

The Promise of Technology: Progress or Problems?

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In his speech accepting the Nobel Prize in Economics, Paul Romer described the “possibility of progress,” driven by innovation across history, and how that “possibility” is based largely on access to technological innovations and using them in transformative ways.¹ We are at a critical tipping point of human progress and security precisely because we are amid a technological revolution unlike any other. Technological innovations in computing, AI, quantum physics, healthcare, agriculture, and energy are arriving as we are faced with an existential threat the likes of which we have never seen in human history—climate change. Access to technology and investments in transforming existing economic sectors in the battle against climate change will determine whether we drive global progress or problems. How we distribute investment, regulate the downsides, and enable access to those technologies will determine whether we increase inequality and hinder human progress, or create equitable economic opportunity.

The Aspen Strategy Group and Aspen Security Forum, which bring national security leaders together to focus on the latest security challenges, acknowledged the national security threat climate change poses in their July 2023 meetings. Experts also focused on how new green technologies and others, like AI, used by workers, militaries, political leaders, media, and businesses, will impact mitigation and adaptation to climate change, which in turn will have profound effects on economic systems and societies—for good or bad. Discussions on the collateral damage we already see from unfettered technological growth, such as social media’s negative effects and automation that has eliminated rather than enhanced jobs, focused on ways the government and the private sector must drive policies and investments that create opportunity for all, rather than increasing inequity.

This is especially true when it comes to technologies for combatting climate change, which is affecting economies and societies across the globe. The way policies are applied to create enabling environments for the sharing of investments and technologies could either increase global warming and economic inequality or supercharge development and achieve sustainable development goals which would lead to unprecedented global growth. But that will depend on whether we choose to distribute investment and access to these technologies equitably in the developed and developing world. Seems like an easy choice. But so far, it is not the one the world is acting on.

Green Technology: The Potential for Progress

According to the International Energy Agency, global demand for energy is expected to increase by 18 percent by 2040, while fossil fuel use is also expected to grow, accounting for a slightly smaller share of global energy consumption, unless we rapidly transition to renewable energy over coal and oil.

Yet technology offers an alternative path. According to the latest report from the United Nations Conference on Trade and Development (UNCTAD), green technology in renewable energy and “frontier technologies” offer developing countries the opportunity to leapfrog old, environmentally damaging systems and build new industries that can offer more jobs, more growth, and more social progress.² In contrast to politicians who argue investment in green technology kills jobs, a 2018 report by the International Labor Organization shows the transition to green economies that includes a shift to renewable energy, the construction of energy-efficient buildings, and the manufacturing of electric vehicles to name a few new sectors, will create 24 million jobs by 2030, far more than the 6 million that may be lost.³

Technologies for distributed renewable energy in emerging markets in Asia and Africa, especially off-grid solutions, are already adding more jobs in the energy sector than those from fossil fuel, in addition to advancing development. In low-income countries, electrification improves healthcare and increases educational levels, food security, access to better-paying jobs, and the creation of businesses. The latest *Tracking SDG 7: The Energy Progress Report*

illustrates the promise of off-grid solutions for providing “last mile” energy to those without it.⁴ Between 2010 and 2021, the number of people in the world without electricity nearly halved, from 1.1 billion to 675 million.

While impressive, the number that still lives in energy poverty, i.e., without access to the amount of electricity that can be used to enhance income generation and productivity in key economic sectors, is still 3.6 billion.⁵ Yet, technological advances in renewable energy generation over the past decade are enabling countries with access to that technology to build on it, displacing fossil fuels as the most cost-effective means for economic development. Modeling done in 2021 shows that ending energy poverty in sixty-three energy poor countries in Asia and Africa by scaling access to distributed renewable energy technology and investment could create 25 million direct jobs, thirty times more than those that could be created by a comparable investment in the fossil fuel industry.⁶ The downstream effects of ending energy poverty in energy poor countries could lead to the creation of 491 million jobs and the enhancement of another 671 million in these developing countries.

Business as Usual: A Reversal of Fortune

We have seen the gap in income inequality between countries narrowing over the past decades, largely due to growth in incomes in India and China.⁷ But recent figures show the narrowing of that gap is slowing, and that statistic taken alone is masking a larger divergence among developing countries when measuring in-country incomes, wealth distribution, and consumption.⁸ The World Bank notes that for twenty-five years extreme poverty was decreasing—but not anymore.⁹ In 2020, the number of people living in extreme poverty rose by 70 million, the largest increase since 1990 when measurement began. Climate change is bound to make this economic divergence even worse. The report notes that the effects of extreme heat, weather, rising sea levels, and resource limitations will drive an additional 68 to 135 million more into extreme poverty by 2030.

And that leads to problems for all of us. According to the National Intelligence Estimate on Climate, “the increasing physical effects of climate change are likely to exacerbate cross-border geopolitical flashpoints as states take steps to secure their interests.”¹⁰ The report also found that those physical effects will be felt more acutely in the developing countries least able to adapt, increasing the potential for conflict within these countries and cross-border competition for resources like water. Heat and rising water levels threatening large coastal populations will also increase migration and political instability in areas taking in large numbers of displaced people. In the next thirty years, 143 million people are expected to be uprooted by climate change.¹¹ That number could be counted as high as 1.2 billion by 2050 when accounting for increased food insecurity and other drivers of migration.

The slowness of a green transition and “business as usual” thinking is exacerbating the problem even while the technologies exist to reduce greenhouse gas emissions and create an estimated direct economic gain of \$26 trillion through 2030 through new or transformed economic sectors across the globe.¹²

While UNCTAD also estimates that while seventeen frontier technologies, including AI, green hydrogen, and electric vehicles could lead to a \$9.5 trillion market by 2030, that benefit is not being equitably shared. For example, clean energy jobs in the U.S. increased by 3.9 percent, better than overall employment growth.¹³ That is good news and could increase the investment and policies that speed a green transition in this country, as seen by the passage of the Inflation Reduction Act. Limiting that investment and access to technology in developed economies will hurt us all in the long run, and yet that is exactly what is happening.

UNCTAD estimates that 70 percent of the patents in these frontier technologies are held by China and the United States. Investment in developing economies is declining overall and is far below the estimated \$1.7 trillion investment annually needed to transition their growing demand for energy from fossil-based systems to renewables. Yet in 2022, developing countries only attracted less than a third of that requirement, or \$544 million, while foreign direct investment fell 12 percent.¹⁴ This is while investments in renewables overall since 2015 have tripled, with most going to developed economies.

Required Action

The UN proposes six areas to target for improvement: national investment policies, international investment agreements, global partnerships, regional and South-South cooperation, improving financing mechanisms and tools, and growing sustainable finance in emerging markets.¹⁵

These include actions that must be taken by both developed and developing countries. For example, while most developing countries have set targets for energy transition and carbon reduction, only about a third have translated those targets into asset specifications needed to market investable projects or investment requirements, which hinder energy transition investments. Partnerships, like that of the Global Energy Alliance for People and Planet, which brings together philanthropy, local entrepreneurs, governments in both developed and developing economies, and tech and financing partners, can create enabling environments, de-risk projects, and spur private investment.¹⁶

Favorable investment policies, particularly focused on green technology, must also be implemented and are increasing in developing countries. Policy changes that liberalized foreign direct investment (FDI) accounted for 21 percent of the policy changes adopted by developing countries for foreign investment. But the benefits of that are being somewhat neutralized by an increase in the use of FDI screening mechanisms by developed countries designed to limit access to technology by investors in strategic industries, which can include energy. In 2022 alone, twenty-four such measures were adopted or clarified by sixteen countries, nearly all in developed countries. That can hinder the transfer of green technologies to developing countries and entrepreneurs.

Tax incentives, such as those in the Inflation Reduction Act, prove to be effective in incentivizing private investment. Non-fiscal incentives like guarantees or access to the grid can also promote green energy investment. But at the same time, there needs to be a reduction in fossil fuel investment incentives and subsidies, which are still eight times the level of subsidies for sustainable energy.

Instead of approaching the climate crisis as that—a crisis—we can see it as an opportunity to create equitable economic growth, decrease destabilizing income inequality, and reverse the decline in the rate of human progress we have seen for the last forty years, which threatens everyone’s security.

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