SUSTAINABLE DEVELOPMENT AT A CROSSROADS:

CHALLENGES FOR INDUSTRIAL GROWTH, ECONOMIC WELFARE, EMPLOYMENT, AND ENVIRONMENT

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NOT (JUST) A TEXTBOOK
A BLUEPRINT FOR
CHANGE

ASHFORD & HALL
2018 Revised Edition
Technological change and globalization (trade) as drivers of change within and between three operationally-important dimensions of sustainability
Long-run flows of environmental services are provided at a level sufficient to maintain a stable ecosystem and to support human health and welfare.

Livelihoods are secure and available that provide satisfying engagement in work and equitable reward for labor, permit the maintenance of a decent standard of living, and are conducted in a safe working environment.

The economy provides goods and services adequate to satisfy the basic material needs of all members of society and provides abundant and equitable opportunities for the realization of human potential.
How might the modern industrial or industrializing state be envisioned?

i.e., what is the system?
SUSTAINABILITY CHALLENGES
Inadequate Supply of, and Access to, Essential Goods & Services
Toxic Pollution
Climate Disruption
Resource Depletion
Biodiversity/Ecosystem Integrity
Environmental Injustice
Employment/Purchasing Power
Economic Inequity

SOLUTIONS
Education & Human Resource Development
Industry Initiatives
Government Intervention/Regulation
Stakeholder Involvement
Financing Sustainable Development
SUSTAINABILITY CHALLENGES
Inadequate Supply of, and Access to, Essential Goods & Services
Toxic Pollution
Climate Disruption
Resource Depletion
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Employment/Purchasing Power
Economic Inequity

SOLUTIONS
Education & Human Resource Development
Industry Initiatives
Government Intervention/Regulation
Stakeholder Involvement
Reform the Financial System
Factor of production do not reflect their full cost – failure to internalize negative externalities- so what is the meaning of economic equilibrium?

Volatility in the price of the factors of production undermines the use of labor.
A PERFECT STORM
BROUGHT ON BY THE FINANCIAL CRISIS
PRELIMINARY OBSERVATIONS ON THE PERFECT STORM

- We are facing the longest recovery period of jobs/employment in modern history. Unemployment rates do not tell the whole story; wages & job growth continue to fall.

- We are facing unprecedented wealth (and income) inequality. And that distortion in wealth has a profound effect on the economic & political agenda of democratic countries (Piketty).

- We are hollowing out the middle class with a divergence between the stock market and the ‘real economy’ … skill-based technological change and the spreading of earning capacity (MIT’s 2nd Machine Age)

- There is great volatility in the US and global economic system.

- We seem bent on believing in an economic recovery (GDP and productivity), rather than a transformation of the industrial state.

- We continue to believe that increasing technological innovation is the most assured pathway to better times (contrast the 2nd Machine Age).

- Global climate disruption/environmental issues remain unaddressed.

- Reform of the financial system remains illusory.

- We have an unresponsive political system.
WHAT IS THE NATURE OF THE CURRENT CRISIS?
THE PERFECT STORM: REINFORCEMENT OF BAD OUTCOMES

- Finance
- Wealth Concentration
- Employment
- Consumption
- Investment and Production
- Environment
**SOLUTIONS**

Table 3.1 Strategies to promote more sustainable industrial production and consumption

<table>
<thead>
<tr>
<th>Industry initiatives</th>
<th>Government intervention and regulation</th>
<th>Education and human resource development</th>
<th>Stakeholder involvement</th>
<th>International community</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use more natural capital.</td>
<td>Provide the physical infrastructure (for example, high-speed rail, ports, and telecommunications) and legal infrastructure (patent protection, R&amp;D tax credits) for industrial development.</td>
<td>Educate scientists, environmental and public health professionals, engineers, material scientists, and energy specialists to design and work together to devise cleaner and inherently safer products and production.</td>
<td>Through education and communication, encourage consumers and citizens to favor energy-saving, cleaner, and inherently safer products, product-services, and services and to meet their needs (for example, for leisure.</td>
<td>Ensure that UNIDO has sufficient resources to promote sustainable industrial development that supports competitiveness, protects the environment, and supports meaningful and sustainable employment.</td>
</tr>
<tr>
<td>Dematerialize products and processes.</td>
<td></td>
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<tr>
<td>Devote more attention to durable goods and remanufacturing.</td>
<td>Shift to cleaner and inherently safer technology, products, processes, product-services, and services.</td>
<td>Create and disseminate knowledge and innovation technology through experimentation and demonstration projects.</td>
<td>Design legislation and regulations that create producer and consumer incentives that favor innovation in production processes, product-system changes that are energy-saving, environmentally sound, and inherently safer, and support employment enhancement.</td>
<td></td>
</tr>
<tr>
<td>Use less energy in production and in the provision of products and services that themselves require less energy in their operation and use.</td>
<td>Shift from selling products to selling product-services wherever possible.</td>
<td>Create nascent markets for new technology through government purchasing.</td>
<td>Provide favorable tax treatment for investment and for human resource development and use.</td>
<td></td>
</tr>
<tr>
<td>Hire scientists, environmental and public health professionals, engineers, material scientists, and energy specialists to design and work together to devise energy-saving, cleaner, and inherently safer products, processes, product-services, and services.</td>
<td>Transform, if possible, or replace incumbent industry with innovative and sustainable producers and providers of services.</td>
<td>Provide favorable tax treatment for investment and for human resource development and use.</td>
<td>Regulate commercial advertising and provide counteracting government messaging.</td>
<td></td>
</tr>
</tbody>
</table>

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**Shared Responsibility:** Industry initiatives; Government intervention and regulation; Education and human resource development; Stakeholder involvement; International community

**Promote more sustainable industrial production and consumption (circular economy)**

Source: Adapted from Ashford and Hall (2011b).
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Hire specialists in health, safety, environmental impact assessment, and energy.</td>
<td>Design legislation, regulations, and tax incentives that favor products, processes, product-services, and culture changes that inherently safer, and employment enhancing.</td>
<td>Educate scientists, environmental, and public health professionals, engineers, material scientists, and stakeholders on the natural environment through sustainable industrial production and consumption.</td>
<td>Promote NGO activity to press for energy-saving, environmentally sound, and inherently safer products and production.</td>
<td>Press for the signing, ratification, implementation, and enforcement of MEAs.</td>
</tr>
<tr>
<td>Integrate marketing, product development, production, environmental affairs, and human resource efforts by eliminating or transcending the unnecessary divisional divides in the firm.</td>
<td>Remove regulations and tax treatment that create perverse incentives.</td>
<td>for the regulatory and educational initiatives needed to promote more sustainable industrial production and consumption.</td>
<td>Open up the negotiation process to include NGOs and labor organizations. Empower the UNEP as the central institution to coordinate the various MEA secretariats.</td>
<td>Ensure UNEP receives the funding it was promised at Rio+20.</td>
</tr>
</tbody>
</table>

Source: Adapted from Ashford and Hall (2011b).
Table 13.3 Strategies to enhance meaningful, rewarding, and safer employment and adequate earning capacity

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>• Invest in new products, processes, product-services, and services that enhance employment.</td>
<td>• Reject the liberalization of labor markets.</td>
<td>• Rethink educational pedagogy, focusing on the acquisition of both technical skills that engender systems and critical thinking and interpersonal skills involving the ability to communicate.</td>
<td>• Encourage workers to press both for more stable, more meaningful, safer, and more rewarding employment and for opportunities to acquire capital ownership.</td>
<td>• Secure the funding and aggressively pursue the nonpayment of dues by some nations to fully empower the ILO to carry out its mission.</td>
</tr>
<tr>
<td>• Seek productivity improvements by processes that increase the productiveness of workers.</td>
<td>• Remove disincentives to hire labor (e.g., remove policies that tax labor).</td>
<td>• Promote incentives to use labor.</td>
<td>• Educate and train</td>
<td>• Begin a serious dialogue with the WTO regarding the adoption of core employment and job creation through labor standards and protections (for example, for health and safety), continuing education and upskilling, tax incentives to employers, and unemployment adjustment policies, including reeducation and unemployment and income guarantees.</td>
</tr>
<tr>
<td>• Invest in increasing the capacity of the firm’s human resources rather than replace labor with capital.</td>
<td>• Promote incentives to use labor.</td>
<td>• Support research on mechanisms for job creation.</td>
<td>• Expand the opportunities for capital ownership by workers and ordinary citizens.</td>
<td>•</td>
</tr>
<tr>
<td>• Engage in revenue-enhancing activities and commerce through innovation and performance enhancement rather than through cost-reduction strategies involving the reduction of jobs or wages.</td>
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<tr>
<td>• Pay attention to the human-technology interface, that is, optimize matching human behavior with technological artifacts.</td>
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<tr>
<td>• Foster healthy industrial relations.</td>
<td></td>
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<tr>
<td>• Make changes to the social and hierarchical environment in the enterprise.</td>
<td></td>
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</tr>
</tbody>
</table>

Source: Adapted from Ashford and Hall (2011b).
Table 13.4 Strategies to promote more sustainable industrial trade

<table>
<thead>
<tr>
<th>Industry initiatives</th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Support or join sustainable trade initiatives/coalitions.</td>
<td>• Encourage national firms to trade from the “bottom of the pyramid.”</td>
<td>• Educate business and finance graduates and public administrators on strategies to promote sustainable trade.</td>
<td>• Press for transparency and accountability on the part of the nation’s trade representative.</td>
<td>• Develop a consistent, coherent trade policy that removes the conflicts among the different trade treaties by revising the GATT, TBT, and SPS agreements.</td>
</tr>
<tr>
<td>• Obtain investment capital from banks that advocate for sustainable trade.</td>
<td>• Think beyond increasing revenues to the private sector, or the balance of payments, when planning.</td>
<td>• Press for consultations of adversely affected and disadvantaged firms.</td>
<td>• Develop a more open-minded approach to respecting the views of individual nations to establish their own systems of health, safety, and environmental protection and minimum standards on a precautionary basis, reflecting their cultural preferences.</td>
<td>• Recognize the importance of securing the protection of labor and human rights in all trade agreements.</td>
</tr>
</tbody>
</table>

Commitment made by developed nations at the Rio Conference to provide financial and technical assistance to developing nations.

More aggressively pursue the adoption and enforcement of codes of conduct in the financing of projects in developing countries.

Increase the transparency and accountability of the activities of export credit agencies and sovereign wealth funds.

Environmental protection in trade negotiations and agreements.

Expand multipartite governance used in the ILO to negotiations.

Consider adopting a multipartite governance structure.

Resolve conflicts in requirements and philosophies among MEAs, TRIPS, WTO and other trade regimes, and national environmental and public health protection laws.

Source: Adapted from Ashford and Hall (2011b).

Embark on a deliberate strategy to decrease unsustainable growth

Promote more sustainable industrial trade
### Waves of Creative Destruction

<table>
<thead>
<tr>
<th>No., date, revolution, core country</th>
<th>INSTALLATION PERIOD</th>
<th>TURNING POINT</th>
<th>DEPLOYMENT PERIOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st 1771 The Industrial Revolution, Britain</td>
<td>Gilded Age’ Bubbles</td>
<td>Recessions</td>
<td>‘Golden Ages’</td>
</tr>
<tr>
<td>2nd 1829 Age of Steam and Railways, Britain</td>
<td>Railway mania, UK</td>
<td>1848–50</td>
<td>The Victorian Boom</td>
</tr>
<tr>
<td>3rd 1875 Age of Steel and heavy Engineering, Britain/USA, Germany</td>
<td>London funded global market infrastructure build-up (Argentina, Australia, USA)</td>
<td>1890–95</td>
<td>Belle Époque (Europe) (*) ‘Progressive Era’ (USA)</td>
</tr>
<tr>
<td>4th 1908 Age of Oil, Autos and Mass Production, USA</td>
<td>The roaring twenties USA, Autos, housing, radio, aviation, electricity</td>
<td>Europe 1929–33 USA 1929–43</td>
<td>Post-war Golden age</td>
</tr>
</tbody>
</table>

Expectations vs. Reality?

We are here

(*) Note an overlap of more than a decade between Deployment 3 and Installation 4 when the USA forges ahead.

Troublesome Realities

1. Job polarization and the hollowing out of the middle class
2. A three-decade declining labor share of total income
3. Increasing cost of living
4. Growing income and wealth concentration
5. The economy has substantial unutilized productive capacity

They Are Connected

The problem is not the technological ability to produce more

The problem is to do so profitably, equitably, and sustainably

The Two Ice Hockey Sticks

The currently discussed long-term solution to sustainability is technological advance (U.S. and EU perspective - is optimism justified?)

Technological advance can eliminate labor that contributes to effective demand
When Workers Began Falling Behind

Until the 1980s labor productivity, real GDP per capita, private employment, and median family income all rose in tandem in the U.S. Then median income started to trail, and around 2000 job growth slowed.
**Chart 1: Manufacturing Output & Employment**

- **Manufacturing Output (Index, LHS)**
- **Manufacturing Employment (Mn, RHS)**

“94 percent of the net employment growth in the U.S. economy from 2005 to 2015 appears to have occurred in alternative work arrangements.”

The conventional full-time job is disappearing

Source: adapted from Autor (2014).
Polanyi’s paradox and the Shape of Employment Growth
America’s Millennials Are Waking Up to a Grim Financial Future

Job prospects, savings, safety nets, life expectancy—the data show just how bad a mess they face.

By Ben Steverman
June 21, 2018, 4:00 AM EDT

Of course, it’s perfectly normal for people just starting out to have less in the bank. However, the St. Louis Fed warned that, even when taking that into account, young Americans are slipping dangerously behind. For a time, Generation X was also losing out, thanks to the 2008 financial crisis. But its members managed to make up most of the shortfall in the years since, tapping into the longest economic expansion in decades.

For some reason that period of tremendous growth barely helped millennials. The St. Louis Fed called this anomaly “a missed opportunity because asset appreciation is unlikely to be as rapid in the near future.” That’s pretty bad news for twenty and thirtysomethings who may have been hoping to catch up. But it gets worse.

Distribution of Family Income, 1963–2016


Notes: 2016 dollars. Income here is measured as private income (e.g., earnings and dividends) plus cash government benefits. Income differences narrow when all taxes and transfers—such as health insurance and in-kind government benefits—are included, but private wealth does not change.
In the Age of Automation... as production becomes more capital intensive, the distribution of earning will become more capital intensive.

Percent increases in employee earnings are of seasonally adjusted average hourly earnings recorded in April of each year.


PRICE CHANGES (Jan 1997 – Feb 2019)

Non-tradeable/services (e.g. childcare)

Tradeable/manufactured goods (e.g. with import competition like TVs)

Overall inflation from 1997 to 2019 is 60.18%


Notes: 2016 dollars. No comparable data are available between 1963 and 1983. Black/Hispanic distinction within nonwhite population available only in 1983 and later.

DISTRIBUTION OF WEALTH 2016

Richest 1 percent bagged 82 percent of wealth created last year - poorest half of humanity got nothing

Published: 22 January 2018

Eighty two percent of the wealth generated last year went to the richest one percent of the global population, while the 3.7 billion people who make up the poorest half of the world saw no increase in their wealth, according to a new Oxfam report released today. The report is being launched as political and business elites gather for the World Economic Forum in Davos, Switzerland.

‘Reward Work, Not Wealth’ reveals how the global economy enables a wealthy elite to accumulate vast fortunes while hundreds of millions of people are struggling to survive on poverty pay.

Joseph E. Stiglitz, recipient of the Nobel Memorial Prize in Economic Sciences in 2001 and the John Bates Clark Medal in 1979, is University Professor at Columbia University, and Chief Economist of the Roosevelt Institute. His most recent book is *The Euro: How a Common Currency Threatens the Future of Europe.* Twitter: @JosephEStiglitz

http://evonomies.com/joseph-stiglitz-inequality-unearned-income/

Joseph Stiglitz Says Standard Economics Is Wrong. Inequality and Unearned Income Kills the Economy

The rules of the game can be changed to reverse inequality
Troublesome Realities

1. Job polarization and the hollowing out of the middle class
2. A three-decade declining labor share of total income
3. Increasing cost of living
4. Growing income and wealth concentration
5. The economy has substantial unutilized productive capacity

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The problem is to do so **profitably, equitably, and sustainably**

The Two Ice Hockey Sticks

The currently discussed long-term solution to **sustainability** is **technological advance** (U.S. and EU perspective - is optimism justified?)

Technological advance can eliminate labor that contributes to **effective demand**
THE TWO HOCKEY STICKS

The past 1,000 years

The past 55 years

NORTHERN HEMISPHERE

Departs in temperature (°C) from the 1981-1990 average

Year

1000 1200 1400 1600 1800 2000

Data from thermometers (red) and from tree rings, corals, ice cores and historical records (blue).

Percentiles of Family Wealth, 1963-2016

Note: 2016 dollars. No comparable data are available between 1963 and 1983.
Transformation requires law, regulation, rules, enforcement, economic and tax levers ... i.e., government intervention

The book provides a framework to enable practitioners/students to understand the critical levers of change

Part I: The Multidimensional Concept of Sustainability

Part II: Economic Development, Globalization, and Sustainability

Part III: Industrial Policy and the Role of the Firm in Pursuing Sustainable Development

Part IV: National, Regional, and International Efforts to Advance Health, Safety, and the Environment

Part V: International Trade and Energy

Part VI: Strategic Policy Design for Sustainable Transformations

1. Concern for a Global Future
2. The Emergence of Sustainable Development
5. Technological Change, Globalization, and Sustainability
6. The Importance of Technological Innovation
7. The Role of the Industrial Firm in Achieving Sustainable Development
8. Government Policies to Foster Innovation, Economic Growth, and Employment
10. Regional and International Regimes to Protect Health, Safety, and the Environment
11. Trade Regimes and Sustainability
12. Climate Change and Energy Challenges
13. Pathways to Sustainability: Co-optimizing Economic Development, the Environment, and Employment and Earning Capacity

Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP)
POLICIES TO REDUCE IMPACTS FROM TRADE AGREEMENTS

• Use domestic policy to compensate (offset the losses to) negatively affected workers.

• Stop pursuing new trade agreements that protect returns to capital while undercutting wages.

• Re-orient international policy away from regressive trade agreements and toward measures that will benefit workers in the U.S. and in other countries.
Average GHG footprint and income per person

Climate Goals Pledged by China and the U.S.

Carbon emissions from energy consumption
Billions of metric tons

- China’s pledge
  Plan to have carbon dioxide emissions peak “around 2030”

- Mr. Obama’s pledge to China
  Would cut emissions by 26 percent to 28 percent from 2005 levels by 2025

Targets pledged by Mr. Obama in 2009 U.N. accord.


Top 5 U.S. Trading Partners for Goods (2016)
($ billions and % of total trade)

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Trade $bn</th>
<th>Exports</th>
<th>Imports</th>
<th>Percent of Total Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>104.1</td>
<td>53.4</td>
<td>527.6</td>
<td>15.8</td>
</tr>
<tr>
<td>Canada</td>
<td>245.6</td>
<td>25.4</td>
<td>500.4</td>
<td>15.0</td>
</tr>
<tr>
<td>Mexico</td>
<td>211.8</td>
<td>-70.6</td>
<td>482.5</td>
<td>14.5</td>
</tr>
<tr>
<td>Japan</td>
<td>57.6</td>
<td>120.3</td>
<td>177.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Germany</td>
<td>450.0</td>
<td>104.6</td>
<td>149.6</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Source: https://www.statista.com/statistik/daten/studie/7740/most-important-trading-partners-of-the-united-states/
INEQUALITY IS NOT INEVITABLE, IT IS A CONSEQUENCE OF THE WAY GROWTH IS TAKING PLACE

- **Piketty (2014)** – the main driver of inequality is the tendency of capital return in developed countries to exceed the rate of economic growth, which will cause wealth inequality to increase. [Also Atkinson for the UK]
  - **Solution**: Redistribution through a progressive tax on wealth

- **Stiglitz (2015)** – misaligned laws, regulations, and institutions have determined unequal shares in the benefits of prosperity
  - **Solution**: Strengthen workers’ rights, raise taxes on capital gains and dividends, and increase transparency in all financial markets

- **Eurofound (2017)** – unemployment has been the main driver of growing inequalities during the Great Recession
  - **Solution**: The welfare state can prevent a greater increase in inequalities by cushioning growing market income inequalities
What are the causes of unsustainable industrial systems?

What are the visions for a sustainable future? (open up the 'design space' to achieve multiple goods)

What or who is standing in the way of achieving that future? (open up the 'participatory and political space' for ensuring that all relevant voices have influence in the processes of change?)

What are the carrots and sticks that need to be fashioned to achieve that future?
Is inequality an inevitable by-product of economic growth?

Will growing inequalities eventually hinder growth?

- Actual policy outcomes strongly reflect the preferences of the most affluent - there is “virtually no relationship” between policy outcomes and the preferences of poor or middle-income citizens
- Put differently, there is a vast discrepancy in government responsiveness to citizens with different levels of income
- The research revealed the negative effects of inequality on democracy and governance
ALTERNATIVE WAYS OF INCREASING EARNING CAPACITY AND IMPROVING THE ENVIRONMENT

- Income and wealth transfers to the poor
  - Progressive changes in the taxation of income and wealth (~Piketty)
  - tax excess profits
  - guaranteed minimum income (UBI)/negative income tax
  - Pay those doing unpaid work such as child rearing/care of the elderly
  - Tax pollution and energy, and reduce the per capita tax on labor
  - Jump start the economy by Keynesian spending

- **Limit the import of goods/services** to increase domestic employment and reduce energy and material content

- **Prohibit elimination of jobs** (~Germany’s Kurzarbeit); supplement the shortfall in paid wages during economic downturns

- Increase labor’s claim on profits from production/services by **designing work back into production and services.**
ALTERNATIVE INTERVENTIONS, CONT’D.

• Meet essential needs of consumers in a different way (shift to product services; a shared economy thru broadening ownership and investment in social goods) – lowering consumption, environmental impacts and costs to consumers

• Educate workers/consumers for the economy of the future; change the nature of demand

• Encourage the design and production of essential goods and services and discourage others – regulate advertising; tax the “bads”

• Invest in labor-intensive production and services

• Adopt a four-day workweek but maintain workpay parity

• Change workers into owners – thru changes in business ownership and corporate structures by allowing them to acquire capital with the (future) earnings of capital (two-factor economics)

• Tax Corporations that shift production/services/ownership abroad

• Extend and expand anti-trust law and enforcement

• Advance/extend the coverage of labor law to contract and temporary workers

• Strength unions and encourage collective bargaining

• Encourage technology bargaining with unions before introducing new technology

• Subsidize education and health care; and essential goods and services

• Change the nature of deficit spending

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