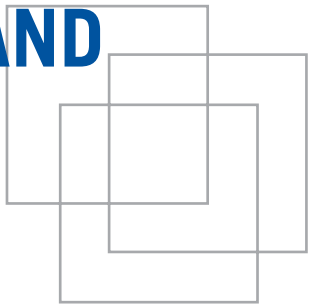
ACT/EMP
The Bureau for Employers' Activities

International Labour Organization

NAVIGATING THE TECH AGE:

PREPARING ENTERPRISES AND WORKERS FOR THE FUTURE



Over the last few years, the discourse on technological innovation has shifted from its impact on the consumer and consumer behaviours, to its impact on the labour market – jobs and enterprises. Cutting-edge technologies have emerged with transformative changes in what can be manufactured, where and how.

Technologies such as **3D printing** – also known as **additive manufacturing** – that have enormous versatility are indicative of this transformation. 3D printing, for example, can be used everywhere, from high tech industries such as aerospace to build jet engines to garden sheds for producing gardening equipment. Additive manufacturing has evolved to the extent it can produce almost any component using metal, plastic, mixed material and even human tissue. The **Internet of Things** allows electronic devices to communicate with each other without human interference, for example a fault in production machinery communicated directly to a supplier.

Other technologies including **automation** and, increasingly, **robotics**, are being deployed by enterprises in manufacturing and services. Critically, the price of smart machines, digitization, and robotics is now allowing small and medium-sized enterprises (SMEs) to invest in advanced technology for their processes, production and services. In the manufacturing sectors that are the most easily automated, such as automobiles and transport equipment and electronics and electrical equipment, most tasks can now be performed by robots. In addition to cutting costs, these technologies offer enterprises speed, precision, efficiency and flexibility.

These exciting, emerging technologies will have transformative impacts on societies and workplaces. However, they also create challenges for policy-makers, enterprises, workers and those that represent them as to how to navigate inevitable changes in labour markets.

ASEAN IN TRANSFORMATION SERIES

The Bureau for Employers' Activities of the ILO (ACT/EMP) launched a major research initiative in 2015 to investigate how technology is impacting key labour-intensive and growth sectors, how enterprises are responding to advanced technology and how young people perceive the challenges and opportunities. The research study focused on the ten countries that form the Association of Southeast Asian Nations (ASEAN), a politically and economically diverse region with a population of over 632 million people, a swelling middle class and an increasingly educated workforce. A separate, parallel, research component looked at technology in key sectors in China.

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Countries that compete on low-wage labour need to reposition themselves. Price advantage is no longer enough. Policy-makers need to create a more conducive environment that leads to greater human capital investment, research and development and high-value production.

Deborah France-Massin, Director, Bureau for Employers' Activities, International Labour Organization

The research concluded that advanced technologies are now enabling multinational enterprises that currently source their products from developing countries to move their production closer to markets at more effective prices and with higher quality and precision. ***This shift in their production model will have major implications for many emerging Asian countries that are pursuing a development model characterized by undiversified, export-oriented and sector-dependent growth.***

ACT/EMP's research – by far the most comprehensive study conducted for the ASEAN region – was undertaken in collaboration with leading academic institutions, including UCLA Anderson School of Management, Emory University, National University of Singapore, University of Malaysia and China Europe International Business School. The methodology included:

- Over 330 qualitative interviews
- More than 4,000 enterprise surveys and 2,700 student surveys
- One meeting of experts with industry leaders, academics and international organizations
- Three national consultation meetings with senior executives in Cambodia, Indonesia and Singapore
- One consultation meeting with the ASEAN Confederation of Employers and ASEAN Trade Union Council

The study examined the impact of technology in five core sectors in ASEAN:

- Automotive and auto parts
- Electrical and electronics
- Textiles, clothing and footwear
- Business process outsourcing
- Retail

The regional report and five separate studies were launched in Singapore in July 2016 in partnership with the Singapore National Employers Federation (SNEF)[1].

- Comprehensive regional report: ASEAN in transformation: How technology is changing jobs and enterprises
- Three sector-specific reports
  - » Automotive and auto parts: Shifting gears
  - » Electrical and electronics: On and off the grid
  - » Textiles, clothing and footwear: Refashioning the future
- Regional survey report: The perspectives of enterprises and students on future work
- Assessment report of the risk automation poses for jobs: The future of jobs at risk of automation

[1] The regional report has thus far received coverage in over 100 media globally, including the Guardian newspaper, Forbes Magazine and Deutsche Welle, with detailed commentary and analysis and garnered about 100 media hits. The regional report and the five separate reports can be accessed at: http://www.ilo.org/public/english/dialogue/actemp/whatwedo/aseanpubs/report2016.htm

Singapore is home to numerous technology centres and research institutes, and we [employers] need to talk more frequently with education and training providers so that the incoming workforce has employable skills.

Stephen Yee, Assistant Executive Director, SNEF at the media launch of ASEAN in transformation in Singapore on 3 July 2016

RECENT RESEARCH FINDINGS

1. Technology will have a highly disruptive impact on low-skilled jobs
    - Approximately 56 per cent of employees in five ASEAN countries (Cambodia, Viet Nam, Thailand, Indonesia, Philippines) are at high risk of displacement.
    - 64 per cent of garment workers in Indonesia, 88 per cent in Cambodia and 86 per cent in Viet Nam are at high risk of displacement.
    - In the Philippines, 1 million workers in the business process outsourcing sector (representing 7 per cent of the country's GDP) are at high risk of losing their jobs from automation (89 per cent of the sector's workforce).
    - Technology impacts more negatively on women as they are much more likely than men to be employed in an occupation at high risk of automation.
2. Senior policy-makers and businesses have alarmingly low awareness of the potentially disruptive nature of technology on labour-intensive sectors.
3. Technology will have major disruptive impacts on labour-intensive occupations but will increasingly impact all jobs, including medium and high-skilled jobs.
4. Demands from business for workers with science, technology, engineering and mathematics (STEM) skills to manage, work and innovate with technology are increasing. Academic pursuits in STEM disciplines, especially by girls, will be critical for the future of young people.
5. The current political discourse of greater protectionism increases the likelihood of reshoring production to market destination countries – technology is now a key enabler for re-shoring.
6. New jobs and new sectors will emerge – we just do not know what these will be.

Media reaction to *ASEAN in transformation: How technology is changing jobs and enterprises*

Deutsche Welle, Robot factories could threaten jobs of millions of garment workers, 9 July 2016 (Interview with Jürgen Rüland, Professor of Political Science and Project Chair of Southeast Asian Studies, University of Freiburg)

"Job losses at the low-skilled end of the labour market will in the first place have serious social repercussions. Female workers in Cambodia's textile and clothing industry, for instance, irrespective of very low wages, send back considerable remittances to villages."

Forbes, If the robots steal all the sweatshop jobs then how will the poor get rich, 12 September 2016

"If we automate sweatshops, whether we install the machines ourselves in our home nations or they get installed in factories in those poor places, then how do poor places develop?... If the traditional methods of development are closed off then how will development happen?"

The Guardian, Robot factories could threaten jobs of millions of garment workers, 16 July 2016 (Interview with Nick Srnicek, co-author of Inventing the Future: Postcapitalism and a World Without Work)

"There is an idea that [the threat to jobs presented by] automation is a rich country problem, but it's much more of a problem for lower income economies...It's not going to be easy to turn this into an opportunity and I don't think the traditional approaches of the labour movement are going to solve it."

Follow up study on technology in the apparel sector

ACT/EMP commissioned UCLA Anderson School of Management to conduct a deeper analysis of disruptive technology on the textiles, clothing and footwear sector. Interviews were conducted with garment sector technology developers, academics and major brands/manufacturers based in the United States to assess how technology is assisting US-based companies to reshore manufacturing. An updated research note, "An analysis of how automation will impact the apparel sector value chain", was launched in April 2017.

INTERNATIONAL AND NATIONAL BRIEFINGS

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[I] can imagine how the production line will work in the future. It will be an automatic system with robots and artificial intelligence. When materials run out, this will be recognized by robots who will issue commands to pour more materials into the production line.

Director, South Korean precision molding company, Hanoi, Viet Nam, The Fourth Industrial Revolution and Implications for Viet Nam's Socio-economic Development, 25 November 2016

Following the launch of the regional report, ACT/EMP has presented the research at national discussions, at briefings with CEOs across Asia and at international conferences. Noteworthy events include:

- Implications of new technologies on the future of work, ILO-Renmin University, Beijing, China, July 2016.
- The Fourth Industrial Revolution and Implications for Viet Nam's Socio-economic Development, United Nations Development Programme (UNDP), Hanoi, Viet Nam, November 2016.[2]
- Future of work policy dialogue: How will Viet Nam address changing technologies and skills needs in the labour market, ILO-Ministry of Labour, Invalids and Social Affairs, Hanoi, Viet Nam, December 2016.
- New innovation approaches to support the implementation of the Sustainable Development Goals, Commission on Science and Technology for Development, 2016-2017 Inter-sessional Panel, United Nations Conference on Trade and Development (UNCTAD), Geneva, Switzerland, January 2017.
- National briefing for senior policy-makers, business, researchers, media and social partners, Yangon, Myanmar, January 2017.
- Briefing to the ASEAN Confederation on Employers (ACE) annual meeting, Phnom Penh, second quarter of 2017.
- Dialogue on technology and displaced populations, United Nations High Commissioner for Refugees (UNHCR), Geneva, Switzerland, February 2017.
- National briefing for senior policy-makers, business, researchers, media and social partners, Manila, Philippines, second quarter of 2017.
- National briefing for senior policy-makers, business, researchers, media and social partners, Jakarta, second quarter of 2017.
- National briefing for senior policy-makers, business, researchers, media and social partners, Phnom Penh, second quarter of 2017.
- National briefing for senior policy-makers, business, researchers, media and social partners, Nay Pyi Taw, second quarter of 2017.
- National briefing for senior policy makers, business, researchers, media and social partners, Bangkok, second quarter of 2017.

Country-specific policy briefs have been developed for Cambodia, Thailand, Indonesia, Myanmar, Philippines, Singapore and Viet Nam.

RESEARCH PRODUCTS

- Analysis of the economic development role of Sectoral Business Associations in the rubber, electrical and electronics and automotive sectors in Malaysia, Thailand and Viet Nam (2016)
- ASEAN in transformation: How technology is changing jobs and enterprises (2016)
- ASEAN in transformation: The future of jobs at risk of automation (2016)
- ASEAN in transformation: Textiles, clothing and footwear - Refashioning the future (2016)
- ASEAN in transformation: Electrical and electronics - On and off the grid (2016)

[2] *Viet Nam TV* conducted a live televised interview with Gary Rynhart, ACT/EMP senior specialist and co-author of *ASEAN in transformation: How technology is changing jobs and enterprises*, on key findings of the report. The interview can be seen at: http://vtv.vn/video/van-de-hom-nay-13-12-2016-190977.htm

- ASEAN in transformation: Automotive and auto parts - Shifting gears (2016)
- ASEAN in transformation: The perspectives of enterprises and students on future work (2016)
- An analysis of how automation will impact the apparel sector value chain (2017)
- Technology and its impact on enterprises and workers in Viet Nam (2016)
- Technology and its impact on enterprises and workers in Singapore (2016)
- Technology and its impact on enterprises and workers in Myanmar (2017)
- Technology and its impact on enterprises and workers in Cambodia (2017)
- Technology and its impact on enterprises and workers in Thailand (2017)
- Technology and its impact on enterprises and workers in the Philippines (2017)
- Technology and its impact on enterprises and workers in Indonesia (2017)

The Bureau for Employer's Activities of the ILO

ACT/EMP
The Bureau for Employers' Activities

The Bureau for Employers' Activities (ACT/EMP) is a specialized unit within the ILO Secretariat. Its task is to maintain close and direct relations with Employer and Business Membership Organizations (EBMOs) in member States.

Across the region, ACT/EMP assists EBMOs to become strong, independent and representative organizations that respond to their members´ needs and challenges by designing and implementing technical cooperation programmes. The key components to ACT/EMP's role are:

- Maintaining and developing a global network of EBMOs
- Being a trusted internal partner of the ILO to EBMOs and keeping the ILO informed of their views, challenges and priorities
- Running capacity-building programmes for EBMOs that respond to their needs (targeting three areas: policy, services and strategy)
- Facilitating the wider work of the ILO with EBMOs

In the Asia-Pacific region, ACT/EMP has four dedicated specialists: one based in New Delhi, India, covering South Asia, one based in Yangon working exclusively in Myanmar, and two based in Bangkok, Thailand, covering South-Eastern Asia and the Pacific and Eastern Asia.

http://www.ilo.org/employers