EMERGING FRONTIERS: STI DEVELOPMENT with IMPLICATIONS FOR SDGs

XIAOLAN FU
OXFORD UNIVERSITY
EXPONENTIAL TECHNOLOGICAL CHANGE

ARTIFICIAL INTELLIGENCE

Alpha Go
Driverless car, …
Smart manufacturing, IoT, Industry 4.0, ......
3D PRINTING
WIDE APPLICATIONS IN MANUFACTURING & BEYOND, PRIVATE & PUBLIC SERVICES

Source: Gartner, 2016; Weigel, 2016
IMPACT ON SDGS: MIXED
• **Connectivity enhancing & human empowering**

  Eg. Mobile phone tech, internet, Cloud, 5G, big data

  **Impact:** connectivity, access, empowerment, efficiency, making impossible possible. - Universal

• **Human replacing**

  Eg., automation, robotics, AI

  **Impact:**

  1. Efficiency gains, consumer welfare

  2. Work condition improvement

  3. Labour replacing

  4. Income inequality
EMPLOYMENT CHALLENGE

• Job replacement
• In a wide spectrum of sectors, not only blue collar workers (from lorry drivers, office white collar, to highly skilled financial sector)
• Difficulties in re-employment for some.
• Political instability & social un-sustainability
DISTRIBUTIONAL EFFECT

• Biased technical change
• Greater income inequality (significant)
• Capital vs labour; Skilled vs un-skilled
• Challenges to low income countries: further backwardness
• Deepening global income divide
CHANGES IN GLOBAL ECONOMY

• Re-shore of manufacturing back to developed countries
• Opportunities for LDCs to catch up narrowed
• Revolution in global production network led by 3D printing
• Distributed localised production replaces mass production
• Challenges to China: the world’s manufacturing workshop
POLICY IMPLICATIONS

• Policy guidance
• Policy to remedy negative effects
• Policy to assist LDCs
  - Technology transfer, cooperation in training.
  - MNEs to play a more active role
  - Global governance reform, partnerships
GLOBAL PARTNERSHIP & EFFORTS

• 2030 global Sustainable Development Goals (SDGs)
• UN Technology Transfer Mechanism (TFM)
• UN Technology Bank for LDCs