

A new direction



It's hard to ignore the fact that our modern lifestyle takes a toll on the world around us. But as we are now accustomed to this way of life, going back to pre-industrial times doesn't seem realistic. Imagine life without a refrigerator, central heating, the internet or even running water. So if there's no way back, where do we go from here? Two experts weigh in on technology and sustainability. >



Professor Calestous Juma, Director of the Science, Technology and Globalization Project at Harvard University:

What is the future of sustainability?

The future of sustainability is both bright and grim. Bright because there is broad agreement on the need to act. Grim because there are more people who want to debate the issue than those focused on finding practical solutions. There are more negotiations and conferences on climate change than there are technology exhibitions. Many solutions to the sustainability challenge are technological and require more involvement from the scientific community.

What role does technology play?

There is no conflict between technology and sustainability. We live in a world of technological abundance, the task is to use this to make greener choices. For example, 20% of the world's electricity is used to run electric motors. New technologies exist that can help reduce their use, such as using flash memory in computers instead of disk drives. More efficient electric motors have also been invented but they're still awaiting wide distribution. We need to find ways to use the technology we have more efficiently as well as develop new technologies to address issues.

To do this we need to set sustainability standards and provide incentives that enable society to switch to cleaner technologies. Building codes, for example, could require the use of more efficient lighting sources such as LEDs. The use of water absorbent polymers in agriculture could reduce water runoff and evaporation, thereby reducing water use in food production.

We've had four decades of scientific and diplomatic work on sustainability that highlights the challenges and emphasizes the

need for action. Now we need to focus on identifying technical solutions and implementing them.

What inspires you in terms of sustainable solutions?

I am inspired by the capacity of young people to come up with solutions to existing challenges. But they are relying on older generations that are too comfortable with the status quo to help them realize their dreams. I'm also inspired by the vast array of technologies at our disposal. For example, drought-tolerant plants can now help us restore degraded ecosystems in Africa's drylands.

How can we use technology to move us forward?

We solve problems by sharpening our creativity, not by killing it. We worked our way out of the Dark Ages by embracing enlightenment. The challenge with sustainability is too little innovation, not too much. Those who argue for slowing down technological advancement often assume risks arise from doing things. But greater risks are associated with doing nothing. In the case of climate change, for example, doing nothing is not an option. We will not reduce carbon emissions by not improving electric vehicles or making better solar cells.

Technology can give us options for changing direction or pursuing alternative pathways. We need to do things differently – using creativity and innovation – but the challenge is to expand technological choices, not to limit them.

How do you envision a more sustainable world?

A sustainable world is one in which we can deploy our creative capabilities to meet current needs while safeguarding resources for future generations. Enterprises can do more by integrating sustainable principles into all their practices. This is already happening but could benefit from more public recognition as well as sustainability incentives at a governmental level.



Calestous Juma is a professor of International Development and the Director of the Science, Technology and Globalization Project at Harvard University. He holds a Ph.D. in science and technology policy studies and has written widely on science, technology and the environment.



Sally Jeanrenaud, Director of the Green Economy Coalition and former project coordinator at the International Union for the Conservation of Nature:

What is the future of sustainability?

Sustainability is notoriously difficult to define. For me, it's a world where people lead happy and healthy lives using just their fair share of the earth's resources so future generations will still have something left, while also leaving space for wildlife. Organizations like WWF talk about the need for 'One Planet Living', while some traditional cultures, like the Iroquois of North America, have 'seventh generation sustainability', meaning that decisions are made based on their potential impact on the future seventh generation.

But it's clear that our generation must lead the transition to a more sustainable way of life because the way we live now is simply not sustainable long term. Burning fossil fuels is causing climate change, while 60% of the world's ecosystem resources are being irreversibly degraded.

What role does technology play?

Technological advance may be the only way to really address some of the world's biggest challenges – like air and water pollution, climate change and rapidly depleting resources. For example, technology is critical for the transition from the old industrial 'fossil fuel, throw-away economy' to a new 'sustainable economy' – one that uses renewable energies and values our ecosystem's resources.

Individually, we can limit our consumption and recycle, but to solve the bigger issues, we need to develop innovative technology to make things cleaner, greener and more efficient. To do this right, we need to embrace a new kind of ecological consciousness – one that seeks to create synergies between people and nature because, ultimately, all things are connected.

What inspires you in terms of sustainable solutions?

Nature is one of the most valuable sources of inspiration. Unlike the 'take, make and waste' model of most current industrial systems, nature manufactures biodegradable products onsite in an energy-efficient way. Imitating these processes – a concept called biomimicry – is leading to many new innovations.

Take the 'Cradle to Cradle' concept, which is based on the premise that waste equals food. Unlike the current 'cradle to grave' way of making things, systems could be designed in such a way that waste products become resources for future products. The industrial eco-park in Kalundborg, Denmark is a good example of this. There, a symbiotic network was created to recycle and reuse waste products between a power plant, a local fish farm, a pharmaceutical company, a wallboard manufacturer and a cement producer. It evolved gradually as environmental regulations became stricter giving incentives for companies to turn their by-products into economic products.

How do you envision a more sustainable world?

Technologies already exist that can help us move in a more sustainable direction. Right now, there's a lot of investment going into renewable energy technologies to help countries meet new CO₂ targets. But such schemes need to consider all aspects. For instance, the climate change challenge also involves land use, water resource, biodiversity and human well-being issues. While some solar-energy projects consume vast quantities of water – creating resource conflicts with local farmers.

It's important to find win-win technological solutions that are achievable on a large scale. We should stop thinking about issues in isolation and deal with challenges in a more integrated way. I like that some companies are moving beyond simply increasing profits to actually developing solutions to the world's problems – creating positive benefits for both people and the planet. ☒



Sally Jeanrenaud is the Director at the Green Economy Coalition. The project aims to accelerate the transition to a new sustainable economy by building a consortium of international organizations. From 2006-2008, she coordinated the IUCN 'Future of Sustainability Initiative', which focused on advancing sustainability in the 21st century.