree that we in Michigan are very fortunate to be surrounded by this great mass of fresh water. And, as you know, fresh water is not a luxury. It is a necessity for life-not just for human life, but for every life form on this planet.

Without question, all of us enjoy the benefit of being able to turn a faucet to draw water. But I know there are many people who may have to walk three hours to find water. We at General Motors recognize this fact. As a global company with locations in 53 countries, we look at the world with a global perspective. As a manufacturing industry, just about everything we do affects water. We use water in our manufacturing processes, and that affects the quantity of water at society’s disposal. Anything that we emit into the air or allow to hit the ground has the potential to impact water quality. And as people use the products we make, they have an impact on water resources as well. Recognizing this interconnectivity, you can see how water is the world’s common environmental concern. That being said, I’d like to discuss GM’s business philosophy and sustainability efforts.

Our concern for the environment is genuine, substantive and long standing. It receives very careful consideration at our company – not only in North America, but around the world. And we are not alone. Many other auto companies are working hard to meet their obligations to society and our planet. We’re reducing emissions, increasing conservation of non-renewable resources, considering the life cycles of our products, improving vehicle safety. We even have good reason to believe that within the next 25 years, technology will provide us with solutions for some of society’s toughest energy and environmental problems. However, even when we achieve that plateau, other significant issues will remain.

For example, developing nations are creating transportation systems because they strive for increased mobility. It’s critical to economic development. But should their mobility systems be the same as we have in the U.S.? If vehicle ownership were as pervasive worldwide as it is in the U.S., there would be some 3 billion cars in the world. Can the world sustain...
that number of personal vehicles? This is just one question surrounding a significant global issue. At GM, we concluded it was time to engage in a disciplined dialogue on this topic.

We recognize the need for a global approach. So GM proposed a global sustainable mobility project. We did this through our membership in the World Business Council for Sustainable Development, which – not surprisingly – embraced the proposed project with a three-year charter. Toyota and Shell have enthusiastically joined GM as co-chairs of the project. And six other prominent global companies have joined as equal partners in this effort: BP, DaimlerChrysler, Ford, Michelin, Norsk Hydro and Volkswagen.

I find it encouraging that resolving our challenges is a critical goal to all of these companies – not only to the future of our companies, but more importantly, to the future of the world. We are all committed to this effort. Our primary objective is to develop a global sense of direction for everyone interested in mobility. We designed the project’s scope and approach to take advantage of three strengths.

First, we wanted a world wide perspective, so we wouldn’t get fragmented responses. We knew anything less could contribute to our problems instead of solving them, because what works for one region could be detrimental to another. Secondly, we wanted to draw on the strengths of many diverse contributors. And third, we wanted a proactive interaction with policy makers and those who influence policy, governments and non-governmental organizations. As part of the project, we’ve held dialogues around the world. We began these discussions last November in Japan, and moved on to Belgium, the U.S, Brazil, the Czech Republic and China. The project will eventually yield three reports – the first of which will soon be released. That report takes a snap shot of mobility at the end of the 20th Century, and it points to a number of challenges to achieving sustainable mobility. For instance: the reliance of the developed world on personal vehicles, the diminishing use of public transit in both developed and developing nations, and the fact that developing nations are urbanizing and motorizing at an increasingly rapid pace.

As you can see, sustainable mobility is a global challenge that applies to both developed and developing areas. It’s about much more than our products. It’s about fuel and roadway infrastructures, urban planning, and socio-economics. It’s about how we locate, plan and build industrial manufacturing plants, the way we design and make our products, how our products perform during their lifecycle, and the impact they have at the end of their useful life. All of these components of sustainability impact water resources, which brings my focus to that precious commodity.

We all know water is unique. All life depends on it. All people have a right to it, as they do to air and food. Like air, it defies ownership. Unlike air, it’s not equally distributed. You can’t make it, like food. And you can’t grow or produce it, like food. That’s why I think GM’s water conservation efforts at our manufacturing plant in Ramos Arizpe, Mexico is the first place to start my discussion on our water conservation efforts. In fact, because of GM’s commitment to water conservation, our Ramos Arizpe facility was honored with the prestigious Stockholm Industry Water Award. As you know, our facility was honored for its extensive use of wastewater treatment and recycling techniques that protect and conserve a scarce water supply. We are proud of our colleagues in Ramos Arizpe. GM de Mexico built that plant some 20 years ago in the small Northern Mexican community of 40,000, and it produces engines, cars and pickup trucks. It has created many jobs, as about 6,000 local people work in our plant. But unfortunately, Ramos Arizpe is in an area where water is extremely scarce. A small, semi-confined aquifer with a relatively high salt content is the community’s only source of water. As you know, it doesn’t take much salt to make water “salty.” If one-thousandth of the weight of water is from salt, then the water is saline. The water at Ramos Arizpe is twice that level.

Our challenge was to acquire enough water for our production without depleting the
aquifer, which is also the source of the community’s drinking water. This meant employing a combination of recycling and desalination techniques. To reduce consumption, we set up a variety of physical, chemical and biological wastewater treatment processes. The treatment processes allow us to recover and reuse 70 percent of our industrial wastewater. To desalinate the water from the aquifer, we used a combination of microfiltration, reverse osmosis, and solar evaporation ponds. This allowed us to increase the usable water withdrawn from the well from 67 percent to 94 percent.

These processes have proven to be extremely efficient. We’ve reduced the annual withdrawal of well water from 1.47 million cubic metres in 1986 to 700,000 cubic metres in 2000, even though the plant has increased its annual production seven-fold. We’ve reduced the amount of water it takes to produce a vehicle from 32 cubic metres to 2.2 cubic metres, and Ramos Arizpe now has a lagoon that stores treated wastewater teeming with fish and birds. Clearly, this is more than a success story for GM. The community has benefited as well.

Another North American example is our metal casting operations in Saginaw, Michigan. That facility constructed an on-site wetland to recycle its wastewater. The wetland contributes to the area’s beauty and provides a habitat for wildlife and plant life.

The University of Tennessee is working with our Saturn Plant in Spring Hill, Tennessee to study new land use practices at the plant. This project includes pest management, land disposal, waste, planting for conservation, and management of erosion, pond buffers and stream corridors.

Here in Sweden, Saab takes water for its Trollhotten factory from the Gota River. After the water is used, it’s put through two different treatments so it can be returned to the river with no negative impact on water quality. The first treatment takes out heavy metals. The second treats it biologically to reduce the content of oxygen-consuming materials. Saab was the first manufacturer in Sweden to use this process. Now, the plant is about to add a paint preparation treatment that is energy efficient. This will further improve the quality of treated wastewater.

At GM’s Opel plants in Germany, water management includes the reuse of process and cooling water and wastewater treatment. We saved a substantial quantity of water by using a closed-loop process and cooling system in these plants, and by using re-processed wastewater in our paint shops. And we’ve taken steps to ensure the best possible quality of effluent water through continuous cleaning and monitoring of upgraded treatment facilities.

Moving around the globe, GM India has been designated a “Zero Discharge Industry.” There, 100 percent of its treated wastewater is re-used for “green belt” development. That’s more than 17,000 cubic metres of water a year. Our operations in India are also working to conserve water. We reduced water consumption this year by 4 percent by modifying a humidification system. That’s a saving of 4900 cubic metres, compared to last year.

We’re also making product improvements that protect our water resources, like the GM Engine Oil Life System. This system monitors how a vehicle’s engine is being used, and its sophisticated software alerts the driver when it is time for an oil change. This system can double or triple the oil change interval for a typical vehicle, and that helps reduce improper disposal of oil. That may not sound like much. But, it is important to water quality. According to the United States Environmental Protection Agency, oil is the single largest source of water pollution in the United States. It only takes one quart of improperly disposed oil to contaminate a million gallons of water. That’s enough to meet the needs of 50 people for a year.

I think it’s time to look at the things we’ve learned at GM. And again, I want to look beyond the water, to three lessons we’ve learned about sustainable development. First, technology is the solution, not the problem. Technology has enabled us to make the water recycling and conservation gains I’ve talked about. Technology will help us meet our vehi-
cle fuel economy and emissions goals. For example, we are seeing significant fuel economy and emissions gains in Europe, where we use modern, clean diesel engines. Because of the high sulfur levels in U.S. fuel, these engines are not available to the U.S. automotive market.

Another thing we’ve learned is that businesses around the world have a unique opportunity to innovate. We have the capital. We have the human resources. And we’re driven to innovate by our need to be competitive. At GM, we’re working to develop both long-range and interim solutions to our challenges.

Long range, we think the answer lies in a whole new economy – an economy based on hydrogen, and most importantly one that removes the automobile from the environmental equation – fuel cells. That’s because these fuel cell vehicles will emit only water vapor. Obviously, we don’t have an infrastructure in place, nor are we at the stage of product development to produce these vehicles commercially. But we’re working on it, and we are committed to demonstrating the commercial viability of fuel-cell powered vehicles by the end of this decade.

GM has three facilities on two continents that concentrate the work of more than 250 fuel cell experts from our operations in North America, Europe and Asia Pacific. We’re making great strides in overcoming the challenges associated with automotive fuel cells.

The HydroGen1 is our first demonstration fuel cell vehicle that runs on pure hydrogen. Its fuel cell stack achieves full power instantly under temperate conditions. It reaches full power 18 times faster in freezing conditions than our first-generation design. Amazingly, this vehicle will start repeatedly in extreme cold weather, and has done so at minus 20 degrees Celsius. The vehicle started equally well in the extreme heat. In fact, this past spring, the HydroGen1 set 11 international records for fuel cell vehicles in a 24-hour endurance run at our Desert Proving Ground. While this is exciting for GM, we know that commercially viable fuel cell vehicles are still a ways down the road. In the interim, we see great potential for advanced internal combustion engines and in hybrids.

And that brings me to my final point: without partnerships, we cannot succeed. Partnerships enable us to exchange the very best ideas, to use our global stretch to build a better understanding of our global customers, and to pool our intellects to discover that as a group we’re greater than the sum of our parts. That’s why we’ve partnered with The Nature Conservancy and its Brazilian conservation partner, SPVS. Currently, GM is purchasing land for a nature preserve that will be owned and managed by SPVS. This is the largest contiguous remnant of the Atlantic Rainforest on the planet – and it is almost 800 times the size of Stockholm. SPVS will restore the degraded areas, and will ensure the protection of the untouched rainforest. The project team also will work with surrounding communities, providing them with economic opportunities, and working with them to achieve their economic goals without despoiling the environment they depend on. Together, GM and the Nature Conservancy are preserving and restoring one of the world’s unique natural resources and providing communities economic opportunity. In closing, we believe economic development and environmental stewardship do not have to be at odds with each other.

As I’ve outlined today, industry has a wonderful opportunity to be a driving force toward water security and many other areas of sustainable development. We’re committed to contributing to the financial success of our company, to the economic progress of developing nations, and to environmental stewardship. We support this commitment daily.

We understand the truth in the words of John Sawhill, the former president and CEO of The Nature Conservancy:

“In the end, our society will be defined not only by what we create, but what we refuse to destroy.”

This, ladies and gentlemen, is our challenge . . . our hope . . . and our future.