Asia-Pacific
Economic Cooperation

Trade and Human Resources Development: Capacity Building for Inclusive Trade

~ Discussion Paper ~

APEC Human Resources Development Working Group (HRDWG)

April 2019

APEC Project: HRD 02 2018T

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APEC Publication #: ###

Acknowledgement

The views expressed and the conclusions reached are those of the author and not necessarily the consensus view of APEC member economies.

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1 Executive Summary

1.1 Introduction

Open and free trade has been one of the major drivers for global growth in the latter half of the past century. However, in many economies, frustrations have grown over inequality and job losses caused by trade. Anxiety is also growing over projected future job losses due to labor-saving technologies such as artificial intelligence and robotics.

These frustrations have been exacerbated by the rapidly changing global market as digital skills have become more important than ever, while the distribution of wealth has in many cases been skewed towards a small group of businesses and individuals. This has led to calls for more protectionist trade policies in some economies, while international organizations have increasingly recognized the need for comprehensive adjustment policies to support workers and ensure that the growth brought by trade and emerging technologies is inclusive.

In order to keep up with these drastic changes, the global talent market today needs more agility and flexibility in capacity building and governance. The adjustment policies to support workers and SMEs whose livelihoods have been impacted by global trade are referred to collectively as "inclusive trade" or "inclusive growth", and include a wide array of possible policy actions, including worker education, promoting labor market participation by disadvantaged groups, and other active and passive labor programs.

Recognizing the importance of inclusive trade and growth, APEC leaders have endorsed the APEC Action Agenda of Advancing Economic, Financial and Social Inclusion[1], and every economy has committed to implement policies fostering inclusive growth. Similarly, the Boracay Action Agenda to Globalize MSMEs that was established in 2015 included a firm commitment to encourage the participation of SMEs in regional and global trade.[2]

APEC activities to support policies for inclusivity are being coordinated through multiple working groups, including the Policy Partnership on Women and the Economy (PPWE)'s work to encourage economic participation by women, and the Economic Committee's efforts to encourage participation by underrepresented members of society. In the field of labor market policies and human resource development, the Human Resources Development Working Group (HRDWG) and the Health Working Group respectively are trying to increase access to better human capital development. Notably, the HRDWG's recent efforts have led to the establishment of the APEC Framework on Human Resources Development in the Digital Age[3] in 2017.

This paper seeks to contribute to the HRDWG's activities by presenting three economy case studies (Australia, Japan, and Singapore) that describe the trade challenges that they face and their initiatives for inclusive trade. In addition, the paper provides a brief summary of the findings from global literature on inclusive trade, with an emphasis on global challenges, the opportunities and risks presented by digital skills development, and a discussion of active labor market policies for inclusive trade. The findings from the two sections were studied to develop preliminary findings to support APEC member economies.

This discussion paper is one component of an ongoing HRDWG project to contribute to APEC economies' future policies fostering inclusive trade, through strengthening human resource development capabilities. The project will seek to assist APEC's efforts in achieving trade and investment liberalization and facilitation in the Asia and Pacific region by enhancing human resources development and growth.

1.2 Findings

The discussion paper presents some preliminary findings that are based on the 3 economy case studies and the global literature review.

The following are the key topics and associated recommendations presented in this paper:

1. Developing Education and Skills Policies that are Responsive to Industry Needs

Developing a workforce with the necessary skills for competitiveness in a rapidly changing global economy involves several intertwined challenges in this topic: the mismatch between employers' needs and the availability of workers in new and emerging fields; the difficulty for education systems to appropriately prepare youth and adults with appropriate skills; and the need for policies that support unemployed or underemployed workers in learning new skills that help them to effectively compete in the current economy. Emerging technologies such as robotics and artificial intelligence present an especially notable challenge, since they are accelerating changes in the labor market and are transforming the business models of many sectors.[4] These changes to the labor market as a result of productivity improvements are a primary factor in the skills mis-match challenge. The recommendations below seek to address these challenges.

- Governance of education and skills training to create demand-responsive programs
- Build complementarity between skills development and FDI
- Create skills certification programs that address key skill mismatch needs and meet global standards
- Develop international cooperation on inclusive trade
- Implement policies to encourage digital skills development

2. Prioritizing Inclusivity and Social Protection in Policy Development

Each economy has workers and businesses that are especially impacted by the changing global economy. While each economy is different, many economies might struggle to adequately increase labor force participation by disadvantaged populations, including people with disabilities, women, youth, and mature-aged workers. The skills gap can have an especially significant impact on youth and aged workers. In a fast-changing market, youth may find it challenging to qualify for emerging jobs. Similarly, mature-aged workers face the risk of their skills becoming redundant or obsolete.[5] MSMEs, as well as start-up companies, face challenges in participating in international trade without the resources, which large corporations have, and may have difficulty locating or accessing the public sector resources intended to support them.

- Active labor market policies should target assistance to workers facing the greatest employment challenges
- Develop a range of policies to support disadvantaged populations' labor force participation

The above recommendations are further discussed in Section 5: Preliminary Findings. The findings will be presented at a symposium on the margins of SOM2 in May 2019. The inputs from the symposium from speakers and audience members will be combined with the case study findings to develop the final best practices findings, which will be presented in the final report.

2 Project Background

2.1 Project Components

This project has three major components:

1. A **discussion paper** presenting a review of inclusive trade in the global literature and an analysis of 3 APEC member economies' good practices in the field, in order to identify opportunities for capacity building around human resource development.
2. A **symposium** during the SOM 2 meetings in Chile in May 2018, which will provide an opportunity for the research team to share its initial findings, and to convene APEC member economies, expert speakers, and invited guests to discuss this issue and provide key insights that will be incorporated into the final report.

3. A **final report**, which will combine the findings from the literature research and the symposium to identify the potential best practices and lessons learned, and will present recommendations to the HRDWG on how APEC member economies can best implement policies for inclusive trade

In keeping with the spirit of the framework and HRDWG's past work, as well as the main theme of APEC2018: "Harnessing Inclusive Opportunities, Embracing the Digital Future", the project seeks to contribute to APEC economies' future policies fostering inclusive trade.

2.2 Research Framework for the Discussion Paper

From January 2019 through April 2019, the project team conducted a thorough review of available global literature on inclusive trade and growth, focusing in particular on the latest status of efforts to support inclusive trade among APEC economies. Background literature research was conducted on case studies of successful efforts that have been implemented outside of the APEC region, as well as global recommendations for policy best practices by leading international organizations like the World Economic Forum (WEF), International Labour Organization (ILO), the Asian Developmental Bank (ADB), and the Organisation for Economic Co-operation and Development (OECD).

The findings from the global literature review are presented in **Chapter 3: Review of Existing Efforts on HRD Capacity Building for Inclusive Trade**.

Through the literature research, 3 economies were selected for case profiles to review their initiatives supporting inclusive trade:

1. Australia
2. Japan
3. Singapore

The economies were selected for review based on existing literature on their policies for worker education, labor market participation promotion, and other active and passive labor programs. The challenges, goals, and policy approaches in each economy were considered for insights on best practices.

In tandem with the literature research, the project team consulted with two of the experts that will present at the symposium in order to solicit their feedback to support the case study profiles.

Table 1: List of Consultations

Date	Economy	Organization
28 February	Australia	Department of Jobs and Small Business
10 January; 9 April*	Japan	Asia University

* the expert from Asia University was also consulted through e-mail exchanges between these 2 dates.

2.3 Next Steps for Research

On May 3, 2019, the APEC HRDWG will host the **"Symposium on Trade and Human Resources Development: Capacity Building for Inclusive Trade – Exploring how digital skills training and other innovative approaches are making the benefits of trade more accessible and sustainable for all"**, a full day workshop that will take place on the margins of SOM2 in Viña del Mar, Chile.

The symposium will focus on policies for digital skills, and policies to empower MSMEs, women, and minorities to participate in trade. Participants will include experts from the APEC Policy Support Unit, APEC Chile, Asian Development Bank, and several experts from academia and governmental offices responsible for inclusive trade.

The findings from the symposium's presentations, panel discussions, and audience Q&A will be compiled into a symposium report.

Following the approval of the symposium report, the findings presented in the discussion paper and the symposium report will be combined in a final report, which will present recommendations for APEC stakeholders to support HRD for inclusive trade.

3 Review of Existing Efforts on HRD Capacity Building for Inclusive Trade

3.1 Global Definitions of Inclusive Trade and Inclusive Growth

Technology innovation and liberalized trade have stimulated global economic growth, although not equitably across all levels of society. However, one of the impacts of trade has been increased inequality and unemployment, which can hinder sustained, high growth in the long run.

The World Bank has noted that a rapid pace of growth should be broad based across sectors and inclusive of the large part of the economy's labor force in order to reduce poverty.[6] It is important for economies to set policy priorities and allocate its resources towards initiatives that promote economic growth that broadly benefits all members of society. 'Inclusive growth' and 'inclusive trade' are two concepts that guide the international community towards tackling global inequality and social inclusion, in order to distribute the benefits of trade more equitably and allow more workers (including vulnerable or underrepresented groups such as women, youth, mature-aged workers, and low-income communities) to participate in international trade.

The following table presents the definitions of inclusive trade and inclusive growth from major international organizations.

Table 2: Definitions of Inclusive Growth and Inclusive Trade

Term	Organization	Definition
Inclusive Growth	APEC	An improvement in income and its distribution, both of which must complement each another.[7] 'Growth' as "a fairer distribution of income (as measured by a reduction in inequality), without an increase in average incomes, can hardly be called growth." [Economic growth that] marginally benefits the poor can hardly be called inclusive".[8]
	WEF	Inclusive growth can be thought of as a strategy to increase the extent to which the economy's top-line performance is translated into the bottom-line result society is seeking.[9] The goal of inclusive growth is a "broad-based expansion of economic opportunity and prosperity."[10]
	OECD	Economic growth that is distributed fairly across society and creates opportunities for all.[11]
	World Bank	Rapid pace of growth is unquestionably necessary for substantial poverty reduction, but for this growth to be sustainable in the long run, it should be broad-based across sectors, and inclusive of the large part of the economy's labor force.[12]
Inclusive Trade	UNESCAP	All people can contribute to and benefit from international trade, equality of opportunities as precondition. [13]

3.2 Overview of Recent Findings from Global Policy Reports

3.2.1 Benefits of Global Trade

An economy with open trade tends to grow faster and benefit from improved productivity. In addition, the increases in income and tax revenues from trade can be invested in social services such as education and health to improve worker's skills and living conditions. Trade also creates jobs and opportunities for workers, particularly in the exporting sectors.[14] Trade integration reduces consumer prices through lifting tariffs and barriers and through firms' productivity gains; and access to goods and services at lower prices can improve the living standards of lower-income households.[15] The benefits of trade for lower-income households are especially relevant since the International Monetary Fund (IMF) has found that "an increase in the income share of the bottom 20% is associated with higher GDP growth."[16] In addition, the benefits of trade have a pro-poor bias, since poor consumers spend relatively more on sectors that are more traded (such as food and beverages) and thus experience larger price drops upon their economy opening to trade.[17]

Trade can also support greater social inclusion. Competition as a result of more open trade reduces the ability of firms to practice within-sector wage discrimination against disadvantaged groups, and studies have found that competition from trade has reduced the gender wage gap in industries with larger tariff declines. Trade has also been associated with reduced racial wage discrimination. In addition, trade agreements that contain labor provisions promoting labor force participation can strengthen the social dialogue on labor conditions for disadvantaged groups.[18]

Trade liberalization and integration typically supports economic growth, reduces the poverty rate, raises living standards, and creates new job opportunities. However, it may also widen income gaps or adversely affect workers in import-competing industries, requiring policy responses to address those impacts.[19]

3.2.2 Overview of Global Challenges for Inclusive Trade

One of the key global challenges is developing a workforce with the skills that are necessary for competitiveness in a rapidly changing global economy. There are several intertwined challenges in this topic: the mismatch between employers' needs and the availability of workers in new and emerging fields; the difficulty for education systems to appropriately prepare youth and adults with appropriate skills; and the need for policies that support unemployed or underemployed workers in learning new skills that help them to effectively compete in the current economy.

Given the rapid change in the needs of employers, workers face the risk of their skills becoming redundant or obsolete.[20] While the education systems in many economies must therefore be reformed in order to adapt to rapid changes in the fast-changing context of global work, it is challenging to create a system that is responsive to industry demands for skills and capable of managing the transition to a digital economy.

The OECD and ILO have found through surveys that certain segments of the workforce are over-qualified and utilize their skills less intensively compared to less proficient workers.[21] For example, young people sometimes cannot acquire the skills that are needed by employers, since the education system might not adequately prepare them for available careers, or they may lack the qualifications to demonstrate their skills. Compounding this issue, demographic transition and an ageing population have led to increased labor force participation rates by mature-aged workers, who face challenges such as the need for retraining, physical and cognitive challenges, and prejudice from employers and coworkers.[22]

Emerging technologies such as robotics and artificial intelligence (AI) present an especially notable challenge, since they are accelerating changes in the labor market and are transforming the business models of many sectors.[23] These changes to the labor market as a result of

productivity improvements are a primary factor in the skills mis-match challenge.[24] The following section discusses digital skills development and inclusive trade in further detail.

3.2.1 Digital Skills Development and Inclusive Trade

Given the proliferation of digital technologies throughout society, business and government, digital literacy and use of ICT technology is critical to participating to access opportunities in the modern economy. Over 60% of CEOs in APEC economies report having difficulties in finding employees with adequate digital skills, while certain economies face a shortage of up to 1.5 million digitally skilled managers and analysts. Thus, the lack of digital skills limits both the success of businesses and the ability for citizens to access available opportunities.[25]

Digital skills pose a challenge for human resources development as they create entirely new job roles, skills demands, and business models and transform existing economic sectors. The fact that skills evolve and change over such a rapid period creates challenges for governments to identify and predict skills demand, leading to challenges for education and training providers to provide learners with the relevant skills.

Certain organizations have produced resources and best practices economies can consult when formulating strategies to address the digital skills gap among their citizens. The International Telecommunications Union (ITU) of the UN provides a toolkit for digital skills strategies. The toolkit is non-prescriptive, in recognition of the diversity internationally in terms of digital skills attainment and needs within economies. The toolkit includes elements such as:

- Methods and frameworks for institutional coordination, stakeholder engagement and governance for digital skills initiatives;
- Starting points, such as defining the skills that the strategy will develop and inventorying existing policies, plans and programs that support digital skills development;
- Analysis of current and future trends such as demographic trends, technological changes, business trends, trade, industrial policies, etc.;
- Creation of a digital skills strategy, with targets for education (primary, secondary, tertiary), work-related digital skills (for youth, adults, elderly);
- Benchmarks and monitoring/evaluation to compare progress with other economies and measure internal project milestones;
- Solicitation of public comment and expert commentary on the strategy;
- Periodic fora to foster communities of practice among training providers to improve the delivery of programs; and
- Continuous iterative improvements to the strategy and programs to reflect lessons learned and the progressive achievement of goals.[26]

To ensure that APEC economies can integrate into the digital economy, ABAC has noted that it is important for APEC members to invest in their digital infrastructure, technology skills training, and enhance internet literacy, narrowing the digital divide.[27] Other measures being explored through APEC publications and workshops include strengthening coordination between employers, educators and policymakers to support the alignment of academic and training curricula with required digital skills in the private sector, early education interventions around digital skills, as well as large-scale digital upskilling and re-skilling through measures such as annual fora and creating a compendium of digital skills definitions.[28]

An example of an initiative in APEC supporting digital skills development is the implementation of 10 APEC Data Science and Analytics Competencies, a resource for academia and training providers to align the development of curricula, courses and programs to industry needs. These competencies were identified through collaboration between labor officials, academic leaders and the business community in APEC.[29]

APEC and the U.S. Department of Education Office of International Affairs, Office of Educational Technology (OET) collaborate on the APEC Digital Workforce Development Project, an initiative to provide resources to “help economies leverage digital and distance-learning technologies to

build a 21st Century workforce through improved career and technical education (CTE)." It includes representatives from government, industry and academia to showcase models for digital CTE that address elements (1) content, (2) delivery, and (3) quality; (4) inclusion of women, girls and underrepresented students; and (5) data analytics in digital workforce development.[30]

3.2.2 Discussions on Active Labor Market Policies in the Global Literature

Around the world, governments have implemented active labor market policies (ALMPs, also sometimes referred to as micro-policies) in order to improve job prospects and worker productivity. The OECD defines ALMPs as policies to improve the function of the labor market that are directed at the unemployed, and can include measures such as: [31]

- Making the process of matching between job vacancies and job seekers more efficient;
- Training to upgrade and adapt the skills of job applicants;
- Direct job creation through public-sector employment or subsidization of private-sector work.

ALMPs are a common tool to address the above challenges and serve as a complement to passive labor market policies, such as unemployment benefits. For instance, the European Globalisation Adjustment Fund (EGF) was established in 2006 in order to finance ALMPs targeting workers that had been affected by trade in European Union (EU). The EGF co-sponsored 17 projects that offered a variety of training, job search assistance, and training. Through EGF sponsorship, 9,072 workers among the 19,434 workers found new jobs by the end of the EGF implementation period.

According to the APEC PSU, a meta-analysis of over 200 studies has concluded that ALMPs can positively impact employment of individuals two to three years after completing programs. Another study found that ALMPs can reduce unemployment, particularly for low-skilled workers.[32] ABAC has noted that the size and makeup of both active and passive policies should vary across economies. Japan and the U.S., for example, spend less than 1% of GDP on both active and passive programs while Nordic economies have much more generous programs.[33]

While there are a variety of different ways to categorize or define ALMPs, the APEC PSU has categorized ALMPs into four broad categories as shown below.[34]

Table 3: Examples of Active Labor Market Policies (ALMP)

ALMP	Policy Examples	Case Study examples
Employment	• Collaboration with employers and industry groups to maintain or grow employment and reduce unemployment or underemployment	Australia (AISAP program)
Labor market information systems (LMIS)	• Gathering labor market information through surveys of the labor force and firms/employers • Projecting future labor supply trends that can be used by government, employers, job seekers, workers and education providers to understand the current labor market and required skills for emerging jobs • Feedback from social protection programs	Not a major component in the case profiles in this paper
Skills development	• Improving access to primary and secondary education • Providing technical and vocational training and apprenticeships, especially for displaced workers and disadvantaged groups • Supporting lifelong learning	Singapore (SkillsFuture initiative) Japan (various HRD for IT & AI professionals)
Social protection	• Skills matching • Job information portals • Employment assistance	Australia (Skills Checkpoint for Older Workers program)

Source: APEC Policy Support Unit (2017).

Research by the ILO suggests that ALMP programs that combine several different components are most effective. In particular, the ILO has found that the most effective program sequence for unemployed individuals is intensive job-search assistance with counseling and monitoring first, which provides the most positive short-term effects, and then in a second step providing training, which provides positive medium-to long-run effects due to the accumulation of human capital.[35]

This section will note some applicable commentary from global literature on ALMPs that falls into the 4 dimensions described above. Due to the space limitations in this paper, the commentary will focus on briefly describing ALMPs that have a strong relationship to inclusive trade policies and will provide examples that tie into the 3 case profiles in the following chapter.

3.2.2.1 Employment

Many ALMPs focus on collaboration with employers and industry groups to maintain or grow employment and reduce unemployment or underemployment. In the context of inclusive trade, **"trade adjustment programs"** are a type of ALMP that targets workers that have been displaced by trade and provides income and re-employment support.

The OECD advises that trade adjustment programs can be a "useful supplement" to more general government programs such as unemployment insurance schemes, especially when mass layoffs have led to a surge in unemployed persons all chasing the same types of largely unavailable jobs, or where general ALMPs are limited in scope and effectiveness. In those situations, OECD advises that longer training and re-education programs that lead to technical or science, technology, engineering and mathematics (STEM) related qualifications that match current skill demands offer promise as an ALMP policy. [36]

However, the OECD warns that there is a much weaker case for adjustment assistance measures that are targeted at trade-displaced workers. In particular, OECD has found that: [37]

> "There is an evident inequity in providing special assistance for the relatively small share of displaced workers whose job loss can be linked to international competition, when similar assistance is denied to other displaced workers facing similar adjustment difficulties. Cumbersome administrative procedures are also required to determine eligibility, leading to arbitrary decisions (e.g. whether workers displaced from a domestic supplier of a trade-impacted firm should qualify) and potentially long delays which greatly undercut the timeliness and effectiveness of the support."

The OECD advises that the best solution is to offer effective re-employment services to all displaced workers. When this is not politically or fiscally viable, then measures which prove to be cost-effective should be extended to all displaced workers as soon as possible.[38]

One of the earliest and longest-lasting programs for trade adjustment is the United States' Trade Adjustment Assistance program (TAA program), launched in 1962.[39] The TAA program offers support for workers (particularly in agriculture, fishing, machinery, and services) to workers who become unemployed or are threatened with job loss due to the impact of imports from trade liberalization. The program offers those workers training, reemployment services, job counseling, weekly income support, reemployment trade adjustment assistance (RTAA), and the Health Coverage Tax Credit. [40] In FY 2017, 94,017 U.S. workers joined the program, and 75 percent of them found new job within 6 months. [41]

The Australia case profile in **Chapter 4.1** of this paper profiles the lessons learned from Australia's Automotive Industry Structural Adjustment Program (AISAP), a trade adjustment program for a specific industry sector. The findings from the project were largely in line with OECD's recommendations above.

3.2.2.2 Labor Market Information Systems

Labor market information systems (LMIS) are tools to gather labor market information and analyze and share that information with stakeholders (such as government, employers, job seekers, workers and education providers) to help them to understand the current labor market and the required skills for emerging jobs. Systems typically include the collection of data and information, analytical capacity and tools, and institutional arrangement and networks. [42] Examples include the Canadian Occupational Projection System (COPS) [43] and the Skills Panorama system in Europe.[44]

In the United States, the Federal-State Workforce and Labor Market Information System (WLMIS) is a joint effort between several federal agencies, including the Census Bureau, the Employment and Training Administration, and the Bureau of Labor Statistics. While the regular evaluation recommendations are specific to the WLMIS in the United States, they contain insights that may be generalizable to other economies, such as:

- Successful systems should include indicators (such as like occupational title, hours worked, and work location) in unemployment insurance data records
- Indicators should provide information on required skills for current and emerging jobs, including credential attainment and outcomes, and transferability of skills across industries and jobs
- Systems should develop and routinely update career awareness frameworks for youths
- Systems should regularly collect information on the scale and volume of alternative work as well as reasons for reducing traditional workforce participation

While LMIS were not a major component in the case profiles in this paper, several APEC economies are exploring opportunities to adopt advanced technologies for their LMIS. The U.S. is exploring the use of artificial intelligence to build a 21st century WLMIS system providing open data,[45] while Singapore has hired Burning Glass, an analytics software company, to help improve its system, and Canada is working with Kijiji, an online classifieds provider.[46]

3.2.2.3 Skills Development

ALMPs for skills development include improving access to primary and secondary education, providing technical and vocational training and apprenticeships, especially for displaced workers and disadvantaged groups, and supporting lifelong learning. ABAC has noted that government labor market policies must refocus their resources to support individuals throughout their working lives (lifelong learning), such as programs that fund life-long reskilling and retraining for all workers; and particularly those workers that are most vulnerable to job dislocation.[47]

According to the ILO, training constitutes the ALMP program type that is most frequently implemented worldwide, through training components such as classroom and vocational/technical training, on-the-job training, basic skills training, life skills training, and job insertion.[48] The ILO has found that labor market training programs are modestly effective overall, and the medium-run and long-run impacts of ALMP training programs are more positive than the short-run impacts.[49]

The Singapore case profile in **Chapter 4.3** of this paper profiles the lessons learned from Singapore's SkillsFuture initiative, which bundles several different ALMPs for skills development.

3.2.2.4 Social Protection

The APEC PSU has noted the importance of programs supporting disadvantaged groups' employment and skills learning as a key factor in improving the labor force participation rate. Disadvantaged populations include people with disabilities, women, youth, and mature-aged

workers.[50] Implementing social protection measures in education, health, and social services can improve their participation in the workforce, making economic growth more inclusive.

Several international organizations have created guidance documents for formulating social protection policies. For instance, the World Bank initiated the *2012-2022 Social Protection and Labor Strategy*, which seeks to strengthen social protection systems that provide vulnerable groups with access to education, health services and job opportunities.[51] Similarly, ILO's International Labor Conference ratified *Recommendation 202 Concerning National Floors of Social Protection* in June 2012. The guidance sets out four key elements of social protection systems, including health services, benefits for vulnerable groups, the older workers, children, and poor.[52]

According to the APEC PSU, an economy can improve the workers' participation by ensuring access to education, including technical and vocational education and training, reducing barriers for female workers and disabled people, supporting youth employment, and encouraging aged workers to delay their retirement and/or work as part-time.[53] Supportive activities include implementing regulations to set minimum wages, restrictions on working hours, and social protections like unemployment insurance.

The Australia case profile in **Chapter 4.1** of this paper profiles the lessons learned from Australia's Skills Checkpoint for Older Workers program, which focuses on reducing workforce discrimination against older workers and improving their access to vocational support.

3.3 Overview of inclusive trade activities in the APEC region

3.3.1 Overview of APEC Regional Challenges for Inclusive Trade

APEC member economies are experiencing the global challenges of technological disruption and insufficient training and education systems.[54] The APEC PSU has noted that emerging technologies are accelerating changes in the labor market as robotics and artificial intelligence gradually replacing workers whose work are mainly repetitive and routine tasks, like factory assembly, simple accounting, and data collection, in addition to transforming the business models of many sectors.[55]

Skills development has become a key issue for several APEC members. More than 40% of APEC member economies have expressed concerns that they do not have sufficient training and vocational education, and enrollment in vocational education has declined.[56] APEC economies including Hong Kong, China, and Chinese Taipei have reported that they have skills shortages problem, while the WEF's Executive Opinion Survey has found that the quality of vocational training is generally low among APEC economies, which may also cause skills shortage issues.[57]

Meanwhile, education systems may not provide workers with the skills demanded by employers, which also leads to a greater degree of skills mismatch, even in economies that invest heavily in education. For example, in South Korea, a study by the Korea Employers Federation found that it took 18.3 months and about $53,000 USD for a company to train a newly-hired graduate on average, despite Korea's heavy investment in education.[58] The skills gap impacts workers of all ages. In a fast-changing market, youth workers may find it challenging to learn the right skills for emerging jobs or anticipate changes in the demand for skills. Aged workers may also encounter barriers in acquiring new skills to stay in their roles.[59]

3.3.2 Examples of Notable Activities by APEC

APEC has a number of programs that provide economies with tools to address their skills shortages and promote more inclusive trade in their economies. These include a range of research projects through the Human Resources Development Working Group (HRDWG) on skills development, human resource management and vocational training, as well as programs focusing on digital skills, SMEs and entrepreneurship.

In 2004, APEC established an APEC Digital Opportunity Center (ADOC) offering computer skills training to vulnerable groups in rural and urban areas in APEC communities. The ADOC project was proposed and self-funded by Chinese Taipei, with the goal to enhance information and communication technology (ICT) capabilities among women, children, and disadvantaged groups. The first phase was implemented from 2014-2018 in 7 APEC Partner Member Economies (PMEs), including Chile, Indonesia, Papua New Guinea, Peru, the Philippines, Vietnam, and Thailand. The second phase, ADOC 2.0, operated from 2009-2011. In the second phase, Mexico, Malaysia, and Russia all joined the project.[60] Over half a million people in the APEC communities have participated in this project to obtain the digital skills to improve their employability.[61]

In 2017, APEC released the Framework on Human Resources Development in the Digital Age, which sets forth policy directions to support economies in preparing workers for the skills demands of the digital economy, such as analyzing the impacts of technology on work and labor market outcomes and identifying government policies that can contribute to labor market adaptability and lifelong learning.[62] APEC has also collaborated with Economic and Technical Cooperation (ECOTECH) to facilitate regional technical exchange and cooperation, setting "developing human capital through capacity building" as a medium-term priority for 2015 to 2019. Through cross-border educational and skills training, APEC has contributed its efforts on facilitating regional technical exchange and cooperation.

The APEC Business Advisory Council (ABAC), which represents industry stakeholders and their participation and feedback within APEC, has published research on inclusive trade, such as the 2017 report, "APEC'S New Challenge: Inclusive Growth through Smarter Globalization and Technological Process."[63] ABAC also released a letter in April 2018 providing recommendations on regional trade, investment, and economic growth, and urging APEC Ministers to pursue sustainable and inclusive growth. ABAC also urged APEC economies to improve their workforces' adaption to emerging technologies and to facilitate the economic development and integration of remote areas.[64]

4 Case Studies

4.1 Contents

The following case studies present the following key information for each economy:

- Economy Trade & HRD Policies
- Current Initiatives and Programs for Inclusive Trade
- Achievements
- Lessons Learned

While the case studies seek to present a holistic view of each economy, each case study has a "spotlight" area on a different aspect for each economy's trade programs to showcase some of the unique or notable activities to address key trade challenges. The findings noted below are described in more detail in Chapter 5: Preliminary Findings.

Table 4: Case Study Comparisons

Topics	Australia	Japan	Singapore
Trade Challenges	Job losses from trade in specific sectors; Supporting mature-aged workers	Skills development for digital/IT industry to compete in global markets	Alignment of skills supply with skills demand
Relevant programs	AISAP; Skills Checkpoint	Various programs for HRD of AI professionals	SkillsFuture
Findings	• ALMPs should target assistance to workers facing the greatest employment challenges • Develop a range of policies to support disadvantaged populations' labor force participation	• Create skills certification programs that address key skill mismatch needs and meet global standards • Implement policies to encourage digital skills development	• Governance of education and skills training to create demand-responsive programs • Build complementarity between skills development and FDI

There were also some common areas for challenges and similar opportunities that were found across all 3 of the case studies, as shown below.

Table 5: Case Study Common Labor Challenges and Opportunities

Item	Description
Labor force challenges	• Aging society and demographic transition • Alignment of skills supply with skills demand • Structural change and technological advancement • Economic dualism
Digital skills development	• Importance of digital skills for workers as well as business competitiveness • Educational reforms to align curricula with much needed digital skills • Programs to provide workers with digital skills to support career development and transitioning
Support for MSMEs	• General support provided for entrepreneurs and MSMEs using training and mentorship • Support for digital transformation of MSMEs • Support for foreign expansion of MSMEs

4.2 Australia

Table 6: Economy stakeholders and programs

Government entities responsible for trade and HRD policies	• Department of Foreign Affairs and Trade • Department of Education and Training • Department of Jobs and Small Business • Department of Industry, Innovation and Science • Australia Skills Quality Authority (ASQA)[65]
Major domestic skills training organizations and NGOs for HRD	• Skills Training Australia[66] • Registered Training Organizations (RTOs)[67] • jobactive providers
Notable programs for inclusive trade and displaced workers	• Automotive Industry Structural Adjustment Program (AISAP) • jobactive • Skills Checkpoint for Older Workers • Skills and Training Incentives • Stronger Transitions Package • Small Business Digital Champions initiative • Regional Employment Trials
Significant sectors for inclusive trade assistance	• Automotive • Natural resources • Agriculture • Steel making • Textiles, clothing and footwear

4.2.1 Economy Trade & HRD Policies[68]

Background/History
Australia's liberal trade policies have led to an increase in employment in trade-related sectors since the mid-1980s. Due to the dynamic nature of international trade, the benefits from trade disproportionately affect different economic sectors and various segments of the workforce. Australia has many workforce programs to address a wide range of challenges faced by different workforce segments, although many are not specific to trade adjustment assistance.

Australia has a liberalized trade regime to support a flexible economy through the use of measures such as "floating of the dollar, the deregulation of financial markets, the broadening of the tax base and corporatization of government businesses." In addition to unilateral actions, Australia participates in numerous bilateral and multilateral trade agreements to lower trade barriers. This has been accompanied by a liberalized foreign investment regime, sustained economic growth and stable inflation that has led to significant private investment in Australia.[69] Australia takes a liberal economic approach to the domestic regulation of private enterprise, with reforms aimed to "boost competitiveness, productivity and job creation by reducing regulatory burden on business, community organizations and individuals." [70]

Trade in Australia is deeply linked with labor, as one in five Australians work in a trade-related activity, including export industries such as agriculture, minerals and energy as well as employees of importers and distributors. In the past 20 years, the number of people employed in trade-related activities has increased by 15% to about 2.2 million in 2013-2014. Major export-related sectors include the Professional, Scientific and Technical Services industry and the Mining sector.

Employment in the manufacturing sector has been in decline due to longer-term trends, in part partly because the sector was too focused on the domestic market to be competitive internationally. This decline has been partially offset by an increase in the share of export-related employment in the agricultural sector, although overall employment in agriculture has declined. An estimated 6% of Australian employment is dedicated to getting imported goods to end-users. The proportion of workers in the entire economy involved in trade has remained stable at about 20-22%.[71]

Skills Development and Inclusive Trade Goals

Australia's overall labor force goals are defined in the 2015 National Innovation and Science Agenda (NISA), which identifies science, research and innovation as the key drivers of Australia's economy, with four key pillars: culture and capital; collaboration; talent and skills; and government. In addition to measures to mobilize venture capital, NISA proposes to increase the involvement of women and girls in science, technology, engineering and mathematics (STEM) education.[72]

Australia's priorities for inclusive trade are to improve workers' resilience to changes, particularly those caused by digital evolution and structural changes, through a number of programs that aim to reduce costs faced by workers through training and adjustment assistance, as well as policies to help the unemployed find work.[73]

Labor Force Challenges

Australia's Employment Plan 2018, prepared for the G20 Summit, defines a number of labor force challenges. These include:

- **Boosting labor force participation.** Due to the aging population, the labor force participation rate (LFPR) for those aged 15 and over is projected to fall from 65% to 63% by 2054-2055, shrinking the tax base and increasing the demand for age-related payments and services.
- **Supporting women's participation**: Ensuring that women can enter and stay involved in the workforce for their economic security.
- **Addressing long-term unemployment:** This must be addressed to avoid the long-term exclusion of parts of the population from the workforce, which can lead to the loss of skills and job readiness.
- **Youth unemployment:** Youth unemployment is double the average as younger people tend to have less skills and experience than older people.
- **Boosting indigenous employment:** Aboriginal and Torres Strait Islander populations face unique barriers to employment due to language challenges, with inequalities more pronounced in rural areas.
- **Managing structural change:** Technological advancements can lead to transformations in the economy that require commensurate skills changes for workers, thus it is a challenge for the government to anticipate such changes and devise skills and active labor market assistance programs.[74]

Responsible authorities:

Organization (agencies under the same ministry are shaded together)	**Responsibilities**
Department of Foreign Affairs and Trade (DFAT)	Department responsible for trade and investment policies.
Department of Education and Training	Department responsible for education and training from childhood to vocational education and training, including certain skills and training indicatives for disadvantaged workers.[75]
Department of Jobs and Small Business	Department responsible for employment, job services, labor market, workplace relations and small business.[76]
Australia Skills Quality Authority (ASQA)	Regulator for vocational education and training (VET), responsible for accrediting providers.[77]

4.2.2 Current Initiatives and Programs for Inclusive Trade

4.2.2.1 Active Labor Market Policies

Government employment services in Australia are provided through "a network of private and community sector entities," which includes three main programs:

- **jobactive**: A $6.7 billion employment service to link job seekers with employers through a mix of incentives, services and obligations. It is delivered over a network of 1,700 locations where jobactive providers assist employers with free tailored recruitment services. Participants are required to actively search for work. Complementary services support populations such as youth, women, parents, indigenous Australians and mature-age job seekers. Program reforms could include greater use of digital technology to deliver services.
- **Disability Employment Services (DES):** An uncapped open employment service for job seekers with disabilities, including individualized assistance on employment, skills, education and training.
- **Community Development Program:** A program for job seekers in remote areas to address the unique social and labor market conditions they face. This program will commence in 2019.[78]

4.2.2.2 Programs Targeting Labor Market Disadvantages

In addition to these programs, Australia has a number of policies designed to target labor market disadvantages faced by certain groups which may or may not be related to international trade. This includes indigenous Australians, people with disabilities, residents in regional/remote areas, workers in industries facing structural changes and migrants.

Policies to assist mature-aged Australians in remaining in the workforce

- **More Choices for Longer Life Package:** An overarching initiative encompassing both Skills Checkpoint and the Skills and Training Incentive. The package includes measures to assist mature-age Australians in staying in and reentering the workforce, as well as measures to tackle age discrimination.
- **Skills Checkpoint for Older Workers program:** Aims to assist Australians aged 45-70 in transitioning into new roles, whether in their industry or a new career. This might include referral to training or education. It is an AUS$17.4 million initiative and provides guidance on transitioning into new roles and referral to education and training options.[79]
- **Skills and Training Incentives:** Provides up to AUS$2,200 to participants for re-skilling opportunities, with eligibility based on completion of Skills Checkpoint.
- **Job Change Initiative:** A $15.2 million program to support mature-age workers facing retrenchment by providing them with an overview of career options.
- **Skills Transferability Tool**: An online tool to match job seekers' skills with new job functions.
- **Career Transition Assistance program:** This program will provide Australians aged 45-70 with guidance and training to be competitive in their local labor market.[80]

While many of these policies are new and have not yet been evaluated, a pilot of the **Skills Checkpoint** program ran from 2015-2016. The program design included an assessment of skills and career interests of participants, guidance on transitioning into new roles (within their industry, or a new career pathway). An evaluation of the pilot found that participants strongly supported the program and found that it filled a gap in available services for older Australians, with 56% of participants rating the program a 9 or 10 (out of 10) and a further 23% rating it as a 7 or 8. In addition, 93% of participants completed the process and received a career plan.[81]

The Australian Government funded an economy-wide rollout of The Skills Checkpoint for Older Workers Program (the Skills Checkpoint Program) based on a model that was piloted by the Department of Education and Training from 2015 until 2016.[82]

Policies to support specific communities or sectors
In recognition of the fundamental structural changes in Australia's economy, the Government has launched programs to address the transition costs faced by individuals in certain sectors or communities. These programs include:

- **Stronger Transitions Package:** AUS$10.3 million for pre- and post-retrenchment support for workers to find labor market opportunities in regions affected by large-scale redundancies and where the local labor market faces difficulties. It includes measures such as: skills and training support; employment support through jobactive; 'employment facilitators' to link workers with employers, training opportunities and other services; job fairs; support for relocation and; access to small business opportunities through NEIS.[83]
- **Growth Fund:** AUS$155 million to assist retrenched automotive workers in re-skilling and finding new careers.
- **Advanced Manufacturing Fund:** AUS$100 million fund to drive innovation.
- **Retrenchment Rapid Response Framework:** tailored employment services through jobactive providers, as well as support to employers in meeting their obligations. Services include face-to-face advice on career options and other assistance, help with resumes and job applications and information on job vacancies.[84]
- Targeted employment support for retrenched workers in auto, steel and other industries.
- Engaging with employers in industries and regions with strong employment prospects,[85] including through job fairs to link individuals and employers.

Regional support policies
Workforce challenges are exacerbated for many workers in Australia's regions and outside of the capital cities. This could be related to larger trends in the Australian economy, in which growing and labor-intensive industries are largely concentrated in urban areas. Programs to address this challenge include a series of large funding packages with partial investments in skills development, including:

- **Regional Jobs and Investment Packages (RJIP):** Provides AUS$222.3 million to help 10 regions diversify their economies for long-term growth and sustainable employment.
- **Regional Growth Fund:** Provides AUS$272.2 million for grants up to $10 million for regional growth programs, including for regions that are struggling from structural change in their local economies.
- T**he Building Better Regions Fund:** Provides AUS$642 million for infrastructure and community projects to create jobs and growth in the regions.
- **Regional Employment Trials:** Provides AUS$18.4 million for 10 selected disadvantaged regions to design solutions for local employment programs. Previously funded programs include mentorship for mature residents by business leaders, work experience programs and preparing job seekers to work on infrastructure projects.
- A range of measures in Northern Australia such as skills development to expand the region's labor force.

4.2.2.3 Skills Development

In addition to employment services and programs targeted disadvantaged populations, Australia provides a number of skills development measures designed to address the growth in demand for skilled labor. Recent measures include:

- Reforms to align education and training with employment opportunities
- $1.5 billion to support apprentice, trainees and pre-apprentice programs as part of the Skilling Australians Fund.
- Industry Specialist Mentoring for the Australian Apprentices program to increase retention rates among apprentices.
- Australian Apprentice Wage Subsidy trial to support apprenticeships in rural and regional areas.
- A review of the vocational education and training system to examine how to prepare Australians for a changing labor market.

The Government also provides incentives to employers and apprentices to ensure that training programs provide individuals with in-demand skills. This includes income-contingent loans to students in higher-level VET programs and arrangements for developing recognized and quality-assured competency standards and qualifications. Additionally, older Australians and their employers will have access to a $2,000 matched incentive for training programs to enable them to acquire new skills and pursue career changes.[86]

4.2.2.4 Initiative Spotlight- Special Adjustment Assistance for the Automotive Sector: The Automotive Industry Structural Adjustment Program (AISAP)

Background: AISAP is one of several special assistance programs (SAPs) that was funded in 2008 to provide employment services for retrenched workers (workers that lost their jobs due to redundancy) in struggling industries like steel making, forestry and textiles. The $AUS 66.89 million program is accepting applications until June 2019.

Goals: The program sought to provide employment services for retrenched automotive workers, as part of a broader policy to support the domestic automotive industry.

Activities: AISAP connects retrenched automotive employees with jobactive providers for services such as résumé preparation, job applications, interview skills, training to obtain tickets or licenses, work experience, and other assistance. Through the program, automotive workers can access a greater level of assistance than is generally available without meeting criteria that those in other industries might, such as a waiting period for those who have received redundancy payments, a liquid assets test and an assessment to determine the level of support.[87]

Participants create a job plan that includes activities to help them acquire necessary skills, connections to other government support and job search measures. Jobactive providers can also connect workers with relocation assistance, wage subsidies, training, apprenticeships and help to start a business through the New Enterprise Incentive Scheme (NEIS). It also includes an AUS$1,300 credit that jobactive providers can access for each automotive worker.

Participating entities: jobactive, Department of Human Services, Department of Jobs and Small Business, Department of Industry, Innovation and Science, Department of Education and Training, regional governments.

Challenges: A report released by the Australian Productivity Commission in 2014 found that government support programs for the automotive industry, including up to AUS$30 billion in assistance provided to manufacturers, only served to forestall the closing of many domestic automotive firms. [88]

The report found that retrenched employees in the automotive sector are likely to face costs associated with job search and training and could find themselves in lower-paying or less secure jobs. Exacerbating factors included the age, educational attainment, language skills, willingness and the ability to relocate and previous occupation of retrenched workers. Additionally, workforce adjustment costs also depend on the amount of time workers have to prepare for adjustment; the Commission noted that larger manufacturers gave notice well in advance, although smaller component's manufacturers may not.

Adjustment costs also vary based on the adaptive capacity of the regions in which retrenched workers live. The number of retrenched workers, the size of the labor market, the types of jobs available, the rate of unemployment, as well as broader macroeconomic factors such as labor, credit and housing markets, are all factors that can lead to increased costs. The report finds that costs will be most pronounced in areas of high levels of unemployment and social disadvantage.[89]

Lessons learned:
AISAP was twice extended, first to 30 June 2018 and later, a further year until 30 June 2019. The Productivity Commission concluded that AISAP would need to undertake several reforms prior to any extension, such as clarifying the goals of the policy, rigorously evaluating the costs and benefits, providing for ongoing monitoring and emulation, and implementing measures to ensure the program targets those with the greatest need, such as creating an intake assessment for the program to identify the workers that are likely to face the highest readjustment costs.[90] The government supported this recommendation in principle, and will consider the processes for monitoring and evaluation of AISAP.

4.2.2.5 Initiatives and Programs for Digital Skills Development

A 2018 Report by the Department for Industry, Science and Technology identified a series of challenges faced by businesses in adopting digital technologies, including:
- low digital skills
- lack of awareness of benefits
- lack of time to research and trial new technology
- concerns about cost
- unreliable internet access.

Furthermore, Australian workers could be at risk of redundancy due to automation, thus necessitating up-skilling, re-skilling, career switching and the development of a culture for lifelong learning. This is also related to a general deficit of digital skills among the Australia workforce, which includes areas such as data management and analysis, cybersecurity, cloud computing, artificial intelligence and machine learning, robotics, digital design, software and advanced mathematics and statistics.[91]

In response to these challenges, the Government has launched a series of programs addressing digital skills, such as:
- the Job Change initiatives (profiled earlier in this case profile), which provides mature-age workers with support in acquiring new skills and entering new roles;
- a review of the Australian Qualifications Framework to see how tertiary requirements can respond to industry demand for skills, such as how micro-credentials could be used to support lifelong learning;
- examining how the Government can promote lifelong learning;
- the Small Business Digital Champions initiative, a program which will assist SMEs in using hardware, software and digital transformation to improve their operations.[92]

4.2.2.6 Initiatives and Programs for MSMEs
New Business Assistance services through the New Enterprise Incentive Scheme (NEIS) provide individuals who desire to launch an SME with small business training, mentorship and advice, delivered through Australia's network of Business Enterprise Centers, technical and further education institutes, community organizations and other businesses.[93]

The Government also offers similar services to promote self-employment specifically among mature-age or young Australians through Entrepreneurship Facilitators. These are locations where individuals can access a range of services, programs and practical assistance to start their business.[94] This includes reducing the tax burden on small businesses through fast-track tax relief for 3.3 million SMEs, as well as measures to reduce personal income taxes.[95]

4.2.3 Achievements
Many of the programs discussed in this paper have been launched recently and thus have not yet produced results. However, the following selected indicators can give an impression of achievements in certain segments of the workforce, although it is challenging to attribute this to any particular program or policy.

Table 7: Economic and labor indicators[96]

Indicator	2008	2017
GDP per Capita	US$42,399	US$46,266
Participation rate (for population aged 55-64) (%)	58.9	66.3
Participation rate (for population aged 55-64) (%)	9.4	13.0
Participation rate (for women aged 15-64) (%)	70.0	72.3

Table 8: Policy indicators[97]

Indicator	2008	Latest available
Poverty rate (% below national poverty line)	14.6	12.8 (2014)
Collective bargaining coverage (% workers)	47.7	50.6 (2014)
Labor income share (%)	61.4	63.0 (2015)
Proportion of 20-24 year olds with Year 12 equivalent or higher qualifications 8 (graduation from post-mandatory education)	84.2	87.1 (2017)

AISAP
From July 2014 to October 2017, the program helped 809 workers with 761 job placements into sectors such as manufacturing, transport and logistics, construction and professional services.[98]

Skills Checkpoint Pilot
As noted earlier in this case profile, the Skills Checkpoint Pilot in 2015 was a program to increase the participation of mature age people in the workforce. The pilot received enthusiastic support from participants, with 56% of them rating the program as a 9 or 10 out of 10, and a further 23% rating it as a 7 or 8 out of 10. The pilot evaluation will inform the design of the main program.

4.2.4 Lessons Learned

Lessons learned from AISAP:
Target assistance to workers facing the greatest employment challenges: There are challenges with provided special assistance to a certain sector, such as equity issues across sectors, and the contingency that resources are spent on workers that would have otherwise found employment without additional assistance simply because they are in the automotive sector. In some cases under the AISAP, retrenched automotive manufacturing employees would receive more support than jobseekers who faced more acute disadvantages.[99] Based on these findings, the evaluation of AISAP recommended that assistance could be better targeted towards workers facing the greatest challenges in finding a new job, and assistance to sectors should not exceed what is generally available.[100]

Generally available adjustment measures in the 'social safety net' are favorable to targeted adjustment assistance to specific sectors: social security and tax systems are favorable in that they provide assistance to those in need rather than particular industries and minimize administration and monitoring costs of assistance. Additionally, evidence from other economies also shows that economy-wide costs are incurred from special assistance provided to the automotive sector and generally have poor results.[101] However, the Government must ensure these general welfare programs are well resourced to handle retrenched automotive employees, but notes that this may be insufficient to handle all contingencies and thus recognizes a role for targeted adjustment assistance "to improve the efficiency of the adjustment process or to address distributional concerns."[102]

Regional structural adjustment funds and large-scale infrastructure projects are costly and inefficient measures for workforce adjustment: The program evaluation cited a study that found that structural adjustment funds in Australia between 2004 and 2010 "did not appear to have significantly affected overall long-term employment trends in the relevant regions, and did not result in the regions performing any better than other regions that lost a major employer but did not receive any additional government assistance." The Commission concluded that plans for such programs in various Australian authorities involving measures such as infrastructure spending, promoting investment in certain sectors and relocating public service functions to impacted regions would be inefficient measures to promote long-term employment.[103]

Lessons learned from the 2015-2016 Skills Checkpoint Pilot initiative:
The 2015-2016 Skills Checkpoint pilot initiative for assistance for mature workers produced the following insights for program design that may be transferable to similar programs in other economies: [104]

Customize approaches to worker needs: Tailored approaches to client needs are effective and should be pursued.

Utilize client feedback and demand: Client demand should be assessed to determine what services can be added to the program to improve outcomes and satisfaction. Possible services could include interview and job search knowledge and skills; advice and feedback of resumes; follow-up career coaching; opportunities to interact with other participants; mental health support and referrals; financial support for training; and direct linkage to employment opportunities.

Select service providers based on their capabilities: Relevant capabilities include:
- Ability to engage with clients
- Expertise in career development/transition
- Knowledge of recruitment practices, labor markets, industries and occupations
- Ability to provide customized/tailored services
- Linkages to relevant networks and other helpful services

4.3 Japan

4.3.1 Economy Trade & HRD Policies

Table 9: Economy stakeholders and programs

Government entities responsible for trade and HRD policies	Ministry of Economy, Trade, and Industry (METI) Ministry of Foreign Affairs (MOFA) Japan External Trade Organization (JETRO) Ministry of Internal Affairs and Communications (MIC) Ministry of Education, Culture, Sports, Science, and Technology (MEXT) Ministry of Health, Labor, and Welfare (MHLW)
Major domestic skills training organizations and NGOs for HRD	METI Information-technology Promotion Agency (IPA) Japan Science and Technology Agency (JST) RIKEN[105] Private institutions with MHLW certificates (see 4.3.2.3 for more details)
Notable programs for inclusive trade and displaced workers	Employment Adjustment Subsidy Program (EAS) Trainings for displaced workers Employment Creation Fund Projects
Significant sectors for inclusive trade assistance	ICT Manufacturing Agriculture

Background/History
Japan is pursuing liberalized trade through the promotion of economic partnership agreements (EPAs) and free trade agreements (FTAs), with 18 agreements signed since 2002 including large-scale multilateral ones in recent years.[106] [107] Japan's Growth Strategy 2018, the latest economic strategy released in June 2018, states that the government will boost economic growth through helping Japanese businesses expand their operations overseas and assisting local small businesses to take advantage of global demand from developing and growing economies. [108]

In contrast with growing protectionism in other parts of the world, public support for liberal trade policies is strong, in part because the trade-induced negative effects have been felt less compared with other economies. Experts have noted that although Japan lacks specific trade adjustment programs, Japan's uniquely rigid labor market and strong support for workers leaves "fewer gaps for trade-induced shocks."[109] [110]

Building on the existing and strong social support for displaced workers and businesses with economic difficulties, Japan seeks to go beyond just mitigating negative effects of trade and tries to help businesses and works to take advantage of the changes caused by globalization and technical advantage. For example, Japan has a series of programs to assist micro, small and medium enterprises (MSMEs) in accessing opportunities in overseas markets, thus increasing MSMEs' access to the benefits of trade and creating employment.

Japan has also been implementing a series of initiatives aimed at developing digital skills among students, workers, researchers, and entrepreneurs. Facing major challenges such as an aging and shrinking population, Japan sees AI and other ICTs as parts of the solution. As shown in its newly introduced concept of "Society 5.0 (see below for more details)", Japan hopes to come up with AI and ICT-enabled solutions for various challenges faced by economies around the world. Nevertheless, these advanced technologies also pose threats for existing workers whose jobs may be replaced by AI in the near future. Japan also aims to maintain its relevance in the heated global competition to develop cutting-edge AI and IT products. The economy's determination to tackle these challenges is evident in its recently drafted "AI Strategy 2019[111]", which will require AI education for all college students. The efforts that have formed the foundation of this future plan will be further explained in the following sections of this case study profile.

Skills Development and Inclusive Trade Goals
In addition to the aforementioned support for Japanese businesses to expand in overseas markets[112], the Growth Strategy 2018 puts forward the concept of the "Society 5.0", or the society that solves social issues through the technologies of the fourth industrial revolution in order to "achieve a better and more sustainable future for all." Japan hopes to develop solutions for some of the United Nations' "Sustainable Development Goals (SDGs)[113]" through the effort and export them to other economies in the future.

Japan's Growth Strategy 2018 targets "taking advantage of growing markets overseas", including doubling the export and revenue from foreign subsidiaries of MSMEs to 25.6 trillion Yen by 2020.[114] Other trade goals include increasing the ratio of trade with FTA partners among all of Japan's foreign trade to 70% by the end of 2018 (18.9% in 2012) and increasing FDI inflows to 35 trillion Yen (19.2 trillion Yen in 2012).

Labor Force Challenges:
Japan faces several labor force challenges to meet the goals of the Growth Strategy 2018:

- **Aging society:** Measured by the portion of people over 65 years old, Japan is the oldest society. This ongoing demographic pressure creates challenges in increasing and sustaining economic growth.[115]
- **Increasing tech professionals:** In order to satisfy goals in the Growth Strategy 2018 to introduce AI, robotics, and automation tools to solve social issues, there is an issue of labor shortage in the high-tech fields in Japan. Japan is currently facing the shortage of IT professionals, especially in the field of advanced IT such as AI. Additionally, Japan's aging population with a low birth rate[116] exacerbates labor shortages. According to the

report provided by METI in 2016, the economy was short of 171,000 IT professionals, and the number was expected to worsen to 369,000 in 2020 and 789,000 in 2030.[117] Japan is also struggling to attract more young workers to the tech field – even though the math and science literacy of Japanese students is the second highest among the OECD economies, many of the top students in those fields enter medicine instead of tech-related disciplines.[118] Furthermore, 60% of college entrants choose social science degrees instead of STEM disciplines.

- **Increasing tax revenues:** Tax revenues need to be raised to meet the social spending for the exponential rise of health and long-term care spending to maintain accessible care for the general population.[119]
- **Improving productivity:** Productivity of Japan is relatively low at 25% below the top half of OECD. This means that the Japanese work longer to arrive at an income that is 20% lower than the top half.[120]
- **Income inequality:** Labor market dualism is leading to income inequality, especially the one between regular workers (or workers under "open-ended, fulltime, direct employment")[121] and non-regular workers. The wages of non-regular workers stagnate at certain level because they have less seniority.[122]
- **Participation of women in labor market:** According to the joint statement by Japan and IMF in 2017, although the number of females involved in the labor market increased by 1.6 million, there is still a room for further improvement through more accessible childcare, reduced working hours, and measures to promote equal pay.[123]

4.3.2 Current Initiatives and Programs for Inclusive Trade

The following initiatives and programs focus on labor adjustment and supporting displaced workers.

4.3.2.1 Existing safety-net for vulnerable workers

Japan has a series of safety nets in place for workers vulnerable to societal changes, such as those caused by globalization and technological advancements. While no adjustment policies in Japan specifically address the issues related to inclusive trade, the existing safety-net programs support workers to adjust to social and industrial shifts or displacement.[124] Examples include:[125]

- **Employment Adjustment Subsidy (EAS):** A set of subsidies for firms to pay sums equal to the wages of employees whom they would lay off if the subsidies were not provided. The subsidies can also be used to provide training for potentially displaced workers to meet labor market demands. Subsidies for job seekers, such as vocational training, are also available. Workers impacted by trade-related economic shocks are eligible for subsidies.
- **Employment Measures for vulnerable workers:**[126] MHLW provides support measures to assist the employment of youth, elderly, disabled, and foreign workers. The measures are focused on job-matching support and advertisements provided through the public employment service agencies overseen by MHLW.
- **Measures for Local employment:** The Act on Promotion of Job Opportunities in Certain Regions offers supports and subsidies based on plans that are created by prefectural or municipal governments. The Employment Creation Fund provides funding for people who suffered from natural disasters, low income regions (e.g. Okinawa), for seasonal workers from rural agricultural areas, and for local employment seekers from urban areas.
- **Employment insurance system:** Benefits for unemployed workers include support for job applicants, employment promotion, education and training, continuous employment, and spending on unemployment.
- **Public Vocational Training**[127]**:** The central and prefectural governments are responsible for "providing vocational training for workers who intend to change their jobs and other persons who need assistance for the development and improvement of their vocational abilities." The trainings are open to unemployed and employed workers, include workers with disabilities and students.
- **Trade Skill Testing and Certification:**[128] These include the "National Trade Skills Testing System" and the "In-house Trade Skills test." The National Trade Skills Testing System tests workers with experience in practice for broad common trade skills in 126 occupations.

The In-house Trade Skills test is a system where MHLW evaluates and certifies skills/knowledge examinations voluntarily given by companies to their employees so that businesses can promote their in-house skills test as a legitimate qualifications for various business purposes (e.g. attracting young talents, proving employees' skill set to clients, getting ahead of competitors).[129] As of 2017, MHLW certified in-house examinations for skills used for 127 occupations at 48 enterprises.

Other adjustment policies are in place for displaced workers, for example[130]:

- **Post-crisis Employment measures:** Employers who are forced to reduce the size of their business due to shifts in business cycle or industrial structure can receive a subsidy if they have maintained their employees during difficult times through temporary adjustments such as lay-offs or vocational training.[131]
- **Public Training for displaced workers:** Workers covered by unemployment insurance may receive training for 3-6 months when they are unemployed. The training is implemented by private institutions that are certified by MHLW.
- **Employment Creation Fund Projects:** This fund has supported employment projects that created over one million jobs from 2008-2012.

4.3.2.2 Support for Foreign Expansion by MSMEs

Japan's Growth Strategy 2018 outlines the goal of facilitating opportunities for MSMEs in international trade, which can help to more equitably distribute the benefits of trade among Japanese society. JETRO, a quasi-government agency overseen by METI, and other agencies like MAFF, Japan Bank for International Cooperation (JBIC), and National Tax Agency (NTA) supports Japanese MSMEs to export to and expand in overseas markets by[132]:

- Providing hands-on support through regional chambers of commerce and local financial institutions around Japan;
- Supporting MSMEs to utilize e-commerce to export their products and services, while collecting and analyzing data on buyer needs in each importing economies;
- Helping MSMEs educate and train their existing workforce who can lead their efforts to expand their businesses overseas (The efforts include support for MSMEs to attract highly-skilled foreign professionals);
- Fostering innovation among MSMEs to build on past successes;
- Backing up MSMEs to enter high-risk high-return markets (e.g. markets with little past exports/investments from Japan) to generate success stories and methodologies for other businesses to follow;
- Improving business environment in each target economy through on-the-ground support to solve issues unique to each economy and networking support;
- Assisting businesses to have their intellectual properties (IP) recognized and protected in each target economy;
- Public financial institutions offering support for MSMEs through foreign transaction support, consultation and information services, and trade finance and bank loans; [133] and
- Protection and promotion for produce and food products exported by MSMEs through geographical indications (GI)[134].

4.3.2.3 Certifications and Programs for Validating and Developing Digital Skills

Skills certifications are a valuable component of lifelong education that assists workers to demonstrate the value of their skills and helps employers to identify qualified workers. Since there is constant demand for workers with digital skills, obtaining digital skills certifications is one step for workers to secure better employment, thereby promoting inclusive growth. Japan has several examinations provided by different ministries that aim to develop digital skills.

Fourth Industrial Revolution Skill Development Course Certification

METI provides this certification for educational and training courses on IT and/or data usage offered by academic or private institutions to help professionals attain skills and knowledge that are needed in today's job market. The topic areas that can be nominated include (1) AI, IoT, data

science, and clouds, (2) advanced-level security or network, and (3) applied use of IT in other industries such as manufacturing or production system.[135] Certified courses may also qualify for the Education and Training Grant System provided by MHLW.[136]

Information-Technology Engineers Examination (ITEE)
The Information-technology Promotion Agency (IPA) of Japan, which is overseen by METI, provides standards for professional IT qualifications. ITEE was established in 1970 and approximately 600,000 people apply to the exam every year. Japan has established mutual recognition agreements (MRAs) with 12 economies for ITEE.[137]

Information Technology Professionals Examination Council (ITPEC) Common Examination
This is an assessment tool that measures the IT skills and knowledge of IT engineers, helping them to compete in the global market. The examination is coordinated by Japan's IPA, and covers three fields: technology, management, and strategy. The exam is conducted in 7 participating economies twice a year. Since they are overseen by the respective economies' governments, they are widely regarded as reliable source of assessment.[138]

4.3.2.4 Initiatives Spotlight - Human Resources Development of AI Professionals

Background: The rising impact of AI on the jobs market has brought attention within Japan to some of the challenges that it faces in its domestic talent market. These challenges include the lack of international salary competitiveness, associated with unstable employment of young skilled workers and a lack of support for creative entrepreneurs and innovators[139], as well as gender inequality in the ICT sector[140]. As a result, Japan has implemented several policies to encourage HRD for AI professionals that can potentially encourage inclusive growth in Japan (and in the Asia and Pacific region) through equipping college graduates with knowledge of AI to enhance the competitiveness of Japanese companies of all sizes, including MSMEs. AI education can also help to address the labor shortage in the IT field[141], making the Japanese workforce more resilient to changes brought by technological advancement. Japan hopes to develop the digital literacy of the population as a whole, to prepare all workers, including less-skilled workers, and businesses, including MSMEs, for drastic changes in work and trade caused by technological advancement[142].

Goals: Japan's goals for AI education are outlined in the "AI Strategy 2019"[143], a cabinet-level strategic policy document that has been drafted[144] and is expected to be passed during the plenary meeting of the Cabinet in the summer. The strategy proposes that coursework in "math & science, data science, and AI" should be added to the curriculum for all students attending 4-year universities and technical colleges (approx. 500,000 graduates per year in Japan), in order to develop a workforce that can apply the knowledge of AI in their respective fields. The strategy emphasizes international collaboration and sets out to expand the educational model to other economies, especially those in the APEC region, if it succeeds in Japan.

Activities: Japanese ministries have supported AI education through 4 key pillars:

1. **Educational reform**: The government has adopted new curriculum guidelines for primary and secondary education to incorporate IT and programing skills, which will go into effect in 2020. The government and universities are also working to encourage expanded IT education at the university level, such as through a consortium of 6 universities with centers on math, science, and data science to expand the data science education to all students and the public through Massive Open Online Courses (MOOCs). The government is also working to form a larger network of universities focused on education and training for students and working professionals in big data analysis and AI application through real-life problems.
2. **Skills certifications and education for professionals**: The government is providing several educational programs for skills required for work in advanced emerging fields, such as:

a. The New Energy and Industrial Technology Development Organization (NEDO) offers a special course to train work-ready young AI professionals at the University of Tokyo and the University of Osaka. NEDO also provides training programs for data-related professionals, including career development support for post-doc and PhD students, and a skills acquisition program certification system for mid-career professionals.[145]
b. IPA administers a development and training program for IT professionals in "Mi-Tō (or unexplored)" fields. The program aims to develop and train experts who can work in new and innovative fields.[146]
c. Similarly, Japan Science and Technology Agency (JST) offers funding to support innovative thinking and challenging work by young researchers. The selection and promotion of studies are jointly operated with the Center of Advanced Intelligence Project (AIP) of RIKEN, a research institution.

3. **Collaboration between industry and educational institutions**: The government is committed to fostering public and private consortia on AI education.
4. **International collaborations**: Japanese ministries have been looking into ways to create collaborations between advanced IT workers in Japan and other economies. One such effort involves METI-sponsored lectures given by professionals from Japanese companies at universities in economies in the Asia and Pacific region, namely Viet Nam and Myanmar.

Participating entities: MIC, MEXT, MHLW, and METI are all active in AI strategic planning. Agency-level entities that are active in AI education include NEDO, IPA, and JST.

4.3.3 Achievements

One can use the utilization rate of the free trade agreements (FTAs) as a measurement to see the effect of all the efforts by Japanese government in fostering inclusive trade. According to the annual company survey conducted by JETRO, out of the Japanese companies that export to more than one economy who had an FTA with Japan in effect[147], almost half (48.2%) of the companies took advantage of preferential tariff rates made possible by FTAs in 2018, representing a 40% increase in the amount of companies utilizing FTAs over 2008.[148][149]

Including companies that intend to take advantage of preferential tariff rates in the future, the number goes up to more than two thirds (72.5%). The number is increasing at a faster pace in recent years – the latest annual increase rate at 7.3% (3.3 percent-point) between the years 2017 and 2018, compared to 4% annualized increase rate in the past decade[150]. When looking at the size of companies, the FTA utilization rate is higher for large corporations (64.4% in 2018) than for MSMEs (43.8% same year), but the number is increasing faster for MSMEs than the rest of the companies – the latest annual increase rate for MSMEs is at 11.7% (4.6 percent point) between the years 2017 and 2018.[151]

Table 10: FTA Utilization Rate among Japanese Exporters to FTA effective economies

	2008	2015	2016	2017	2018	Difference 2017-18	
						Percent-point	ratio
All companies	34.2	38.3	45.1	44.9	48.2	3.3	7.3%
Large corps.	N/A*	52.2	57.1	63.5	64.4	0.9	1.4%
MSMEs	N/A*	33.2	40.6	39.2	43.8	4.6	11.7%

* Data unavailable.

Source: Created by Washington CORE based on JETRO reports[152]

For how IT skills are used for trade, the utilization rate of e-commerce may be one good measurement. According to the same JETRO survey, 30.3% of all the surveyed companies used e-commerce for domestic and/or international sales, 24.2% (5.9 percent-point) increase in 2 years between the year 2018 and 2016[153]. Here again, the increase rate is higher for MSMEs (28.0%; 6.6 percent-point) than for large corporations (12.2%; 3.3 percent-point), and about the same percentage (approximately 30%) of both large corporations and MSMEs now use e-

commerce. Furthermore, out of these companies engaged in e-commerce, more than half (52.8%) of them used e-commerce for overseas sales. The rate has increased 5.6 percent-point from that of the year 2016 (47.2%), and the increase is mostly attributed to the companies that use e-commerce to export products and services from Japan, as opposed to overseas subsidiaries utilizing e-commerce in their designated markets. A larger percentage of MSMEs than large corporations responded using e-commerce to export products and services.

Table 11: Use of E-Commerce among Japanese businesses

Utilization Rate	2016	2018	Difference 2016-18	
			Percent-point	ratio
All companies	24.4	30.3	5.9	24.2%
Large corporations	27.1	30.4	3.3	12.2%
MSMEs	23.6	30.2	6.6	28.0%

Purpose of e-commerce*	All companies	Large corporations	MSMEs
Domestic Sales	78.6	75.4	79.4
Overseas Sales	52.8	51.9	53.0
Export from Japan	40.3	27.8	43.1
Overseas subsidiaries	22.8	38.5	19.3

* Multiple answers are allowed, and the ratio does not add up to 100%.

Source: Created by Washington CORE based on JETRO reports[154]

For more sophisticated IT skills than the use of e-commerce, Japan's efforts are still premature to measure any achievements. However, several measures can demonstrate early outcomes:

- Since the beginning of the development and training program provided by IPA for IT professionals in unexplored fields, the program identified and trained approximately 1,700 IT experts and over 255 of the alumni have started their own business based on the software developed in the program, where six of them have achieved over 10 billion market capitalization. Many of them currently work in the AI related fields[155].
- Receiving funding from MEXT, research organizations such as RIKEN with the Center of Advanced Intelligence Project (AIP Center) and the Japan Science and Technology Agency (JST) has been training young talents in utilizing AI. The AIP Center has hired 14 principal investigators (PIs), 68 Part-time researchers and 30 trainees who are Japanese university students, 72 researchers from industry, and 33 foreign students from 8 economies.[156]
- JST has been providing research funding for 30 young scholars each year since 2016, with initial funding of up to JPY 5 million for 1.5 years with a possibility to receive additional JPY 10 million for the subsequent 2 years (about a third of the funded researchers received the additional funding).

4.3.4 Lessons Learned

IT skills development: Japan is a good example of an economy that is preparing its workforce for the future by investing in skills development for IT. In order to realize its vision for the "Society 5.0", Japan is planning to implement several policies to encourage HRD for AI professionals that can potentially encourage inclusive growth in Japan and in the Asia and Pacific region. Japan's plans to implement mandatory AI classes for college students may help to enhance the competitiveness of Japanese companies of all sizes, including MSMEs, and is expected to help address the labor shortage in the IT field, making the Japanese workforce more resilient to changes brought by technological advancement. The ripple effects from developing the digital literacy of the population as a whole may also help less-skilled workers to retain employment and to contribute towards and benefit from international trade in the future.

In addition, skills certifications are a valuable component of lifelong education that assists workers to demonstrate the value of their skills and help employers to identify qualified workers. Obtaining certifications in desirable fields (such as IT) is a valuable tool for workers to secure better employment, thereby promoting inclusive growth. Japan's ITEE has a 40-year history of providing certifications for IT professionals, and now is expanded to 12 other economies as the ITPEC common examination, providing certifications mutually recognized across borders. In addition to providing its own certifications, the Japanese government also selectively support various training programs provided by private organizations that it believes are needed to prepare Japan's workforce for the fourth industrial revolution. This way the government can react quickly to changing demands from the industry for workers with latest and advanced skills.

Social safety net and trade-induced shocks: A strong social safety net can be effective at mitigating many of the negative impacts on workers of trade-induced economic shock. A combination of unemployment insurance, subsidies for job creation, skills training and other measures can ensure workers impacted by trade receive needed support during times of adjustment while they are equipped with the skills to succeed in a dynamic economy. Measures such as expanding the eligibility for programs can be used to target more drastic adjustment challenges.

Consolidating economy-level resources: By listening to businesses on what information is needed in what form, the Japanese government pulled together its resources scattered across various agencies through the leadership of its cabinet. This has not only improved the way the government provides information about tools to ease barriers for trade, such as FTAs, GI, and protection of IPs, but has also encouraged these government agencies to start actively assisting MSMEs to expand their international businesses in a more coordinated manner, both in Japan and overseas.

4.4 Singapore

Table 12: Economy stakeholders and programs

Government entities responsible for trade and HRD policies	• Ministry of Trade and Industry (MTI) • Ministry of Education • Ministry of Manpower
Major domestic skills training organizations and NGOs for HRD	• Institute for Technical Education • SkillsFuture Singapore (SSG) • Workforce Singapore (WSG)
Notable programs for inclusive trade	• SkillsFuture • Adapt and Grow • Professional Conversion Program (PCP) • SMEs go Digital
Significant sectors for inclusive trade assistance	• Services • ICT

4.4.1 Economy Trade & HRD Policies

Background/History
Singapore's approach to economic development and its strategies for education and training are closely linked as part of an overall strategy to increase the supply of highly skilled labor to match industry needs.

Singapore restructured its educational system in the 1990s as it transitioned to a knowledge-based economy, and the government has focused on ensuring that higher education could meet industry needs through polytechnics that provide mid-level technical, management and service skills, while universities focus on higher-order skills for government and commercial activities. This model creates a skilled labor base to attract foreign companies, while stimulating growth

through creating the foundation for innovative technology development and technology entrepreneurship, commercially relevant research, and attracting foreign talent.[157]

Economists have argued that Singapore's higher education system is 'design-centric' and 'development oriented', in that "higher education institutions and policies allude to the presence of a set of policy 'tools' that can be applied to the attainment of economic development goals." [158] Higher education and education policy provide policy support for economic development, as well as numerous interrelated goals such as achieving equitable social outcomes through access to post-secondary education. A large part of this strategy is aligning university education with industry needs to create a post-secondary education system that drives innovation, technology development and entrepreneurship while attracting large foreign enterprises. This includes the establishment of research and industry clusters that leverage science and technology universities as well as large government-driven investments in R&D.[159]

Skills Development and Inclusive Trade Goals
According to the International Labor Organization (ILO), there are five key elements to skills development policies in Singapore: [160]

1. **Singapore has historically been successful at linking economic development polices with skills development**. This has included skills development policies to support various industrial strategies, with a focus on innovation and entrepreneurship-focused policies through emphasizing creativity in the basic education system from the mid-1990s forward
2. **The skills and technology transfer model of the Singaporean system provides incentives for foreign investors to collaborate with the economy government to establish training centers in exchange for access to skilled graduates**. This model allows for the economy government to supply skilled labor to participating foreign investors in the short-term, and also creates a steady supply of skilled labor for other employers.
3. **The Skills Development Fund, established in 1984, requires employers to contribute 1% of the gross salary of all employees earning less than US$1,500 per month,** of which 80% can be recouped through grants for skills development that are tailored towards in-demand skills, with larger grants available for training that covers more employees.
4. **Long-term reforms in education policy have enabled skills development**, such as reforms in the 1990s to foster creativity in school children.
5. **Institutional coordination among organizations responsible for trade, economic development and upskilling of workers occurs under a system of committees**. This creates a system in which skills development is responsive to industry demands, where firms can be referred to appropriate skills training institutions to find skilled employees.

Labor Force Challenges
Singapore's economy is rapidly restructuring to meet current market needs and incorporate emerging technologies, and has generally experienced high productivity and growth, although domestic services generally lag behind export-oriented industries such as manufacturing.[161] Singapore's economy faces challenges from uncertainties in the global economy due to growing trade conflicts, nervous financial markets, and slowing global growth.[162]

Responsible authorities:

Organization (agencies under the same ministry are shaded together)	Responsibilities
Ministry of Trade and Industry (MTI)	Responsible for trade and industrial policy and is responsible for several agencies for skills development
Economic Development Board (EDB)	A semi-autonomous agency under MTI that is tasked with attracting FDI and meeting foreign investors' demand for skilled labor

Organization (agencies under the same ministry are shaded together)	Responsibilities
Productivity and Standards Board (PSB)	Works with the EDB to meet the needs for FDI and skilled labor
Council for Professional and Technical Education (CPTE)	Responsible for ensuring skills development matches the supply and demand conditions in the economy.[163]
Future Economy Council (FEC)	A multi-stakeholder council[164] that is tasked to drive growth and transformation in the economy, support SMEs, drive the upskilling of workers, and develop clusters to achieve synergies across sectors.[165]
Ministry of Education	Has authority over schools, polytechnics, universities and the Institute of Technical Education.
SkillsFuture Singapore (SSG)	A statutory board under the Ministry of Education to drive the implementation of SkillsFuture, an initiative to promote lifelong learning and skills development through education and training. SSG is also responsible for quality assurance for adult training and private education institutions.[166]
Institute of Technical Education	Public vocational education institute for secondary-school graduates and continuing education for adults.[167]
Ministry of Manpower	Responsible for the formulation and implementation of labor policies related to the workforce in Singapore.
Workforce Singapore (WSG)	A statutory board under the Ministry of Manpower that is responsible for overseeing the transformation of the workforce to meet economic challenges and maintain "competitiveness, inclusiveness, and employability of all levels of the workforce."[168]

4.4.2 Current Initiatives and Programs for Inclusive Trade

4.4.2.1 Active Labor Market Policies

Industry Transformation Program
The Industry Transformation Program is a key strategic initiative of the MTI. The S$4.5 billion program and its associated Industry Transformation Maps (ITMs) have been launched for 23 industries under 6 clusters in 2016-2018.

The ITMs seek to ensure that the skills that citizens require are applicable to available jobs in industries that contribute to economic development goals.[169] They outline plans for productivity improvement, innovation, internationalization, and skills development to promote growth and competitiveness for each industry. The ITMs were developed through collaboration between government, small and large firms, Trade Associations and Chambers (TACs) and unions. The Future Economy council (FEC) will implement the ITMs.[170]

The Government has launched two schemes to achieve the goals laid out in the Industry Transformation Program: Adapt and Grow, and SkillsFuture.

Adapt and Grow
The Adapt and Grow program by Workforce Singapore (WSG) is designed to help citizens develop their careers amid changing economic conditions. It targets individuals planning a career transition, searching for career guidance or looking for a job. Services are split across 3 categories of beneficiaries:

Beneficiary category	Services
Career Guidance	Career coaches located at NTUC centers.
	Career workshops and events
Career transition	Mid-level PMET opportunities with salary support

Beneficiary category	Services
	Reskilling and placement opportunities in 20 growth sectors.
	Career opportunities with SMEs.
	Work trials with host companies for up to three months.
Job search	The Government maintains a 'jobs bank', where seekers can see jobs that match their skills and employers can post open positions.[171]

The Professional Conversion Program (PCP) under Adapt and Grow is a career conversion program that assists mid-career professionals in reskilling and taking on new job roles, and it provides beneficiaries with access to government funds such as the Course Fee Grant and Salary Support/Training Allowance.[172] Specific programs include:

- **Place-and-Train:** professional is hired by a participating employer before undergoing training to take on new job role.
- **Attach-and-Train:** professional is provided with training and work attachments, in advance of job placement, through industry partners in growth sectors with good future job opportunities.
- **Redeployment:** professionals facing redundancy by existing employer are provided with training to take on new roles within that employer.

4.4.2.2 Initiative Spotlight: SkillsFuture

Background: The SkillsFuture scheme is a lifelong learning initiative that "provide[s] Singaporeans with the opportunities to develop their fullest potential throughout life, regardless of their starting points." The program was implemented in 2016 and is administered by the SkillsFuture board under the Ministry of Education. It includes both labor policy outcomes as well as other policy instruments that address a wider range of beneficiaries over a longer period.

SkillsFuture provides the direct disbursement of government funds for skills training, subsidies and work placements, as well as information provision and planning activities to encourage citizens to choose new skills to better align their competencies with industry demand. The Government of Singapore describes the initiative through four key 'thrusts':

1. Help individuals make well-informed choices in education, training and careers.
2. Develop an integrated high-quality system of education and training that responds to constantly evolving needs.
3. Promote employer recognition and career development based on skills and mastery.
4. Foster a culture that supports and celebrates lifelong learning.[173]

The programs contribute to economic development goals through human capital development, while some address societal goals such as individual and community development more broadly. Economic development goals include promoting human capital development through education and training, creating an education and training system that is responsive to industry needs and highlighting employers with policies that are supportive of the skills development of employees.

The social policy component of the program aims to promote equity and social inclusivity in society through increasing upwards mobility through creating more educational and training opportunities.

Direct Support to Students and Learners
SkillsFuture includes several programs with some type of industry placement:

- The **Work-Study Degree program** allows students to acquire technical and essential generic skills to prepare them to graduate and enter the workforce. Curricula and on-the-job training are closely integrated through partnerships between companies and universities offering this program. In addition to training and career opportunities, students can receive

tuition fee sponsorship, stipends and sign-on bonuses from companies. Partners include both government agencies and private companies.[174]

- The **Earn-and-Learn Program**, targeted towards fresh graduates from the polytechnics and the Institute of Technical Education (ITE), allows employers to recruit recent graduates and prepare them for suitable job roles. Thus, graduates gain access to high quality training, income, the potential to acquire industry-recognized certifications and qualifications, and a structured career progression pathway, while employers gain access to educated graduates and the opportunity to receive grants up to S$15,000 per individual to cover costs of training. The program is currently active in 25 sectors.[175]
- The **Mid-Career Enhanced Subsidy** provides lifelong learning support to Singaporeans aged 40 and older to mitigate the challenges mid-career individuals face in undertaking training. Participants can receive up to 90% of course fees for over 8,000 courses recognized by the program in autonomous universities, polytechnics and ITE.[176]
- The **SkillsFuture Qualification Award** encourages lifelong learning among all employed Singaporeans by providing incentives up to S$1,000 to attain qualifications under Singapore's credential system (Workforce Skills Qualifications, or WSQ)

Developing New Skills and Competencies

Several SkillsFuture programs specifically highlight the need to prepare Singaporeans to participate in Singapore's "transition to an innovation-driven economy" in which "new skills and competencies among Singaporeans will be in demand.":

- **SkillsFuture for Digital Workplace** is a future-oriented initiative to assist adults and workers to "understand emerging technologies and how they impact work, interpret and use data, and adopt a positive mindset for change, innovation and resilience." Objectives of the program include providing participants with an understanding of the types of jobs in the future economy, how to use digital technologies, the importance of cybersecurity, and how to apply this knowledge to their skills and career development. Programs include those targeted towards general digital skills, as well as specific sectoral courses such as Food Services and Hospitality, and Retail.[177]
- **SkillsFuture Series** specifically addresses emerging skills through the provision of short, industry-relevant training programs in data analytics, finance, tech-enabled services, digital media, cyber security, entrepreneurship, advanced manufacturing, and urban solutions. The courses focus on innovative technology in the sector in addition to fundamental topics.[178]
- The **SkillsFuture Study Awards** encourage mid-career citizens to develop specialist skills in future economic growth sectors as well as other competencies. Participants can receive up to S$5,000 to defray expenses associated with courses. For example, in the healthcare sector, Study awards support healthcare workers to deepen skills and knowledge in Aged Care, Healthcare IT and Data Analytics, and Healthcare System Design, Organisation and Delivery.[179]
- **SkillsFuture Fellowships** provide up to S$10,000 for those with at least 10-years working experience in a given sector to "recognise and support Singaporeans who have displayed skills mastery in their respective fields as well as personal commitment to mentorship and the skills development of others."

Information Provision and Planning

SkillsFuture leads collaboration between sector lead agencies, unions, employers and other stakeholders to design and implement frameworks for career advancement in key sectors. These "Sectoral Manpower Development Plans" (SMDPs) identify skill requirements over a five-year period and outline a holistic package of measures that meet those requirements. SMDP plans can include initiatives such as place-and-train programs, overseas structured training for professionals, and career conversion programs targeted towards mid-career professionals. Each SMDP identifies key industry priorities and the associated strategies to achieve them. The table below shows an example of priorities identified by the Biologics SMDP:

Industry Key Priority	Strategy
Meet high demand for skilled manpower	Build pools of skilled talent in technical and management positions.

Industry Key Priority	Strategy
Improve relevance of training programs.	Enhance current training provisions to meet the needs of current and future competencies.
Talent attraction and retention	Profile industry to improve attraction and retention.

Recognition of Employers and Training Providers
Employers who "have made significant efforts in investing in the skills development of their employees and have developed skills-based career pathways for their employees" can receive recognition under SkillsFuture through the Employer Awards, which includes a category for SMEs as well as non-SMEs. The program aims to recognize participating employers in the program who create a culture of lifelong learning in their workplace, prioritize the development of skills and mastery by employees and align employee development efforts with other manpower objectives.[180]

SkillsFuture has also launched iNnovative Learning 2020, or iN.LEARN 2020, a learning innovation initiative to promote blended learning in Continuing Education and Training (CET) through providing capability building, infrastructure support, and resources provision support to training providers. This includes tools for e-learning and innovative technology-based pedagogies, supporting partnerships with industry, other resources such as facilities, as well as grants.[181]

4.4.2.3 Initiatives and Programs for Digital Skills Development

SMEs go Digital
Announced in 2017, SMEs Go Digital is a S$80 million program that facilitates the adoption of digital technologies by MSMEs through specialist advice and consultancy services. It provides skills development and lifelong learning for employees as well as pre-approved digital solutions for MSMEs in the logistics and retail sectors.[182]

The program has three stages. In the first step, the business consults a step-by-step guide on digitalization for their sector referred to as an Industry Digital Plan, which are available for the Media and Wholesale Trade sectors, and then can apply for grants to procure pre-approved solutions. Local SME centers provide consultancy and project management support to participants.[183]

ICT SMEs Capability Development
This program administered by IMDA is aimed at SMEs in the ICT sector so that they can "develop digital capabilities and keep in pace with new technologies and industry practices to remain competitive and relevant in a Digital Economy." This includes capacity building programs for MSMEs for specific topics including cybersecurity as well as cloud computing.[184] Other supports provided by IMDA include grants for fiber internet in non-residential buildings and funding for the development and production of prototypes and pilot content integrating the use of data/digital technologies, and production assistance.[185]

4.4.2.4 Initiatives and Programs for MSMEs
Both programs in the Digital Skills Development section above are targeted at SMEs.

4.4.3 Achievements

Adapt and Grow
In January 2019, it was reported that about 30,000 workers found jobs through the Adapt and Grow initiative throughout 2018, a 5,000 increase over the figure of 25,000 from 2017.[186]

SkillsFuture
In 2018, the program benefitted 465,000 citizen and 12,000 enterprises, with 431,000 credits and 41 employers awards distributed and a total of 52,000 individuals attending workshops. The

program also created a number of programs in various sectors, including skills frameworks for 25 sectors and work placement programs.

SMEs Go Digital
The SMEs Go Digital program had 4,000 beneficiaries from its inception up until February 2019.[187]

4.4.4 Lessons Learned

Singapore is an example of the success of demand-driven education, training and skills development policy. The use of effective governance arrangements that unite different agencies and stakeholders has led to the development of an internationally recognized skills development system, thus overcoming the pervasive challenge of creating industry-relevant programs. Ensuring communication and coordination between agencies, industry, unions, trade associations and advanced foreign firms allows for programs to contribute towards economic development while mutually benefiting stakeholders through aligning skills demand and supply.[188]

Since most of the programs profiled in this case study have been created in the past 1-3 years, there hasn't yet been sufficient time for a public report on the lessons learned. However, academic analysis of the SkillsFuture initiative has noted the lessons below.

Lessons learned from SkillsFuture initiative:

Challenges and limitations: Perceived limitations of the SkillsFuture initiative include an insufficient focus on soft and cross-job skills, a lack of flexibility in eligibility for courses and an insufficient amount of credits disbursed. In terms of social equity, it is noted that only citizens have access, and permanent residents are excluded from the program. This is linked to growing public discontent over immigration in Singapore.[189]

Governance of education and skills development to create demand-responsive programs: The SkillsFuture scheme is an example of Singapore's approach to governance of education and skills development, in which government, industry, unions, workers, trade associations are mobilized under a system of committees and statutory boards to devise, implement and monitor programs. Coordination and communication allow stakeholders to represent their interests, mitigate informational asymmetries between actors, and consolidate and mobilize resources towards the most effective interventions. This is a key element in ensuring that education and training programs are responsive to industry demand so that workers are equipped with skills that they can apply to available jobs.

For example, SkillsFuture is highly integrated with elements of the higher education system. SkillsFuture programs have been introduced in universities that are co-created and co-delivered by partner companies in growth sectors such as cybersecurity, software engineering, hospitality business, electrical power engineering, civil engineering, finance and business analytics.[190]

5 Preliminary Findings

5.1 Overview

The following preliminary findings are based on the three economy case studies and the global literature review. The literature findings will be supported by the insights from a symposium on the margins of SOM2 in May 2019, which will solicit feedback from APEC economies on the preliminary recommendations, as well as insights on additional findings to consider.

The following are the key topics covered in this study:
1. Developing Education and Skills Policies that are Responsive to Industry Needs
2. Prioritizing Inclusivity and Social Protection in Policy Development

The inputs from the symposium will be combined with the case study findings to develop the final best practices findings, which will be presented in the final report.

5.2 Preliminary Findings

1. Developing Education and Skills Policies that are Responsive to Industry Needs

Challenges:
One of the core challenges faced by many APEC economies is developing a workforce with the skills that are necessary for competitiveness in a rapidly changing global economy. There are several intertwined challenges in this topic: the mismatch between employers' needs and the availability of workers in new and emerging fields; the difficulty for education systems to appropriately prepare youth and adults with appropriate skills; and the need for policies that support unemployed or underemployed workers in learning new skills that help them to effectively compete in the current economy. Reflecting these challenges, more than 40% of APEC member economies have expressed concerns that they do not have sufficient training and vocational education, and enrollment in vocational education has declined.[191]

Emerging technologies such as robotics and artificial intelligence present an especially notable challenge, since they are accelerating changes in the labor market and are transforming the business models of many sectors.[192] These changes to the labor market as a result of productivity improvements are a primary factor in the skills mis-match challenge. In addition, ABAC has recommended that APEC economies must invest in digital literacy, technological skills training, and digital infrastructure in order to manage their digital development.[193] However, ensuring that workers have the appropriate digital skills is a challenge even in developed economies.

Best Practices:

Governance of education and skills training to create demand-responsive programs
According to the ILO, **Singapore** has historically been successful at linking economic development polices with skills development through advanced governance arrangements surrounding education and skills training. One key element for its success has been the institutional coordination among organizations involved with trade, economic development and upskilling of workers (government agencies, industry, unions, trade associations and advanced foreign firms) which occurs under a system of committees and statutory boards.

This level of coordination and communication creates a system in which the delivery of education and skills development is responsive to industry demands, allowing for firms to be referred to the appropriate skills training institutions to find skilled employees. Meanwhile, citizens are informed about in-demand skills and can access opportunities to acquire those skills.[194]

This collaborative approach is a key element of current strategic initiatives such as the Industry Transformation Program, a S$4.5 billion program to ensure that the skills that citizens require are applicable to available jobs in industries that contribute to economic development goals. The program implementation is led by the Future Economy Council (FEC), which is led by the Ministry of Finance and includes representatives the government, unions, trade associations and chambers of commerce, industry, and educational and training institutions. The program's planning is a key component for Singapore's active labor market policies such as the Adapt and Grow initiative and the SkillsFuture initiative.

Build complementarity between skills development and FDI

ILO and WTO have recommended that attention should be paid to ensuring that the skills development system should meet both the existing and emerging skill needs for tradable industries and domestic supply chains.[195] **Singapore's** education and training system in particular is a strong model for structuring a skills system to meet both domestic and international skills demand as it creates a pool of skilled labor to attract large and advanced foreign companies.[196] Furthermore, the Singaporean government provides incentives for foreign investors to collaborate with the economy government to establish training centers in exchange for access to skilled graduates, thus creating a mutually beneficial system in which the advanced competencies of foreign enterprises can be translated into advanced skills training programs for citizens.

Create skills certification programs that address key skill mismatch needs and meet global standards

Skills certifications are a valuable component of lifelong education that assists workers to demonstrate the value of their skills and help employers to identify qualified workers. Obtaining certifications in desirable fields (such as IT) is a valuable tool for workers to secure better employment, thereby promoting inclusive growth. **Japan's** approach to skills certification can serve as a model for other economies on how to develop and manage courses that help workers to gain the certifications that they need to succeed in the global economy.

The qualification requirements to achieve Japanese certifications are decided on by government agencies and rigorously updated through reviews by domestic industry members.[197] There are multiple certifications available in digital skills, and certified courses for the certifications may also qualify for education and training grants. In addition, Japan has coordinated with other economies through mutual recognition agreements (MRAs) to ensure that the examinations are accepted as valid accreditations in those economies, which supports Japanese workers' opportunities to work overseas.

In addition to providing its own certifications for IT skills, the Japanese government also selectively supports various training programs provided by private organizations that it believes are needed to prepare Japan's workforce for the fourth industrial revolution. This way the government can react quickly to support changing demands from the industry for workers with the latest and advanced skills.

Develop international cooperation on inclusive trade

International cooperation is necessary to effectively address inclusive trade challenges. APEC has a number of programs that provide economies with tools to address skills shortages and thus promote more inclusive trade in their economies. These include a range of research projects through the Human Resources Development Working Group (HRDWG) on skills development, human resource management and vocational training, as well as programs focusing on digital skills, SMEs and entrepreneurship. Relevant projects also include the APEC Digital Opportunity Center (ADOC), which offers computer skills training to vulnerable groups in rural and urban areas in APEC communities, and the APEC Digital Workforce Development Project, which is assisting economies in mitigating barriers for digital skills attainment for their workers.

The APEC HRDG "Symposium on Trade and Human Resources Development: Capacity Building for Inclusive Trade – Exploring how digital skills training and other innovative

approaches are making the benefits of trade more accessible and sustainable for all" that will be held on May 3, 2019, will present an opportunity to further explore this topic and solicit best practices on developing international cooperation from the audience and experts.

Implement Policies to Encourage Digital Skills Development
ABAC has recommended that APEC economies must invest in digital literacy, technological skills training, and digital infrastructure in order to manage their digital development.[198] These are common challenges that all economies are facing, however, many of the efforts studied in the case study economies are too early to derive specific recommendations.

For example, in order to realize its vision for the "Society 5.0", **Japan** is developing policies to encourage HRD for AI professionals. Japan's plans to implement mandatory AI classes for college students are expected to enhance the competitiveness of Japanese companies of all sizes, including MSMEs, and will help to address the labor shortage in the IT field, making the Japanese workforce more resilient to changes brought by technological advancement. The ripple effects from developing the digital literacy of the population as a whole may also help less-skilled workers to retain employment and to contribute towards and benefit from international trade in the future.

Digital skills development will be a key topic at the APEC HRDG "Symposium on Trade and Human Resources Development: Capacity Building for Inclusive Trade – Exploring how digital skills training and other innovative approaches are making the benefits of trade more accessible and sustainable for all" that will be held on May 3, 2019. The symposium will present an opportunity to further explore this topic and solicit best practices from the audience and experts.

2. Prioritizing Inclusivity and Social Protection in Policy Development

Challenge:

Each economy has workers and businesses that are especially impacted by the changing global economy. While each economy is different, many economies might struggle to adequately increase labor force participation by disadvantaged populations, including people with disabilities, women, youth, and mature-aged workers. APEC has noted the importance of programs supporting disadvantaged group's employment and skills learning in improving the labor force participation rate.

The skills gap can have an especially significant impact on youth and aged workers. In a fast-changing market, youth may find it challenging to qualify for emerging jobs. Similarly, mature-aged workers face the risk of their skills becoming redundant or obsolete.[199] Japan in particular faces several challenges from an aging workforce, as the oldest society when measured by the portion of people over 65 years old.[200]

MSMEs, as well as start-up companies, also face challenges in participating in international trade without the resources, which large corporations have, and may have difficulty locating or accessing the public sector resources intended to support them.

Best Practices:

Active labor market policies should target assistance to workers facing the greatest employment challenges
Post-program evaluations of several sector-specific adjustment efforts in the global literature show that economy-wide costs are incurred through providing targeted supports to certain sectors. A review by **Australia** of the Automotive Industry Structural Adjustment Program (AISAP) found several challenges that arose from providing special assistance to the automotive industry, such as equity issues across sectors, and concerns that retrenched automotive manufacturing employees would receive more support than jobseekers in other industries who

faced more acute disadvantages.[201] AISAP's evaluation recommended that assistance could be better targeted towards workers facing the greatest challenges in finding a new job, and assistance to specific sectors should not exceed what is generally available to workers in other sectors.[202]

Develop a range of policies to support disadvantaged populations' labor force participation

The APEC PSU has noted the importance of programs supporting disadvantaged group's employment and skills learning as a key factor in improving the labor force participation rate. Disadvantaged populations include people with disabilities, women, youth, and mature-aged workers. Policies to support mature-aged workers are especially important to mitigate the challenges of ageing society faced in many APEC economies. Barriers faced by mature-aged workers in staying in the workforce can include lower education/skills attainment and discrimination, thus programs are needed to provide them with the information and skills to pursue employment opportunities. **Australia's** experience with the Skills Checkpoint for Older Workers pilot showed that highly tailored and customized approaches to clients were effective in in promoting satisfaction with the program, while iterative additions to program offerings based on client demand could further increase satisfaction. Furthermore, it was clear that those delivering services to clients needed skills and knowledge such as the ability to engage with clients, knowledge of career development/transition and understanding of the labor markets and industries to produce the best outcomes for clients.

6 Appendix A – Key Acronyms

ABAC	APEC Business Advisory Council
ADB	Asian Development Bank
AELM	APEC Economic Leaders Meeting
AFAS	ASEA Framework Agreement on Services
ALMP	Active Labor Market Policy
AMM	APEC Ministerial Meeting
AMS	ASEAN Member State
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CBN	(APEC HRDWG) Capacity Building Network
CTE	career and technical education
EDNET	(APEC HRDWG) Education Network
HRDMM	(APEC) Human Resources Development Ministerial Meeting
HRDWG	(APEC) Human Resources Development Working Group
ICT	information and communications technology
ILO	International Labour Organization
LSPN	(APEC HRDWG) Labor and Social Protection Network
OECD	Organisation for Economic Co-operation and Development
SOM	(APEC) Senior Officials' Meeting
TVET	technical and vocational education and training

7 Appendix B – References

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