

# 'INNOVATION AND ITS ENEMIES'

 by Sean Treacy

*A new book by TWAS Fellow Calestous Juma explores the societal forces that stall problem-solving technologies.*

Many scientists have seen the story first-hand: After working for years on a problem such as hunger, energy or climate change, they produce a new technology that can help to answer the challenge. But once that new technology is available, it meets intense opposition from interest groups and the public.

It's an old pattern. Mechanical refrigeration in the mid-19th century alarmed the ice industry and triggered debates over the new technology's safety. More recently, renewable energy technologies, urgently needed to counter climate change, face opposition from the fossil fuel industry and political factions that deny the reality of warming.

TWAS Fellow Calestous Juma explores this dynamic in a new book, "Innovation and Its Enemies: Why People Resist New Technologies" (Oxford University Press, July 2016). People don't fear emerging technologies because they are new, Juma says. Rather, the resistance typically comes from established industries and social orders that worry about being displaced.

In this way, new technologies generate uncertainty about the future – and when making decisions under uncertainty, potential losses loom larger in people's minds than potential

gains. "So the rate at which we apply new technologies tends to be glacial," says Juma.

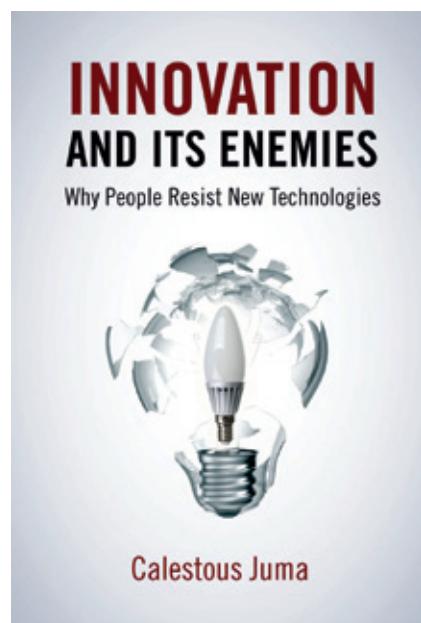
Juma is professor of the practice of international development at the Harvard Kennedy School in the United States. He is a leading voice on issues of biotechnology and science and innovation policy. This is his second book, following "The New Harvest: Agricultural Innovation in Africa".

In an interview, Juma said he wrote 'Innovation and its Enemies' because very few new technologies generated today are ever actually put to use. Each chapter in the new book serves as a case study of resistance to a new technology.

Coffee, for example, is among the oldest transformative innovations. At the time of its emergence around the 15th century, it started to get consumed at mosques to keep imams awake. But coffee spread to the general public and coffee houses surpassed mosques as the main social centre where people met and exchanged ideas. So political forces rose attempting to suppress it.

Coffee won out in the end. But the pattern repeats itself throughout history. Margarine faced challenges from the dairy lobby. Musicians secured bans on recorded sound.

Such useful technologies run into a wall again and again. And though, from asbestos to cigarettes, there are numerous innovations that have legitimately had tragic ends, Juma argues that the stories of those harmful technologies become the



▲ Top: Calestous Juma. Above: The book "Innovation and Its Enemies".

reference points by which all new technologies tend to be judged, even if they're proven safe.

Innovation and its advocates have to emphasize how the technologies can improve people's lives and address unmet needs. "In an increasingly complex and uncertain world," Juma writes, "the risks of doing nothing may outweigh the risks of innovating." □

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