Facing the seemingly irreconcilable demands of environmental stewardship and reviving the world’s economy, many are asking if it is even possible to live today without borrowing from tomorrow. Globalization, population growth, rapid urbanization and a growing middle class are all driving competition for increasingly scarce resources—energy, water and raw materials.

And yet, from the perspective of a smarter planet, this traditional opposition between nature and industry is not inevitable. It is being replaced by a very different paradigm, grounded in a new understanding of sustainability that is operational and economical, as well as environmentally sound. The key lies in the data. Thanks to pervasive instrumentation and global interconnection, we are now capturing it in unprecedented volume and variety. The world’s network traffic will soon total more than half a zettabyte (that’s a 1 followed by 21 zeros). And thanks to powerful new computing systems and advanced analytics, we can now make sense of it in real time.

Forward-thinking leaders around the world are harnessing and analyzing these data flows to create end-to-end, sustainable systems. Where once we inferred, now we can know. We can do so in the systems that humans control—and we can even do so in how those systems interact with the planetary ecosystem we share. And thanks to the capabilities of a smarter planet, we can.

Consider COSCO, a global shipping firm in China, which reduced its emissions by 15%, all while reducing its CO2 costs by 23% and reducing its CO2 emissions by 15%, all while maintaining service levels for clients.

Consider CenterPoint Energy in Texas, building an intelligent utility network that detects outages and instruments homes with smart meters—allowing homeowners to make smarter consumption decisions. CenterPoint has already installed more than 618,000 smart meters for residential and business consumers in Houston.

And consider the City University of New York, which is collaborating with IBM Research to develop a comprehensive analytic tool set for assessing, tracking, forecasting, simulating and optimizing energy consumption based on the large data sets of buildings in an urban environment. The hoped-for results will be better decision making, significant energy savings, reduced greenhouse gas emissions and lower costs.

The importance of these kinds of smarter, whole-system approaches is underlined in the Climate Group’s SMART 2020 report, which estimates that improvement in energy efficiency and reduction of greenhouse gas emissions can potentially drive $1 trillion in savings per year by 2020 and 7.8 gigatons of CO2 abatement globally.

We are learning that in today’s globally integrated economy, we cannot optimize any one of these systems without optimizing all of them. And thanks to the capabilities of a smarter planet, we can. Where once we interfered, now we can know. We can do so in the systems that humans control—and we can even do so in how those systems interact with the planetary ecosystem we share.

Let’s build a smarter planet. Join us and see what others are doing at ibm.com/smarterplanet.