

## Sustainable Development, Managing Risks of Chemicals, and Risk Challenge

Andrew Liu

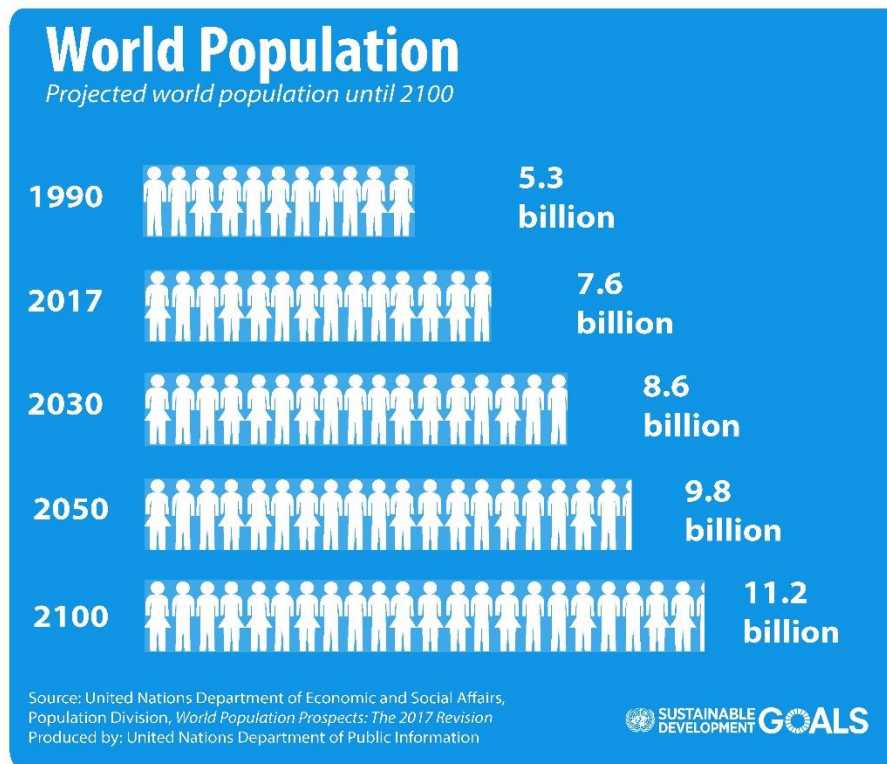
NOTE: The views expressed in here does not necessarily reflect the official position of Chemours

For me, who grew up in the 1960s and 1970s, the economic and technology growth is astonishing. As a child, our family was privileged to have one phone in the house. Today's mobile phones would have been inconceivable. But technological advances and greater consumption also brings problems in waste generation, climate change, water scarcity, emissions to water and air, and risks to health and environment due to hazards of chemicals.

As the global population grows (**Figure 1**) and per capita consumption rise as more people achieve middle class (**Figure 2**), these issues are becoming more acute, and seemingly faster.

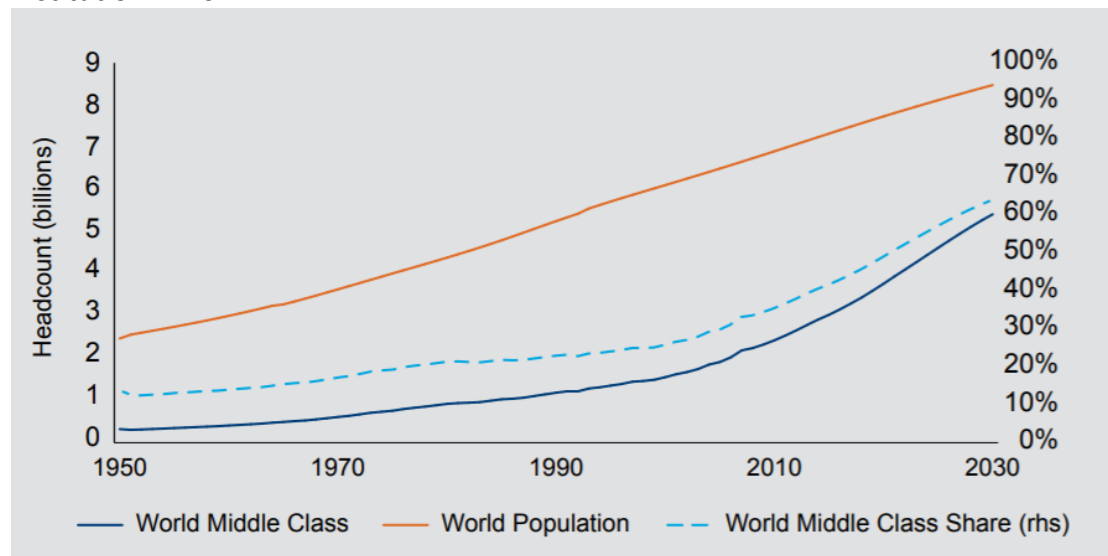
No doubt that we have made progress (e.g. increasing transportation fuel efficiency, cleaner energy, more efficient food production), but the rate of innovation must outpace the rate of growth, if our children and their children are to have a clean and safe future. Because chemicals are very often the foundation that enables innovation, our ability to make decisions quickly and efficiently about the safe use of chemicals is important in our race for a viable future. In the context of decision-focus and efficiency, we developed the "Risk Challenge" risk assessment workshop.

**Figure 1.** World population projections by the UN in 2017.



<https://www.un.org/development/desa/publications/graphic/wpp2017-global-population>

**Figure 2.** Estimates of the size of the global middle class, 1950-2030 (billions) by The Brookings Institution in 2017.



[https://www.brookings.edu/wp-content/uploads/2017/02/global\\_20170228\\_global-middle-class.pdf](https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf)

Decisions about safe use of chemicals are usually based on the outcome of chemical risk assessments. Risk Challenge seeks to bring understanding through guided risk assessment exercise – like chemistry lab or training wheels on a bicycle. To ride a bicycle, one must make hundreds of small weight shifts to stay upright while peddling. To learn by description seems impossible; one must get on the bicycle. Similarly, because there is a seemingly infinite number of possible combinations of properties and exposure scenarios, we felt that a hands-on exercise would more effectively demonstrate how to conduct risk assessments, the need for judgment, and some of the possible considerations and challenges.

The concepts incorporated in Risk Challenge are consistent with those from organizations such as the U.S. National Academy of Sciences (US NAS; see *Science and Decisions: Advancing Risk Assessment* [2009]), Health and Environmental Sciences Institute (HESI; see RISK 21), and Organisation for Economic Co-operation and Development (OECD; see Integrated Approaches to Testing and Assessment). These include:

- Problem formulation
- Early consideration of exposure in formulating data generation strategy
- Tiered and proportional approach
- Flexible and not prescriptive approach to better adopt to unforeseeable situations and technology advancements
- Use of existing information
- Focus on decision-making, which is the objective of risk assessment

We developed this workshop to help our employees better understand how to make decisions about understanding and mitigating risk of chemicals to people and the environment. While

only a few will become risk assessors, the understanding helps everyone in their daily function and communication.

More broadly, we wanted to share what we have developed with the goal of maximizing positive societal impact with limited public and private resources, as well as learn from others through dialogue. The United Nations describes The Sustainable Development Goals as “the blueprint to achieve a better and more sustainable future for all” (<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>). The seventeenth and final goal is “Partnerships for the Goals”. We hope to share in this goal and partner with stakeholder, so we can “achieve a better and more sustainable future for all”.