



International  
Labour  
Organization

## ► Technology in public employment services to promote youth employment in Asia and the Pacific



## ► **Technology in public employment services to promote youth employment in Asia and the Pacific**

## ► Copyright

---

Copyright © International Labour Organization 2023  
First published 2023

This is an open access work distributed under the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>). Users can reuse, share, adapt and build upon the original work, as detailed in the License. The ILO must be clearly credited as the owner of the original work. The use of the emblem of the ILO is not permitted in connection with users' work.

**Attribution** – The work must be cited as follows: *Technology in public employment services to promote youth employment in Asia and the Pacific*, Geneva: International Labour Office, 2023

**Translations** – In case of a translation of this work, the following disclaimer must be added along with the attribution: *This translation was not created by the International Labour Organization (ILO) and should not be considered an official ILO translation. The ILO is not responsible for the content or accuracy of this translation.*

**Adaptations** – In case of an adaptation of this work, the following disclaimer must be added along with the attribution: *This is an adaptation of an original work by the International Labour Organization (ILO). Responsibility for the views and opinions expressed in the adaptation rests solely with the author or authors of the adaptation and are not endorsed by the ILO.*

This CC license does not apply to non-ILO copyright materials included in this publication. If the material is attributed to a third party, the user of such material is solely responsible for clearing the rights with the right holder.

Any dispute arising under this license that cannot be settled amicably shall be referred to arbitration in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of such a dispute.

All queries on rights and licensing should be addressed to the ILO Publishing Unit (Rights and Licensing), 1211 Geneva 22, Switzerland, or by email to [rights@ilo.org](mailto:rights@ilo.org).

---

ISBN: 9789220390115 (print); 9789220390122 (web pdf)

---

The designations employed in ILO publications, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the ILO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers.

The responsibility for opinions expressed in signed articles, studies and other contributions rests solely with their authors, and publication does not constitute an endorsement by the ILO of the opinions expressed in them.

Reference to names of firms and commercial products and processes does not imply their endorsement by the ILO, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

Information on ILO publications and digital products can be found at: [www.ilo.org/publns](http://www.ilo.org/publns).

---

Cover photo: © ILO.  
Photo page 1, 13, 37, 47: © ILO.

Printed in Thailand

## ► Foreword

---

Technology has been a key driver of change in economies and labour markets across Asia and the Pacific, transforming economic sectors, shaping jobs available to workers and impacting the skills demanded by employers. It has profoundly changed how governments, employers and workers interact in the labour market. In the [Singapore Statement of the 17th Asia and the Pacific Regional Meeting \(2022\)](#), governments, employers' and workers' organizations in the region recognized the opportunities created by digital transformation. They also affirmed the need to prioritize national action to "develop and implement inclusive labour market programmes and policies that support life transitions and demographic shifts, noting the ageing populations in many countries and youthful populations in others and the need to invest in skills, social protection and health and social services."

Yet for far too many young people in the region, their transitions in the world of work have been challenging, marked by decent work deficits and aggravated by the devastating socioeconomic impact of the COVID-19 crisis on education, training and employment. Public employment services have a key role to play in supporting the transitions of workers, particularly young women and men, in the Asia and the Pacific region and helping them access productive employment and decent work. Technology provides an unprecedented opportunity to transform and modernize public employment services, from generating and analysing labour market information to segmenting and profiling jobseekers, delivering inclusive services to help youth access better and future-oriented quality jobs. To ensure that no one is left behind, technology adoption needs to be customized to the local socioeconomic context, integrating it with other delivery channels depending on youth client needs and providing complementary support to the disadvantaged who face barriers such as lack of infrastructure and access to digital equipment and low digital skills.

This report on *Technology in public employment services to promote youth employment in Asia and the Pacific* aims to provide insights for governments and social partners into how public employment services are advancing their digital transformation and how public employment services are using technology to help youth succeed in the labour market. As part of ILO's Youth Employment Action Plan 2020-2030, this report presents the results of a multi-country survey and reflects the diversity of socioeconomic contexts, digital transformation and labour market challenges faced by youth across the region.

It is the responsibility of governments, employers, workers and other key stakeholders to leverage technology to deliver inclusive, gender-responsive, client-centred and effective labour market programmes and employment services for youth in Asia and the Pacific. It is our hope that the analysis, country-level examples and practical policy considerations in this report will inform the next generation of public employment services to empower young people for a human-centred recovery, decent work and social justice in the Asia-Pacific region.



Sangheon Lee  
Director, Employment Policy Department  
International Labour Organization



Chihoko Asada-Miyakawa  
Assistant Director-General and Regional Director  
for Asia and the Pacific  
International Labour Organization

## ► Acknowledgement

---

The ILO regional report on technology in public employment services (PES) to promote youth employment in Asia and the Pacific was prepared by the Regional Economic and Social Analysis Unit of the ILO Regional Office for Asia and the Pacific and the ILO Employment, Labour Markets and Youth Branch in collaboration with the World Association of Public Employment Services (WAPES). Based on desk research, an ILO survey and interviews with PES in eleven countries in the Asia-Pacific region, this multi-country study aims to shed light on the role of technology in PES and provide policy considerations and practical recommendations for PES officials and other stakeholders to advance the PES digital transformation with a focus on improved delivery of employment services to facilitate the labour market transitions of young women and men.

The main author and research consultant of this report is Dr Willem Pieterse. Michael Mwasikakata, Anna-Karin Palm Olsson and Felix Weidenkaff led the design and management of this ILO research, provided overall technical guidance, and contributed to the drafting and review process of the report. Hatairat Thongprapai provided excellent operational and administrative support throughout the research, including the editing and publication process. The ILO values the collaboration with the Executive Secretariat of WAPES, including the comments on the draft report, through Eve-Marie Mosseray, Nicole Clobes, Fumie Higashira and Thierry Huort.

The report makes detailed use of a survey and interviews conducted with government entities responsible for PES in eleven countries in the Asia-Pacific region in 2022, focusing on the role of technology within the PES, youth policies and programmes in the PES and its partners, and the role of technology in supporting youth labour markets. The valuable contributions to the ILO survey by national entities are greatly appreciated and we gratefully acknowledge the collaborative effort by officials across government entities to compile relevant inputs: Australia (Department of Employment and Workplace Relations), Cambodia (National Employment Agency), China (Ministry of Human Resources and Social Security), India (Ministry of Labour and Employment), Indonesia (Ministry of Manpower), Japan (Ministry of Health, Labour and Welfare), Nepal (Ministry of Labour, Employment and Social Security), Philippines (Department of Labor and Employment, Bureau of Local Employment), Republic of Korea (Ministry of Employment and Labor), Singapore (Workforce Singapore) and Viet Nam (National Center for Employment Services, Department of Employment, Ministry of Labour, Invalids and Social Affairs).

We are grateful to colleagues in the ILO Country Offices in Asia and the Pacific for their support to this research and the close engagement with national entities throughout the research process: Gulmira Asanbaeva, Tara Bakhariya, André Felipe Bongestabs, Ruchira Chandra, Shouly Chann, Marie Allyssa Dacasin, Xiaochu Dai, Tendy Gunawan, So Yeon Kim, Kimroeun Kouy, Nita Neupane, Nguyen Hoang Ha, Nguyen Thi Le Van, Wei Pan, Christianus Panjaitan, Ma. Lourdes M. Rivera, Ma. Concepcion Sardaña, Saurabh Shah, Keiko Shibatom, Sunggil Son, Ryusuke Tanaka, Sophorn Tun, Napaporn Udomchaiporn and Divya Verma.

We would like to acknowledge the valuable comments to the research design and draft report provided by ILO colleagues Sara Elder, Xiaochu Dai, Pedro Moreno da Fonseca, Phu Huynh, Diego Rei, Christian Viegela and Lena Xinyu Yan.

Peter Gosling edited the report, and Napisa Leelasuphapong organized the graphic design and layout. We extend our thanks to colleagues in the Regional Communications Unit for their collaboration and support in the finalization and dissemination of the report.

## ► Contents

---

► Foreword	iii
► Acknowledgements	iv
► Executive summary	xi
► Methodology	xvi
► Technical terms	xx
► 1. The state of technology and youth labour markets in Asia-Pacific	1
1.1 Labour markets and youth in the Asia-Pacific region	3
1.2 Public employment services and youth	6
1.3 Technological and societal developments	7
1.4 External influences (COVID-19)	8
1.5 PES digital strategies	9
1.6 Employment Services Conventions	11
► 2. Status of PES' digital transformation in selected Asia-Pacific countries	12
2.1 PES digital strategies	13
2.2 Back-office and IT developments	18
2.3 Front office, services and channels	21
2.4 The role of data	24
2.5 Innovation	28
2.6 Conclusions and recommendations regarding the status of PES' digital transformation	31
► 3. Youth policies and programmes to support and enable youth employment	34
3.1 Policies and mandates	35
3.2 Services, programmes and partnerships	38
3.3 Conclusions and recommendations regarding youth policies and programmes to support and enable youth employment	41

► <b>4. The role of technology in supporting youth labour markets</b>	<b>43</b>
4.1 Youth digital services and segmentation	44
4.2 Youth front-office technologies	48
4.3 Youth back-office technologies	50
4.4 Conclusions and recommendations regarding the role of technology in supporting youth labour markets	53
► <b>References</b>	<b>55</b>
► <b>Annexes</b>	<b>58</b>
Annex 1. Country profiles	58
Australia	58
Cambodia	61
China	64
India	68
Indonesia	71
Japan	74
Nepal	77
Philippines	80
Republic of Korea	83
Singapore	86
Viet Nam	89
Annex 2. Survey Instrument	92

## ► List of boxes

---

► <b>Box 1.</b> Highlights of Convention 88 and Convention 181	11
► <b>Box 2.</b> Business and process transformation in Singapore	18
► <b>Box 3.</b> Systems and data integration in Indonesia	20
► <b>Box 4.</b> Labour Market Information in Timor-Leste with ILO support	21
► <b>Box 5.</b> Development of the online job portal in India in 2015	21
► <b>Box 6.</b> Role of Employment Exchanges in India	22
► <b>Box 7.</b> Data integration through the X-Road in Estonia	25
► <b>Box 8.</b> Goals and KPIs in Cambodia	27
► <b>Box 9.</b> Youth employment policy in Japan	36
► <b>Box 10.</b> Youth targeting and programmes in China	40
► <b>Box 11.</b> Skills development in Singapore	45
► <b>Box 12.</b> Youth programmes in the Philippines	47
► <b>Box 13.</b> The K-Digital initiative in the Republic of Korea	49



## ► List of tables

---

- |  |       |
|--|-------|
| ► <b>Table 1.</b> Study countries and their ranking in the United Nations' E-Government Development Index (EGDI) | xviii |
| ► <b>Table 2.</b> Use of newer technologies for service delivery to youth by country group                       | 50    |

## ► List of figures

---

► <b>Figure 1:</b> Study framework	2
► <b>Figure 2:</b> Unemployment rate by sex (%), youth compared to adults, latest year	4
► <b>Figure 3:</b> Share of youth not in employment, education or training (NEET) by sex (%), latest year	5
► <b>Figure 4:</b> Types of digital strategies	9
► <b>Figure 5:</b> Nature of PES digital strategies in 2022	13
► <b>Figure 6:</b> Key elements of national and PES digital strategies	14
► <b>Figure 7:</b> Factors driving the adoption of digital technologies in PES, 2020 and 2022	15
► <b>Figure 8:</b> Obstacles to future digitalization and improvements in service delivery	16
► <b>Figure 9:</b> The effect of the COVID-19 pandemic on the budgets/funding of the PES	17
► <b>Figure 10:</b> Key back-office and IT developments	19
► <b>Figure 11:</b> The role of technology in PES processes	20
► <b>Figure 12:</b> The role of technology in PES front offices, services, and channels	23
► <b>Figure 13:</b> Ways in which technology has improved service delivery for various target groups in 2022 and 2020	24
► <b>Figure 14:</b> The role of data and measurement within PES	27
► <b>Figure 15:</b> The role of advanced analytics within PES	28
► <b>Figure 16:</b> The role of the organization, its people and innovation within PES	30
► <b>Figure 17:</b> Types of digital skills development programmes within PES	31
► <b>Figure 18:</b> Strategic level youth mandates and laws in participating countries	36
► <b>Figure 19:</b> The extent to which youth resources and focus are in place	37
► <b>Figure 20:</b> Degree to which PES focus on youth importance and targeting	39

► <b>Figure 21:</b> The role of youth partnerships within PES	40
► <b>Figure 22:</b> Degree to which general youth services are in place	45
► <b>Figure 23:</b> The extent to which PES identify subgroups and segmentation	46
► <b>Figure 24:</b> Current scope of youth-oriented programmes in PES	47
► <b>Figure 25:</b> The use of common youth focused front-office technologies	48
► <b>Figure 26:</b> The use of innovative youth-focused front-office technologies	49
► <b>Figure 27:</b> The role of youth back-office and staff technologies	51
► <b>Figure 28:</b> Target groups for technology-enabled youth programmes	52

## ► Executive summary

---

Technology plays an increasingly important role in labour markets and the functioning of governments. Public Employment Services (PES) need to both address the changing needs of labour markets as well as navigate the digital transformation of modern government agencies. Youth (aged 15-24) are often at the forefront of technology adoption in societies. At the same time youth are often in a more precarious labour market position than adults and need effective PES approaches that offer more personalized, targeted services and Active Labour Market Policies (ALMPs) to navigate a rapidly changing world of work. Technologies, if well designed and implemented, provide government agencies with an opportunity to enhance inclusive outreach and delivery of their services to youth.

Youth have been particularly hard-hit by the COVID-19 and other crises in Asia and the Pacific through disruptions to their education, training and employment. While the crises have put pressure on the labour market and its institutions, digitalization efforts within PES offer opportunities to improve service delivery for youth, helping them to enter and remain in productive employment and decent work. The longer-term impacts of these trends are uncertain. They require dedicated policies and programmes to shape a human-centred recovery and future of work for youth. Even before the crisis, many young women and men in the Asia and Pacific region were in vulnerable positions in the labour market and their labour market prospects have been severely impacted by the pandemic, especially for certain subgroups such as young women.

This multi-country study on the role of technology in public employment services for youth employment in Asia and the Pacific seeks to provide insights into (i) How PES are digitally transforming themselves, especially in the wake of the COVID-19 pandemic; and (ii) How PES are using technology to support youth to enter the labour market. The research provides both general (quantitative) insights about developments in the region, as well as qualitative insights from case studies, examples and good practices from PES in Asia and the Pacific, as well as from selected other PES around the world. This is based on data collected from 11 PES in the region<sup>1</sup>, varying from high- to middle-income countries with varying stages of digital transformation of societies and governments. The countries participating in this study account for 79 per cent of the youth population in the Asia and the Pacific region which is home to most of the world's youth aged 15-24.<sup>2</sup>

The report provides several recommendations for participating PES, which may also be of interest to other PES in the region and beyond. Stakeholders working in education, training and labour market interventions supporting young people might find useful information in this report.

## Study design and methodology

This study collected quantitative and qualitative data about the role of technology in PES in general and data aimed at youth labour market services specifically. It builds upon a global study conducted by the ILO in 2020 which focused on the state of digital transformation within PES. The current study reuses some of the questions from that study and thus serves as a post-COVID-19 follow-up; 9 of the 11 participating PES in 2022 also participated in 2020. The survey used both closed and open questions for the quantitative and qualitative analysis. The questionnaire covered three main areas:

- The role of technology within the PES
- Youth policies and programmes in the PES and its partners
- The role of technology in supporting youth labour markets

---

<sup>1</sup> Australia, Cambodia, China, India, Indonesia, Japan, Nepal, Philippines, Republic of Korea, Singapore, Viet Nam

<sup>2</sup> UN population estimates and projections, July 2022, accessed in ILOSTAT.

## Key conclusions and recommendations

Based on the findings of the study, several main conclusions emerge for the participating PES which are presented below, accompanied by a series of recommendations.

Overall, the study finds that PES in the eleven countries in Asia and the Pacific have the mandates in place to serve youth and PES clearly recognize youth as an important target group. However, while PES are often planning to introduce technologies, in many cases the plans have not yet been implemented. Although technologies, where available, are often refined and sufficiently tailored to cater to the youth, broader organizational obstacles, such as siloing (within the organization and beyond) hamper thorough execution of youth programmes through digital technologies. Targeting of subgroups among youth (such as based on gender) requires further efforts in most of the participating PES in Asia and the Pacific to achieve inclusive design and delivery. PES can broaden their digital transformation strategies beyond the purely technological elements, taking into account the following considerations:

### Status of PES' digital transformation in selected Asia-Pacific countries

#### 1. PES in the eleven countries in Asia and the Pacific – regardless of country-income level – recognize the role of technology development and express interest in more targeted approaches

All PES in the study are committed to technology development and expressed interest in having more targeted approaches to certain groups. While more basic services, such as providing information, job matching and, in some cases, registration are already provided online, the shift or intention to move towards more automation and AI can be recognized. The reasons concern both efficiency internally, in caseload management and outreach, and externally, to ensure better coverage of the population for their services.

Recommendation for PES:

- Analyse recent trends in technology and PES and create opportunities to learn from internal development of PES at different levels (central, provincial, local), from other government entities, and from PES in other countries when developing better technology and when integrating automation and AI. This is subject to their level of development and capabilities, and should be customized to meet their own and their clients' needs and challenges.

#### 2. PES have digital strategies that focus on digitalization of their processes. Resources and low digital capacity and awareness of staff and organizations constrain a full digital transformation

The majority of PES in this study focus on digitalization with most attention going to the technical aspects of their service delivery. The desire to lower costs has gained in importance since 2020, probably accelerated due to the COVID-19 crisis. Lack of financial resources to digitalize and improve service delivery is a key obstacle and this was exacerbated by the COVID-19 crisis, especially in the middle-income countries (MIC). Other important obstacles relate to 'soft' aspects of digitalization such as digital skills in the organization and a lack of knowledge about relevant technologies.

Recommendations for PES:

- Undertake assessments to understand and take smart decisions about in which areas technologies yield the greatest return on investment for PES. A better understanding of the possibilities and limitations of current technologies should be a priority.

- Strengthen staff technology skills development, including through peer-to-peer learning, sharing of knowledge and examples as well as tailored piloting with close monitoring and follow-up.

### **3. PES could benefit from increased attention to the organizational aspects of digital transformation such as breaking through silos and cultural change**

Digital transformation is as much an organizational as a technological challenge. Results indicate that PES are paying less attention to the balance of these parameters than needed. In particular, cultural change and organizational aspects require further efforts in most participating PES. For instance, while PES do focus on implementing technologies, there is less attention to how their employees respond to the changes or collaborate and work within this changing environment. This results in ‘siloeing’ (the degree to which parts of the organization are not connected, either technically or through a lack of communication, such as when a new job portal is not linked to an LMIS within the same organization). This is one of the most apparent challenges which could have negative effects on the performance of the PES as a whole and especially on the ability to successfully deliver integrated youth programmes.

Recommendations for PES:

- Enhance organizational aspects of digital strategies of PES, especially in preventing internal siloeing. To see digitalization not only as a technological adaptation but a transformation of the organization and the relationship with the users. A key aspect of this is for such processes to become iterative and continuous in transformation and development.
- Employ change management protocols like any other PES transformation, including ensuring a whole of organization involvement through a structured social dialogue mechanism, prioritizing cultural change and staff training.
- Align approaches with partners that could benefit PES, their clients and PES stakeholders such as other parts of the government, and private sector partners.

### **4. PES recognize the relevance of advanced analytics (such as artificial intelligence) but could benefit from integrated approaches and a solid data foundation**

Data is an increasingly important part of PES functioning. It is being used to measure performance and is an important ingredient of novel approaches. PES recognize the new possibilities of data. Most PES in this study have not yet deployed advanced analytics applications but are experimenting with or are planning to introduce them. Most PES have no data strategy and are not measuring progress towards goals using youth programme KPIs. Data is frequently not used as a tool to learn and improve, despite the finding that ‘lack of data’ is not an obstacle for most PES in the eleven countries. This could be explained by lack of appropriate infrastructure or inadequate skills to manipulate the messy big data.

Recommendation for PES:

- Invest in data analytics through adoption of the required technology and strengthening of skills in PES concerned
- Take holistic approaches to the use of data within their organization to ensure usage of data collected more efficiently and in developing operations.
- Explore use of data (analytics) to measure success towards goals as a way to operate more smartly.
- Consider use of data to segment and target subgroups (such as youth) and identify opportunities to improve service and programme delivery.
- Leverage data as a key resource to innovate, for example using artificial intelligence-based applications.
- Create a solid foundation from relevant systems across the organization to facilitate the use of data (see recommendation below on IT integration).

## Youth policies and programmes to support and enable youth employment

### 1. Inclusive approaches are lacking and client approaches are too generic in the PES covered by this study. A focused approach on youth in PES processes and on subgroups is needed to improve inclusion.

PES in the eleven countries in the region have the mandates to deliver youth programmes. They are dedicated to supporting youth, and the findings indicate that technology has contributed to improving service delivery for young jobseekers in all participating PES. Every PES in the study reports that the PES leadership recognizes the importance of youth as an important group, and a majority have dedicated resources secured at ministerial level. However, there appears to be less understanding of youth user needs and behaviours, especially in MIC and this applies to youth needs relating to the use of technology and specific services/programmes, mainly resulting from a lack of user research and data utilization. User disaggregated and granular data is necessary to design customized services and programmes, especially for vulnerable target groups.

PES mandates typically involve prioritizing vulnerable clients and should therefore develop inclusive approaches that ensure services to all target groups. Almost half the participating PES in the region report that the lack of inclusive approaches is an obstacle in the organization and this applies to a majority of MIC. Almost four in ten PES are unable to identify subgroups in service delivery processes and only a minority of PES have specific inclusion programmes in general. ‘Youth’ are a heterogeneous group with many subgroups that have their own needs and behaviours (e.g., young women, young persons with disabilities, or youth NEETs), but there is a lack of customized services for these subgroups.

Recommendation for PES:

- Increase PES understanding of user needs and behaviours to strengthen the focus on youth in general, based on user research and behavioural data analytics.
- Use the resulting labour market information concerning understanding of user needs and behaviours to ensure accurate targeting of PES service and programme developments, and alignment to labour market demands and changes.
- Increase PES focus on inclusion and develop programmes that help create equal opportunities for all client groups, including subgroups within the population. This increases the chances that ALMPs are effective and foster inclusion. Technology could facilitate this level of granularity.
- Develop a communication strategy to attract and convince young persons to use new digitized services, taking into account the new use and the digital culture of young people and enabling partnerships.
- Promote collaboration and partnership with relevant institutions, including through joined-up service delivery and one-stop shops.

### 2. PES are part of a complex system of organizations executing government policies, laws and regulations and organizations that provide labour market services. PES could benefit from enhancing IT integration and partnerships with key stakeholders.

Participating PES systems in Asia and the Pacific are typically not connected to other government and other systems, making it difficult to share information or prevent duplicate client data inputs. In addition, process integration and IT interoperability are important obstacles for PES, possibly contributing to siloing within them and beyond. PES typically do not have the necessary partnerships in place with external stakeholders that could support and expand their service delivery. PES may need to increase awareness of other actors in the labour market and their priorities. Current experience shows that

integrated and joined-up delivery of services tend to achieve more effective labour market outcomes.

Recommendation for PES:

- Explore tighter integration with IT systems from relevant government institutions to improve PES processes, subject to the prevailing government data sharing and IT policy, ranging from enhanced links with educational organizations to verify diploma information or with tax entities to check for income/benefit status.
- Focus more on networks to improve service delivery and create or strengthen partnerships with other service providers and stakeholders.
- Governments should consider improving policy coherence and coordination at different levels.

## The role of technology in supporting youth labour markets

### 1. Youth are often targeted through the general social media, yet dedicated youth channels, where feasible, can offer possibilities for more effective service delivery.

PES recognize the importance of youth and typically try to specifically reach them through general social media channels. However, these channels work well for outreach but less for actual service delivery. For PES that can afford to do so, using dedicated channels designed around the needs of youth could appeal to this segment and deliver services to youth and subgroups more effectively, for example, through dedicated youth web portals, mobile applications, and dedicated support channels.

Recommendation for PES:

- Where feasible, consider developing youth-oriented channels that offer targeted information, services and programmes.
- In developing such channels, look for possibilities of targeting subgroups within the youth population to improve service and programme effectiveness and inclusion and partnering with other specialized institutions.

### 2. Innovative technologies for youth are rare, but might provide a stimulus for digital transformation

PES express interest and willingness to focus on innovation. However, newer technologies such as social robots, dedicated mobile apps, as well as augmented reality and virtual reality (AR/VR) have not yet been widely adopted, especially in MICs – not surprisingly, given the huge investment outlay required. These technologies, if targeted and adapted well, could be instruments to test ideas and fuel the digital transformation of the PES given that: a) youth are often the first to adopt newer technologies, and b) youth are likely to be the ones using these technologies most in their future careers and labour market transitions.

Recommendations, while recognizing the limited resources within PES:

- Consider investing in advanced technologies when possible and put in place enabling policies to implement such technologies.
- Consider using newer technologies to support youth and improve organizational efficiency. Such efforts have to be accompanied by relevant implementation and skills development programmes. The design and implementation of newer technologies needs to be context-specific with relevant adaptations at country and local level.



### 3. Back-office technologies and processes could benefit from an increased youth focus

PES in the region are focused on digitalization of their back-office systems. However, most PES currently do not have the mechanisms to identify and target youth. They often rely on self-segmentation and selection, meaning that youth need to actively contact the PES and select programmes that are relevant for them. PES typically do not have dedicated staff (technologies) to support youth and few PES have KPIs to measure the performance of youth services, including digital.

Recommendation for PES:

- Focus more on the development of data analytics based on granulated target subgroups and the development and implementation of youth back-office technologies for staff.
- Assign dedicated staff (wholly or partly) to supporting youth accompanied by specific training efforts.
- Develop specific KPIs for the youth target group, with appropriate disaggregation, to ensure accurate follow-up.
- Explore possibilities of new or more inclusive outreach efforts and programmes to reach and provide effective services to youth.

## ► Methodology

---

This study adopted a mixed methods approach. This consisted firstly of desk research to gain a broader understanding of the role of technology for youth employment in the Asia-Pacific region and the different variables in the framework. Secondly, a survey was designed to gather more quantitative insights and lastly, the survey was followed by a round of qualitative data collection to gather additional insights and clarify survey responses.

The survey was designed in 2022 to capture the role of technology in public employment services to promote youth employment in Asia and the Pacific. The survey consists of three main sections (see Annex 1):

- Questions about the role of technology within the PES in general
- Questions regarding youth policies and programmes
- Questions about the role of technology in supporting youth labour markets

In addition, it includes questions about the impact of the COVID-19 pandemic to study how PES are adjusting in the crisis recovery and how they are using technologies at strategic and operational level to support youth. Furthermore, the survey includes questions about various subgroups within the youth population, as well as inclusive approaches towards youth to measure the degree to which equality is being promoted. The survey consisted of closed questions combined with open questions seeking additional information or asking to upload appendices.

Government entities responsible for PES in eleven countries in Asia and the Pacific participated in the study (For list, see [Table 1](#)). While they do not account for the diversity of countries and contexts in

Asia and the Pacific, they provide a relevant sample of the region and give a broad range of insights<sup>3</sup>. They vary from high- to middle-income countries across subregions in the Asia-Pacific region and are at varying stages of digital transformation of societies and governments. Several countries participating in the global ILO survey (2020) on PES also contributed to this study, allowing identifying developments over time. The countries participating in this study account for 79 per cent of the youth population in Asia and the Pacific region which is home to most of the world's youth aged 15-24.<sup>4</sup>

Fieldwork was conducted between November 2022 and January 2023 and consisted of two rounds. During the first round, the survey was sent to the participating countries – facilitated by ILO Country Offices – with the request to supply all information. Based on the completeness of the responses a second round (the qualitative round) was sometimes necessary. Nine of the participating PES were asked to do this (and seven responded).

During this second round the countries were asked to provide additional information, either in writing or through a video interview. These interviews were recorded and used to update and augment the results. If any uncertainty about the data persisted, further clarification was sought. Two PES supplied additional information in writing and five consented to an interview in which follow-up questions were asked and points were clarified. It is important to understand that this survey, like the one from 2020, contains self-reported data.

## Study context: Asia and the Pacific

Asia and the Pacific is the most populous region in the world, with large disparities in terms of income, technology adoption and labour market situation. Furthermore, even before the COVID-19 crisis, young women and men aged 15-24 were in a vulnerable labour market situation in Asia and the Pacific, and the massive disruption to economies and labour markets in the region due to the COVID-19 crisis had disproportional impacts on youth through: (i) disruptions in education and training, (ii) job disruptions from reduced working hours and layoffs, and (iii) difficulties transitioning from school to work and moving between jobs. The COVID-19 crisis is likely to have accelerated the adoption of technologies in two important ways: (a) through the increase in digitalization and automation of work, and thereby changing the nature of work and the composition of the labour market, and (b) how public employment services are using technologies to address the needs of labour markets.

## Additional metadata

The bi-annual United Nations e-Government survey highlights both developments and differences in technology use by governments. This survey reports the E-Government Development Index, Index (EGDI), which measures the state of development of electronic government in the Member States of the United Nations. The overview below contains worldwide (country) rankings of the participating countries in 2016, 2018, 2020 and 2022.

<sup>3</sup> Note: For brevity, the report makes reference to PES in Asia and the Pacific. These findings are based on and apply only to the eleven countries in this study, and do not provide findings or recommendations for other countries.

<sup>4</sup> UN population estimates and projections, July 2022, accessed in ILOSTAT.

► **Table 1. Study countries and their ranking in the United Nations' E-Government Development Index (EGDI)**

Country	2022	2020	2018	2016
Australia	7	5	2	2
Cambodia	127	124	145	158
China	43	45	65	63
India	105	100	96	107
Indonesia	77	88	107	116
Japan	14	14	10	11
Nepal	125	132	117	135
Philippines	89	77	75	71
Republic of Korea	3	2	3	3
Singapore	12	11	7	4
Viet Nam	86	86	88	89

Firstly, Table 1 highlights the wide disparity in technology and development between the different countries in the region participating in the study, from leaders in eGovernment development (Australia, Republic of Korea, Singapore) to those developing and improving (e.g., Cambodia, Nepal). This provides a basis for learning among participating countries. Secondly, countries vary in their development over time. The data only provide a comparison between the countries, and not national improvements. This means a deeper look is needed into some of the obstacles and success factors that explain progress and stagnation and the role of technology in the functioning of these PES. While the E-Government Development Index provides relevant insights, it does not necessarily reflect the development of PES in a country.

While two clusters of countries do not account for the diversity of country contexts, technology, economies and labour markets, they do provide a relevant way to assess differences between clusters relative to their use of technology for the purpose of this study.

- The High-Income Countries (HIC) consisting of Australia, Japan, Republic of Korea and Singapore. These are also the four countries scoring highest on the EGDI among the countries in this study.
- The Middle-Income Countries (MIC)<sup>5</sup> consisting of Cambodia, China, India, Indonesia, Nepal, the Philippines and Viet Nam.

Where relevant, the results of the study are presented based on these groupings.

## ILO study on Public employment services' use of technology in 2020

This work builds upon previous work by the ILO carried out in this area in 2020 (see ILO 2020b, ILO 2021b, ILO 2022a). The ILO designed a global survey prior to the COVID-19 crisis to explore the state of practice in the public employment services' use of technology to facilitate service delivery. While this survey was not specifically aimed at youth, it does contain several questions that are relevant for the purposes of this study. These include questions such as:

<sup>5</sup> Middle-Income Countries in this study combine lower-middle and upper-middle income countries.

- Whether or not the PES has a digital transformation strategy
- The factors motivating PES to adopt technology by order of importance
- Whether technology has contributed to improving service delivery for jobseekers in certain target groups (e.g., young people under the age of 25).

The 2020 survey was conducted with the support of the World Association of Public Employment Services between May and October 2020, when the COVID-19 pandemic was in full swing. In total, 69 public employment services in 64 countries from all ILO regions responded to the self-administered questionnaire, voicing the position of their respective national employment service system. The following countries responded to both the 2020 survey and the 2022 survey: Australia, Cambodia, China, Indonesia, Japan, Philippines, Republic of Korea, Singapore, and Viet Nam.

Several questions from the 2020 survey were included in the 2022 survey, such as the factors motivating PES to adopt technology by order of importance and whether technology has contributed to improving service delivery for jobseekers in certain target groups. This allows a comparison of the situations between 2020 and 2022 and (by proxy) the impact of the COVID-19 crisis. However, the samples in both studies are not representative of the entire Asia-Pacific region.

## ► Technical terms<sup>6</sup>

---

### **Active Labour Market Policy (ALMP)**

ALMPs are measures to support the labour market. Typically, these are measures to help individuals (re-)enter the labour market or to prevent employed individuals from losing their employment.

### **Artificial Intelligence (AI)**

AI is the degree to which machines or computers show (human) like intelligence.

### **Back office**

In the context of this study, the back office of public employment services refers to the internal part of the organization where services and processes are completed. This in contrast to the front office (see below), where interaction with PES clients takes place.

### **Deep Learning**

Deep learning is a subset of artificial intelligence. It consists of algorithms and models that learn based on high-level abstract data and layers or manifestations of unstructured data (such as written text, pictures, videos and many combinations of data sources).

### **Digital strategy**

A digital strategy in the context of PES is the application of information and technology to provide value for jobseekers, employers, and other stakeholders as defined in the PES mission and within the context of its vision.

### **Digitization**

Digitization refers to the process of making information and materials digital. Examples are online information vs information in a leaflet or creating digital copies of forms (e.g., in PDF).

### **Digitalization**

Digitalization refers to the process of making services and/or processes digital end-to-end. An example is taking a PDF form and designing a new online form based on this PDF.

### **Digital Transformation**

Digital transformation refers to the realignment of the organization around digital technologies. For instance, PES could design an integrated labour mediation workflow in which previously separated activities such as profiling and matching are now part of the same process.

### **Front office**

The front office refers to that part of the organization where interaction with clients takes place. This is in contrast to the back office (see above) where systems and processes reside.

### **Information (Communication) Technology (IT/ICT)**

Information technology refers to those technologies that are used to create, process, and transmit information. Examples are computers and smartphones. The alternative is Information and Communication Technology (ICT) which specifically includes technologies used for interaction.

---

<sup>6</sup> This list of technical terms aims to provide a simplified overview and understanding of concepts used for the purpose of this study. It does not provide a comprehensive definition of the terms.

**Key Performance Indicator (KPI)**

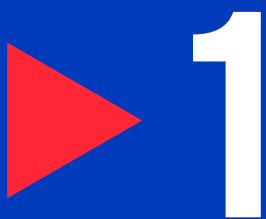
Key performance indicators are those performance indicators of progress towards meeting the highest-level organizational goals. In the context of PES, this means that KPIs are those indicators that are most crucial when understanding whether the PES is achieving its goals.

**Machine Learning**

Machine Learning can be described as algorithms that learn from data processed to make predictions and improve outcomes. It is a subset of artificial intelligence (see above).

**Social Robot**

A social robot is an automated communication channel based on artificial intelligence. Examples are chatbots or conversational robots. The state of technology and youth labour markets in Asia-Pacific



# The state of technology and youth labour markets in Asia-Pacific

---

Even before the COVID-19 crisis, youth aged 15-24 were in a vulnerable labour market situation in Asia and the Pacific. The massive disruption to economies and labour markets in the Asia-Pacific due to the COVID-19 crisis had disproportional impacts on youth through (i) disruptions to education and training, (ii) job disruptions from reduced working hours and layoffs, and (iii) difficulties transitioning from school to work and moving between jobs. In response, governments have adopted a wide array of policy measures in the socioeconomic recovery process to support youth employment. Public employment services (PES) across the region play a key role in supporting young people to navigate the multiple labour market transitions in a rapidly changing world of work, including those young women and men who shifted into unemployment, are out of the labour force, or are looking for a first or new employment opportunity.

The potential of PES activities to support youth is substantial. Various labour market indicators, from youth unemployment and underemployment to the potential labour force, indicate that a significant proportion of youth in the Asia-Pacific could benefit from PES services to activate their potential, move them to productive employment and/or transition them to better jobs. This also applies to different segments and subgroups within the youth population. For example, gender considerations are at the core, as the majority of youth not in employment, education or training (NEET) in Southern Asia are female.

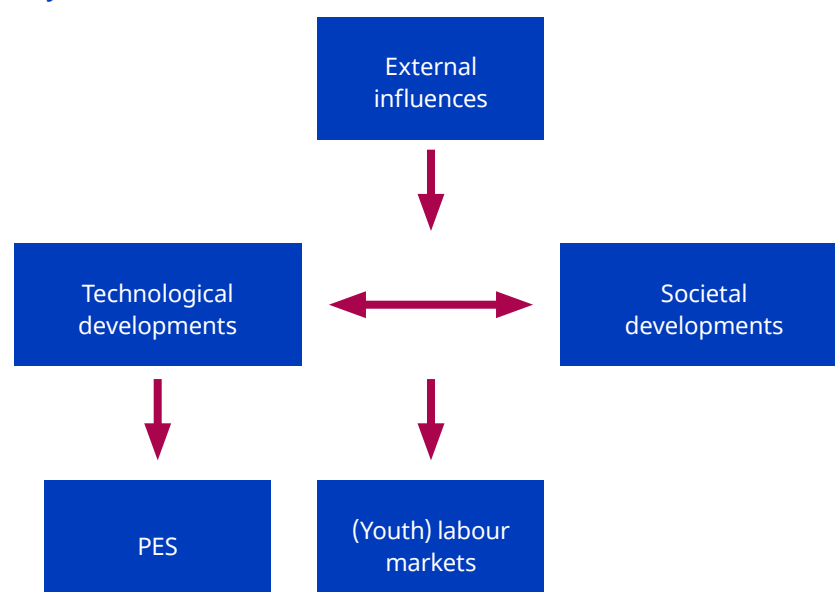
Technology, in this context, creates both opportunities and challenges for PES and youth. Technologies are creating better possibilities to target specific segments in populations (e.g., specific age groups or segments (such as NEETs) using data and adaptive technologies. Furthermore, youth are traditionally at the forefront of technology adoption and have a better long-term outlook when it comes to acceptance of new technology and media, as well as investing in developing their skills in these new tools and services. For example, both the digital and creative economies have the potential to increase the availability of good quality employment opportunities for young people (ILO, 2022b). On the other hand, technologies do impact occupations and tasks within occupations, thus influencing change in economic sectors and creating increasingly complex labour markets. In some cases, this may lead to job replacement due to robotization and automation and could impact youth, especially those in lower-skilled jobs and those jobs at higher risk of automation. Trends in high-income countries suggest that educational requirements for most jobs are increasing, putting additional strain on governments to provide training opportunities and for citizens, including youth, to adopt a “life-long learning” approach to skills development and their career.

A key question is how PES are using technology to support youth and how PES themselves are digitally transforming themselves and their services, especially in the wake of the COVID-19 pandemic and other crises. This concerns both the short-term use of technologies, e.g., as part of ALMPs, as well as the longer-term strategy to adapt to a changing world or work.

This introductory chapter sets the scene for the empirical study that seeks to answer this main question. In doing so it looks at previous literature and data about the labour markets in Asia and the Pacific. It is based on a framework (see [Figure 1](#) below) that integrates the key variables in this study.

**A framework to guide this study:** To guide the empirical study and correctly frame the results, we need to understand the status quo of a number of variables.

► **Figure 1. Study framework**





First, it is necessary to understand the status of labour markets in the region. While PES typically aim to address employment issues, they do not control most elements of the labour markets they work in. Thus, understanding the status of the labour market can help to understand the potential efficacy of PES. Longer-term labour market developments as opposed to the short-term which are often determined by the economic conjuncture are often a result of developments in technology and society and these are most likely to affect youth during their career.

Secondly, a closer look at the intersection of technology and society is key. The various ‘industrial revolutions’ in the past have always profoundly impacted the ways societies function. Several authors argue that we are in the middle of a ‘fourth industrial revolution’ (Schwab, 2016) or ‘second machine age’ (Brynjolfsson & McAfee, 2016) which is affecting societal elements such as people’s mobility, flexibility and overall trends such as globalization, demographic shifts, climate change and digitalization. Both technological and societal developments are impacting labour markets; technology could, for example, lead to automation and displacement of jobs. Societal changes mean that the concept of ‘jobs for life’ is challenged while new concepts such as ‘job-hopping’ emerge.

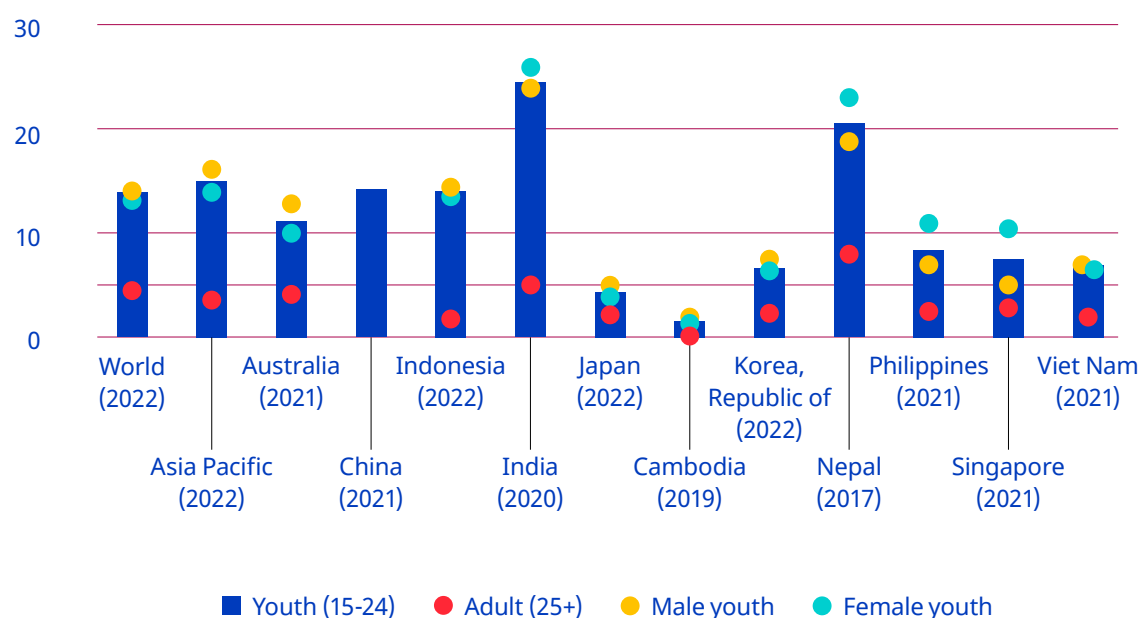
These technological developments are not only affecting labour markets, but also how PES function. For example, PES around the world are constantly experimenting with, developing and implementing new technologies in their processes and services (e.g., social bots, artificial intelligence-based vacancy matching, cloud computing, etc.).

Lastly, we need to examine external influences that may impact these variables. The most relevant at present is the impact of the COVID-19 crisis, which not only massively impacted labour markets in the region in 2020-2022 but is likely to have a long-term impact in terms of recovery and perhaps more fundamental shifts in the labour market in the Asia-Pacific.

## ► 1.1 Labour markets and youth in the Asia-Pacific region

---

Young people in Asia and the Pacific were disproportionately affected by the devastating impacts of the COVID-19 pandemic compared to adults in the region, while the pace of recovery in terms of youth employment is also lagging behind that of adults (ILO, 2022b). The unemployment rate of young people aged between 15 and 24 years in Asia and the Pacific is estimated to have reached 15 per cent in 2022, slightly above the global average. Youth are many times more likely to be unemployed than adults (see [Figure 2](#)). Women, youth, migrant workers and older workers, are groups often over-represented among the low-skilled and in those sectors hardest hit by the effects of the pandemic, and were more likely to find their jobs threatened in the COVID-19 crisis (ILO, 2020b). Furthermore, unequal access to digital technologies also contributed to gaps in education and training prospects during the COVID-19 crisis. The shift towards digitalization in the delivery of education and training, including TVET programmes, has been accelerated due to COVID-19. However, not everyone has the information and communication technology (ICT) skills required to fully benefit from distance, digital-based learning (ILO and ADB, 2020).

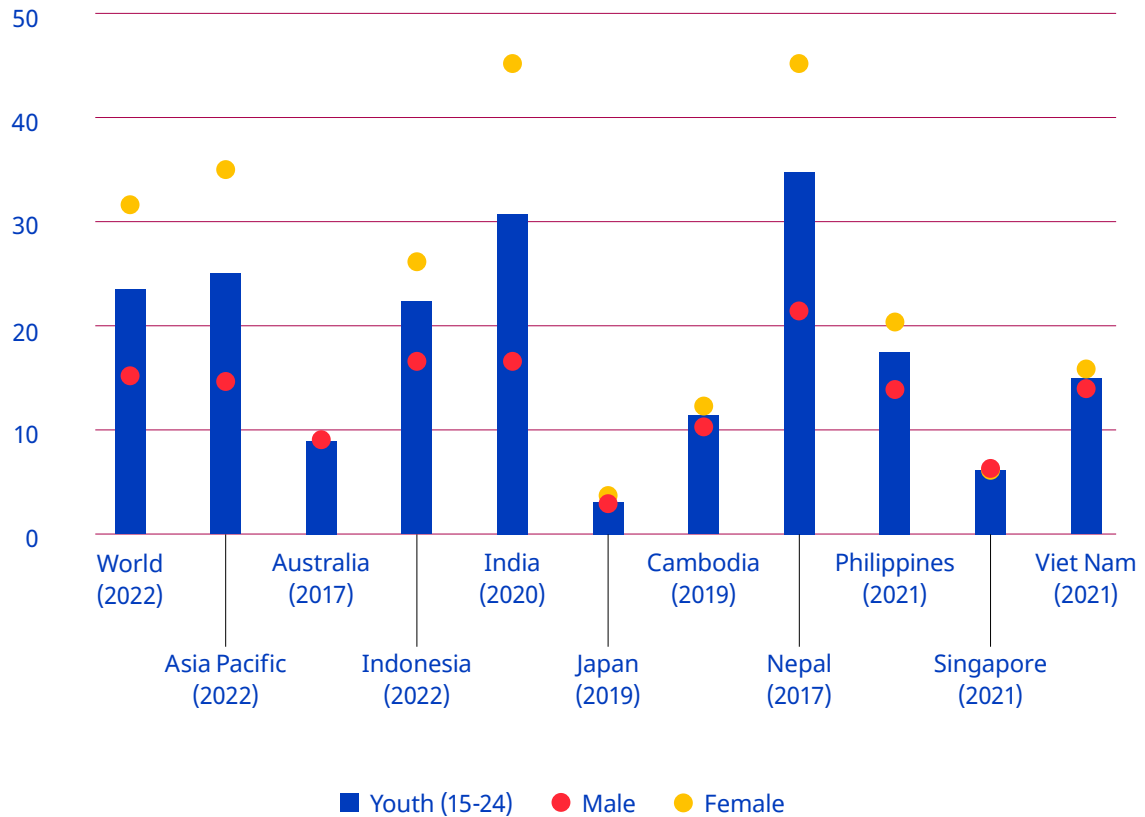
► **Figure 2. Unemployment rate by sex (%), youth compared to adults, latest year**

Source: ILOSTAT based on National Labour Force Surveys. The data for the World and Asia-Pacific are ILO modelled estimates, Nov. 2022.

For those young people in employment in the Asia-Pacific, the quality of their employment was a major challenge and policy concern even prior to the crisis. Then, young workers were increasingly well-educated, yet the lack of decent work opportunities for them in the pre-COVID-19 period is evident in the following statistics (ILO and ADB, 2020):

- Eighty-four per cent of young people in the region were in informal employment, working under precarious conditions and without access to social protection, versus 69 per cent of adults.
- One in four young workers were living in conditions of extreme or moderate poverty (below US\$ 3.20 a day), versus 18 per cent of adults. Working poverty was particularly high among youth in Southern Asia (45 per cent) and lowest in Eastern Asia (7 per cent).

In low- and middle-income countries (LMICs), vulnerable and/or informal employment dominate youth's labour market experiences. About one in four young people aged 15-24 in the Asia-Pacific region were not in employment, education or training in 2022. Large gender gaps persist across countries in the region (see Figure 3). The large proportion of NEETs among young women in Southern Asia had significant implications for the subregion's future productivity and inclusive growth prospects even prior to the COVID-19 crisis (ILO and ADB, 2020). As shown in the ILO figures (2022c), the youth NEET indicator includes unemployed non-students and inactive non-students who are out of the labour force. Youth classified as inactive non-students can be further disaggregated into potential labour market entrants and those who are completely out of the labour force and education for various reasons. Potential labour market entrants can be distinguished in terms of marginal labour market attachment and disaggregated into "unavailable jobseekers" and "available potential jobseekers". A nuanced understanding of the youth labour market situation is essential for PES to design targeted and relevant support measures.

► **Figure 3. Share of youth not in employment, education or training (NEET) by sex (%), latest year**

Source: ILOSTAT based on National Labour Force Surveys. The data for the World and Asia-Pacific are ILO modelled estimates, Nov. 2022.

In addition, several factors contribute to uncertainties for the future for youth as well as their short-term labour market prospects (ILO, 2022b):

- The COVID-19 crisis, its lasting damage and recovery
- Geopolitical risks,
- Macroeconomic risks such as the impact of supply chain disruptions and rising inflation

The longer term is even more uncertain and stems from broader developments in labour markets. It is a time of transformative change in the world of work, driven by technological innovations (see Section 1.3 below), demographic shifts, environmental and climate change, and globalization, as well as persistent inequalities, which have profound impacts on the nature and future of work, and on the place and dignity of people in it (ILO, 2019).

A key question is how governments in general and public employment services specifically are dealing with these challenges. Several potential solutions are outside the mandates of PES. For example, extending broadband coverage could, based on certain macro-econometric models, create a net increase of 2.1 million jobs for young people aged 15-29 in the Asia-Pacific by 2030 compared to a “business-as-usual scenario. However, the majority of these jobs are projected to go to males (ILO, 2022b).

## ► 1.2 Public employment services and youth

---

Public Employment Services typically are mandated government organizations that focus on one or more of three tasks: a) administration of unemployment benefits for unemployed persons, b) creation of labour market information that can be used by other agencies and c) provision of interventions, services and programmes in the labour market. Most PES typically focus on three related interventions on labour markets for youth:

- **Using specific Active Labour Market Policies (ALMPs) to target youth or subgroups within the youth population.** Examples are digital skills development programmes for young people or internship programmes for disadvantaged youth.
- **Refining traditional PES processes to better account for the needs of youth.** Examples are vacancy matching processes that include youth-specific variables (such as age and work experience) or profiling methods that segment youth specifically and provide them with counselling services (e.g., about types of training programmes to follow).
- **Transitioning their business models (such as digital transformation) to focus on career guidance and life-long learning rather than simple labour mediation** in order to serve young people continuously as they embark upon their careers and multiple labour market transitions. Examples are regular check-ins with clients (whether employed or not) to help them advance their careers and/or remain up-to-date in their existing careers, working in partnership with education/ TVET providers to enable relevant training.

ALMPs tend to be an effective measure to support young people. On average, evaluations of youth employment programmes report small but statistically significant positive effects (Kluve et al. 2019). In addition, programmes that integrate multiple interventions and services are more likely to have a positive impact (Kluve et al. 2019). Youth employment interventions tend to be more successful in low- and middle-income countries because small investments in a group with initially lower capacities tend to have stronger impacts (Kluve et al. 2019).

One of public employment services' core duties, typically, is to carry out labour mediation: the matching of jobseekers to vacant positions. For this, young people require a combination of mainstream services and targeted approaches typically for their transition into employment (Avila, 2021). Thus, PES should explore how more segmentation and/or profiling could be incorporated into their processes. In addition, career guidance approaches are increasingly common in many countries. The reason is that the need for career guidance has increased sharply, with people staying in education and training longer and pressure growing on people to upskill and reskill throughout their career (European Commission, et al. 2021). This could benefit youth – generally regarded as a priority for targeting career guidance services in low and middle-income countries (Hansen, 2006). The focus on labour mediation will continue its relevance in a rapidly changing labour market in which young people undergo multiple labour market transitions.

Lastly, an important consideration is the position of PES vis-à-vis private companies that also provide complementary or competing services. Labour market interventions go beyond the policy areas of labour and employment. This includes a plethora of labour mediation services (e.g., through LinkedIn), training providers or providers of services to PES (e.g., consulting firms and companies developing matching algorithms). Social security and education/training systems need to be developed in connection with labour market interventions for an inclusive approach. Examples can be an expansion of the childcare system and make it affordable to enable higher female participation in the labour market or modernizing the educational system to satisfy labour market needs and demands for traditional and new skills. It is important for PES to monitor such services in order to understand them and establish benchmarks.

## ► 1.3 Technological and societal developments

---

Many changes in labour markets are the result of technological developments which can occur in several waves. According to Schwab (2016), who uses the label 'fourth industrial revolution', the current wave of developments is characterized by:

- **Velocity.** As opposed to previous changes, this one is evolving at exponential rather than linear speed.
- **Breadth and Depth.** This revolution builds upon previous revolutions and is characterized by a combination of technologies that will lead to drastic shifts in the economy, business, society and individually.
- **Systems Impact.** It entails the transformation of entire societies (instead of segments), across and within countries, systems, companies, industries, etc.

What types of societal changes. Several consequences (and drivers) of technological changes have been mentioned in the literature, often in relation to changes in labour markets due to automation and robotization, which will be discussed subsequently:

### ► Globalization and mobility

Improvements in transportation and communication have led to an increasingly globalized society in which people are much more mobile than before. This stimulates higher labour mobility, which impacts PES workloads.

### ► Social and cultural

Technological innovations such as television, the Internet and mobile phones have impacted how people communicate and spend their leisure time, but more importantly in the context of this paper is the influence on workers. Workers (Castle, 1995) are affected in three different ways: a) the social status of the worker, b) the role that work plays in the individual's identity and c) the worker's standard of living. These changes could impact how people want to communicate with PES.

### ► Finances and taxation

If robots replace humans in many jobs, this could affect the state's finances, especially if a) more people become unemployed and thus drawing unemployment benefits (where available) and b) taxable income is falling. This impacts PES operations concerning resources and budgets. Several thinkers in the field argue that the solution to the problem is to introduce taxation on robots in a fashion similar to the way in which human labour is currently taxed. The Republic of Korea is one of the countries to actually impose a "Robot Tax"<sup>7</sup>

### ► Education and training

Technology has always had an impact on people's skills and underlying skills requirements. For example, production of text has shifted from writing to typing via typewriters to typing on PCs. Newer technological developments will also pose their own challenges for education and training. In this context, Aoun (2017) advocates for a new model of learning, labelled "humanics", which should be aimed at the following types of skills:

- **Human literacy skills.** We need to focus on the types of skills where technology is inferior to humans and these are skills such as creative problem solving, conflict resolution, communication, and the ability to work in a team.

---

<sup>7</sup> See ADB (2022) Is it Time to Tax the Use of Robots? <https://blogs.adb.org/blog/it-time-tax-use-robots>

- **Experiential learning.** We should not just focus on theoretical learning—the kind that takes place in traditional classrooms, but also on experiential learning, in which pupils apply their knowledge to novel, real-world situations. This can help in honing future skills and developing the new types of skills that are needed.
- **Lifelong learning** is needed to keep up with advancing technology. Developing human literacy skills and our cognitive capacities through experiential learning can help create a growth mindset, which is needed if one is to become a lifelong learner.

In general, there is an increased focus on lifelong learning and the development of so called “21<sup>st</sup> century skills” to tackle the challenges of digital technological developments. This impacts PES concerning operations, priorities and outreach, thus, the need for PES to actively monitor and interact with these technological developments.

## ► 1.4 External influences (COVID-19)

---

The COVID-19 crisis, which was a major external influence on labour markets, had a vast impact on the labour markets in the Asia-Pacific region, in particular for youth. Beyond the direct effects of the crisis on employment, there are more indirect effects that underscore some of the longer-term effects of the crisis, such as changes in young people’s career plans.

Secondly, there is the longer-term aspect of equality and inclusion. The ILO Global Call to Action (2021a) focuses on a recovery from the COVID-19 crisis that is inclusive, sustainable and resilient. A key consideration is that the crisis has affected the most disadvantaged and vulnerable disproportionately (e.g., those working in low-skilled jobs) and has widened gaps, including the digital divide within and between countries. For example, digital inequalities have prevented many people from shifting to remote working and receiving skills training since the start of the lockdown owing to the pandemic (ILO, 2021b).

Reductions in family income and the use of distance learning by educational institutions were other factors that rendered the pursuit of education and training more difficult and/or disruptive for many (ILO, 2022b) during the crisis. As a result, one of the longer-term effects of the crisis could be that PES need to increase their efforts on education and providing training-related ALMPs.

In addition, as mentioned above, women have been hit disproportionately (ILO, 2021a), and young women are no exception. The pandemic has severely affected their education, training and employment, making it even harder for them to find a job, successfully transition from education and training to work, continue education or start a business, thus posing the risk of a reduced trajectory of earnings and advancement over the course of their working lives. Thus, in the longer term, more emphasis should be put on the impacts of COVID-19 on subgroups, such as young women.

A last factor is the role of advanced analytics and mainly artificial intelligence. In the post-epidemic era, artificial intelligence has proved to have a great impact on labour markets. For example, the recent release of ChatGPT - an advanced chatbot - based on artificial intelligence, could accelerate transitions of the labour market<sup>8</sup>. This is amplified by the pandemic, which has intensified the polarization of the labour force. For example, the demand for technical skills is increasing while at the same time there are technological developments leading to potential job loss because of increased automation efforts spurred by the pandemic (Yan-ping and Ai-qin, 2022).

---

<sup>8</sup> See <https://openai.com/blog/chatgpt/>

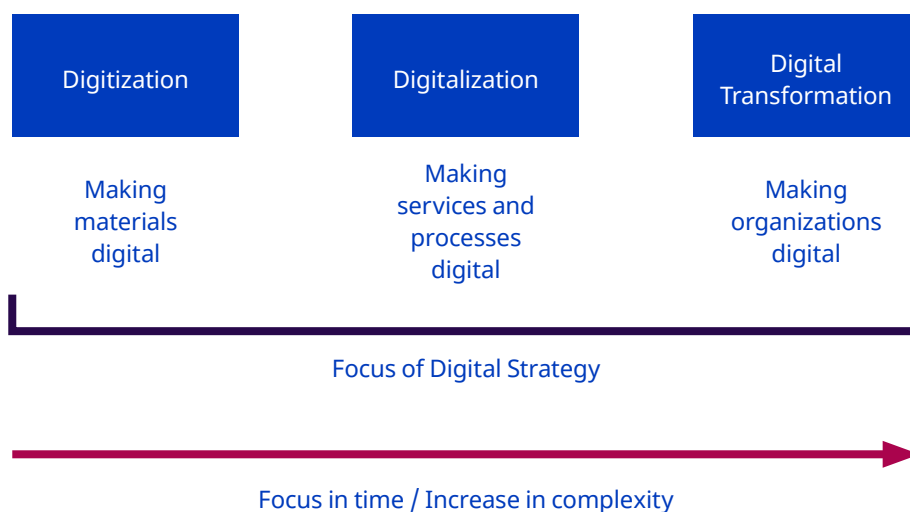
## ► 1.5 PES digital strategies

The ILO Global Survey from 2020 suggests that technology uptake across PES is moving forward. By the time the pandemic hit, all PES (69 PES across 64 countries) had digitalized or automated at least one core service (ILO, 2022a). This technology uptake occurred across the entire PES organization. The results highlight that web-based technologies are now the most used types of channels to deliver services worldwide, and more and more technologies are finding their way into the heart of PES processes, such as vacancy matching, counselling services and case management. The newer developments, such as the adoption of AI are slowly gaining ground. As of now, one third of the responding PES were deploying one or more types of AI. The most popular applications are in the areas of vacancy matching and production of LMI. To guide all these developments, a majority of PES are now deploying a guiding digital transformation strategy (ILO, 2022a), which could be defined as follows:

*A PES digital strategy is the application of information and technology to provide value for jobseekers, employers and other stakeholders as defined in the PES mission and within the context of its vision.*

Three different types of these digital strategies exist, varying in their complexity (based on Pieterse, 2019) (see Figure 4 below):

► **Figure 4. Types of digital strategies**



► **Digitization**

Refers to making information and materials digital, for example the creation of digital versions of forms (from paper to PDF).

► **Digitalization**

This focuses on the process of making services and/or processes digital end-to-end. An example of digitalization is the translation of pdf forms into completely digital forms (e.g. online forms) that directly connect to PES' back offices.

► **Digital transformation**

Refers to the realignment of the organization around digital technologies, where technology becomes the leading element around which the organization is structured. This (often) involves changes in organizational structure, redesign of processes and services, changes in HR functions and talent management, and in communication and collaboration.

It is increasingly common for countries to have a digital strategy in general. Digital strategies are often accompanied by advances in the use of data. Digitalization of employment services, for example, unlocks the use of “big data” with the potential to improve job matching and tailoring of employment services to individual needs. Similarly, they could provide more accurate analysis of the labour market (Lee, 2018) and thus create better Labour Market Information (LMI). In the Republic of Korea, for example, the employment information network managed by the Korea Employment Information Service (KEIS) comprises several databases and systems (ILO, 2020) and by connecting these systems, a previously unavailable wealth of information is unlocked.

There are challenges, however. In reviewing EU PES digital strategies, it is evident that, while digitalization and automation lead to more efficient workflows, some institutions are being held back by a lack of resources and by internal resistance to change (Pieterse, 2018). Furthermore, the use of digital technologies, e.g., AI-based recruitment and matching tools opens up the possibility of discriminatory practices (Avila, 2021), thus hampering inclusion, while at the same time creating opportunities to identify inequalities in labour markets and thus improve inclusion.

Digitalization in PES can lead to an enhanced outreach and targeting of clients, dependent on digital coverage in the country and digital literacy of targeted persons. Current collaborative efforts consist of different technology developments within and between different organizations, and the harmonization of different systems. It is important to note that PES have an obligation to respect the privacy of clients and data protection regulations need to be adhered to, in combination with organizational efforts to protect the integrity of clients, both individuals and employers. Pooling of vacancies and sharing information are some of the key areas for collaboration between PES and PrEAs. In Thailand for example, the Department of Employment collaborates with several private recruitment agencies such as Manpower, Adecco, Jobbk and Jobs D.B. The job vacancies from these agencies are linked to the online platform of the Department of Employment, showing more job opportunities to jobseekers publicly.



## ► 1.6 Employment Services Conventions

International Labour Standards (ILS) on employment services are stipulated in the Employment Services Convention 88 (No. 88) (C88) and Convention 181 on Private Employment Agencies, 1997 (No.181) (C181) (see [Box 1](#)). Japan is the only country included in the research which has ratified both ILS for public employment services and private employment agencies. Most countries in the study have ratified C88, except Cambodia, China and Nepal. Substantive work on developing employment services is ongoing in the region, increasing the importance of both PES and private employment agencies (PrEA) and collaboration between the two. Together, the two Conventions constitute a solid legal framework for stakeholders in the labour market on employment services. Processes have been initiated in several countries to move towards ratification of preparing national legal systems to align with the principles in the Conventions.

### ► Box 1. Highlights of Convention 88 and Convention 181

**Employment Services Convention, 1948 (No. 88)** calls on governments to maintain a free nationwide public employment service (PES), cost-free for clients and open to everyone. C88 also emphasizes the coordinating role played by public employment services. It calls for cooperation with public and private bodies to ensure the best possible organization of the labour market for achieving and maintaining full employment and for developing and deploying productive resources. The Convention emphasizes the importance of PES in collecting labour market information, including increasing the responsiveness of both jobseekers and

employers to labour market changes through mobility and collaboration with other stakeholders.

**Private Employment Agencies Convention, 1997 (No. 181)** establishes a comprehensive framework for the registration, licensing and effective regulation of private employment agencies and the protection of workers that use their services. It requires member States to take measures to protect national and migrant workers from abuses and protects legitimate agencies from unfair competition by rogue operators. C181 recognizes the sector's important contribution in matching labour demand and supply and applies to all private employment agencies, economic sectors, and categories of workers (with the exception of seafarers).



# ▶ 2

## Status of PES' digital transformation in selected Asia-Pacific countries

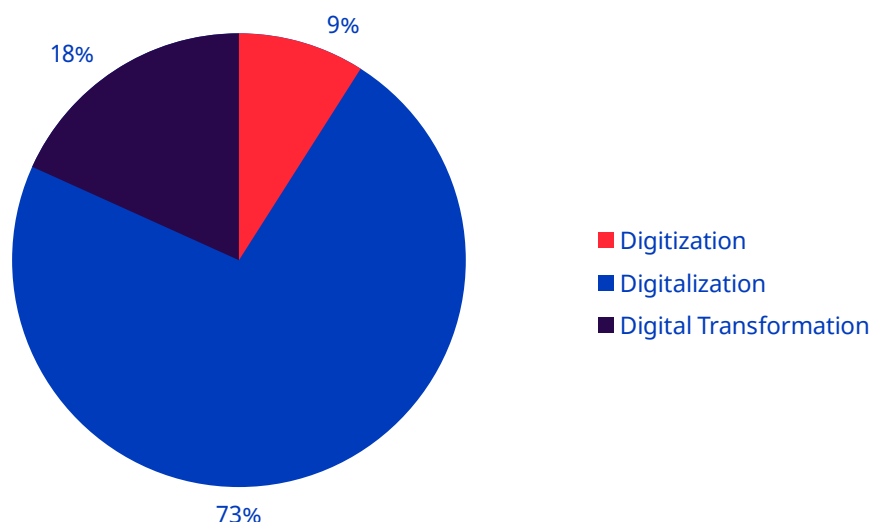
---

In this first empirical chapter, the emphasis lies on the current status of PES digital transformation, especially in the wake of the COVID-19 pandemic. It compares the status of digital transformation with that of 2020. In addition the drivers of technology adoption in PES are re-examined. Key elements of digital strategies are discussed: What PES are doing with their IT-systems in their back offices, technology in their front offices, organizational aspects and the role of data. While these are more general elements of PES digital strategies and not directly aimed at youth, the overall technology landscape provides the foundation upon which successful digital youth services are built.

## ► 2.1 PES digital strategies

**As digital technologies become increasingly important in all parts of the PES organization, it becomes all the more important that PES adopt and implement dedicated digital strategies that help them manage all facets of technology in their organization.** As seen in the previous chapter, there are different types of digital strategies, the most advanced being digital transformation. In 2022, all participating PES have some form of digital strategy. When drilling deeper into the exact nature of these digital transformation) strategies, it is clear that the majority of PES are not yet focused on the re-alignment of their organization (Figure 5). Rather, the focus of PES is on digitalization of their processes and services.

► Figure 5. Nature of PES digital strategies in 2022



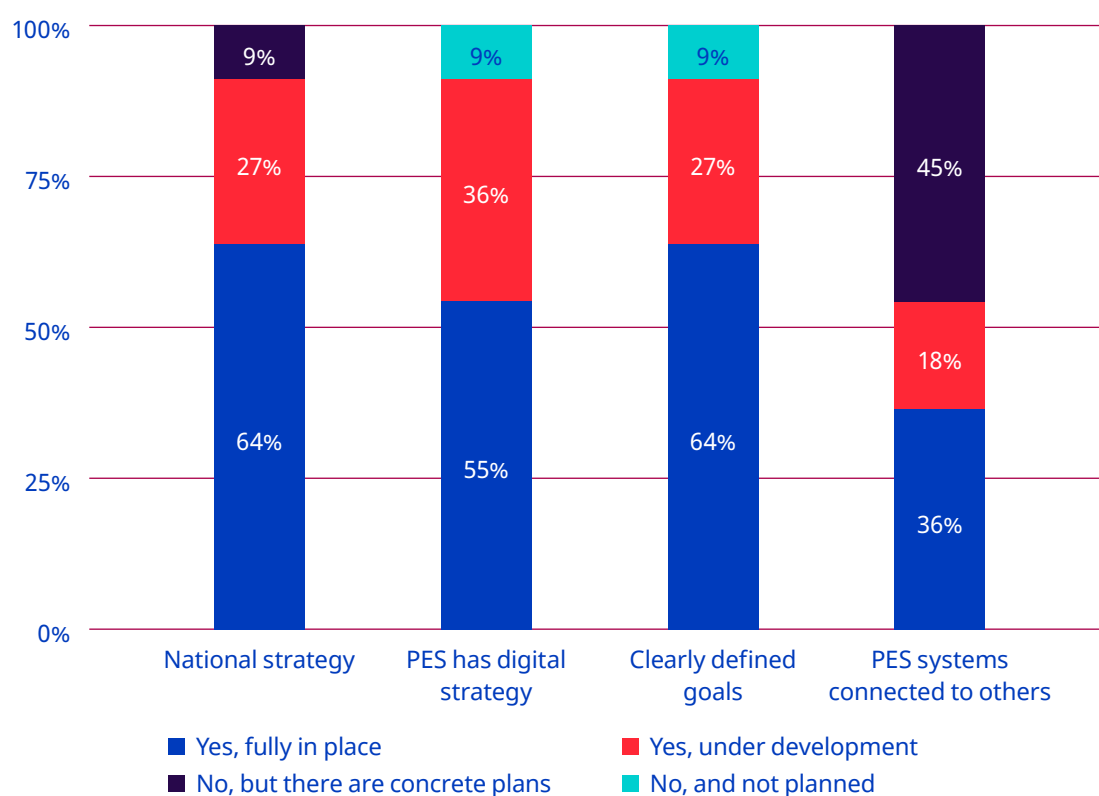
Only two of the participating PES report that their actual focus is on the more comprehensive digital transformation (Republic of Korea and India). The Republic of Korea is a high-income country (HIC) and one of the world leaders in electronic government. In India the 2015 effort and establishment of the National Career Service was the starting point (more information in [Box 5](#), [Box 6](#)).

PES digital strategies could consist of many different elements. The first is the degree to which PES have a formalized plan in place to execute their digital strategy, the second is whether this strategy has been translated into clearly defined goals or objectives that are realistic and attainable. Lastly, it is important to note that PES never operate in isolation, they are part of a wider government ecosystem and any PES digital strategy is more likely to succeed when embedded in a cohesive national strategy and when PES systems are connected to other government actors. For example, linkages to educational organizations could be important to share diploma and CV information; connections to tax authorities could be important to prevent benefit fraud, and links to central registries (such as name and address) are relevant so that PES clients do not have to supply information already known by governments. Further examples include outreach to vulnerable groups, such as information about persons with disabilities where the registry information tends to sit with other ministries, e.g. social protection databases. As an example, by the end of 2023, the Republic of Korea will combine various information services such as employment intermediation and skills training into a single system. By sharing information among related internal and external government organizations, the PES in the Republic of Korea is planning to enable civil petitioners to submit applications with only a minimum amount of information. PES employees will be supported to quickly process applications and pre-screening with the integrated screen. In addition,

other functions that facilitate companies or individuals in their initial application add and analyse the required information in order to introduce those companies and individuals to each other.

Most participating countries already have a national digital strategy in place (64%) with 27% reporting that this is currently being developed (Figure 6). This roughly aligns with the percentages of PES that have their own digital strategies<sup>9</sup> as well as the number of PES that have translated their digital strategies into clearly defined goals. Room for improvement exists where PES IT-systems can be connected to those of other relevant government and other parties. Currently 36% of PES have this in place and a larger group of 45% have concrete plans to start developing it. The ability to share data reduces administrative burdens within PES and for clients, and increases the accuracy of the data being collected and shared. In general, the high-income countries (HIC) are more likely to have a national digital strategy than the middle-income countries (MIC). For example, every HIC (100%) has a national digital strategy in place, versus 43% of MIC in this study.

► Figure 6. Key elements of national and PES digital strategies



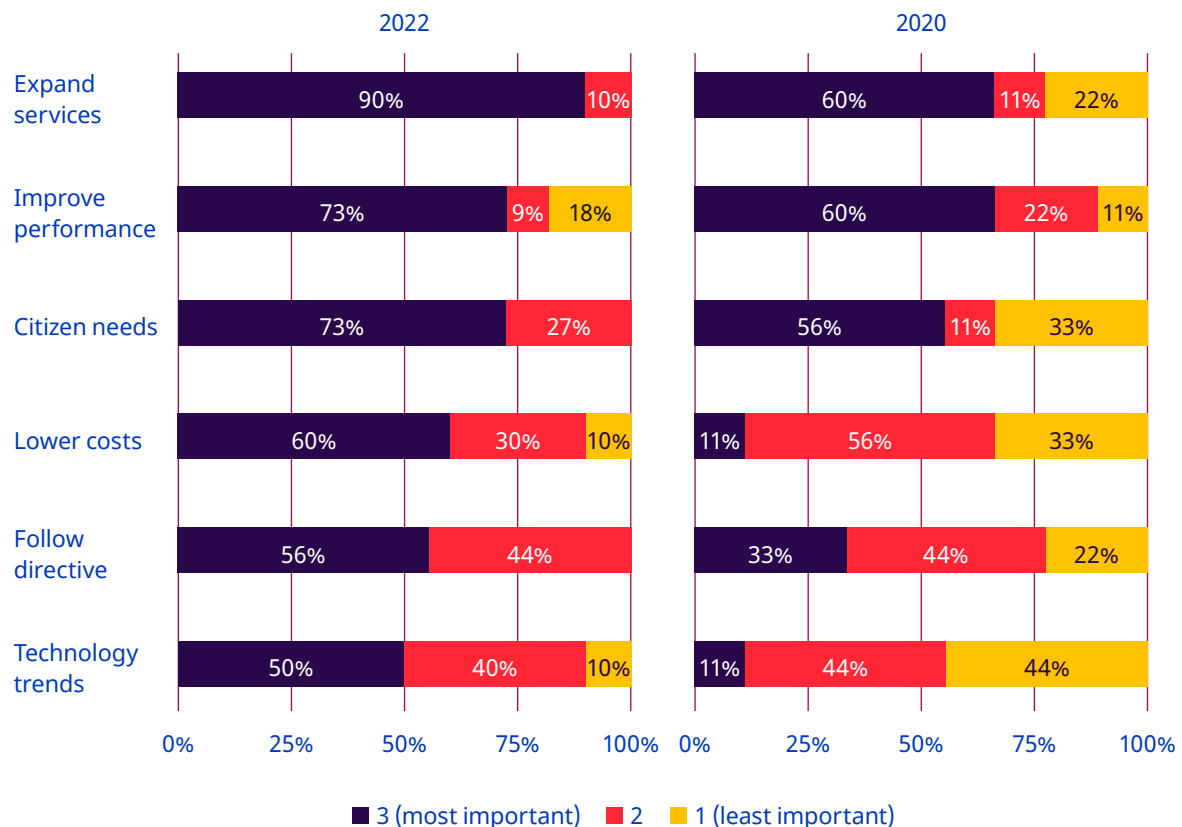
PES can have different reasons to start adopting and using technology and the 2020 global study already explored the drivers of technology adoption in PES. This 2022 study re-uses the same questions to study how these drivers have changed over time in the participating countries (with the realization that the COVID-19 pandemic happened between the two points of measurement) (see Figure 7). The results indicate that the picture in 2022 is different from that in 2020. First and foremost, all drivers are being mentioned as more important in 2022, suggesting that the COVID-19 pandemic has accelerated the adoption of technology within PES. For example, while 67% of the PES responded in 2020 that expanding services was an important reason to use technology, this increased

<sup>9</sup> The differences between the percentages of PES having a digital strategy (Figure 6) and the much higher percentage of PES reporting having a digital transformation strategy in 2020 and 2022 results from the fact that the questions asked in the 2020 study (and re-used in 2022) about digital transformation were more generally and broadly phrased and thus applicable to more PES.

to 90% in 2022. Secondly, technology as a means to lower costs especially has grown in importance. This is not surprising, as government and PES budgets have often been strained due to the crisis.

► **Figure 7. Factors driving the adoption of digital technologies in PES, 2020 and 2022**

Factors ranked from most (3) to least (1) important:

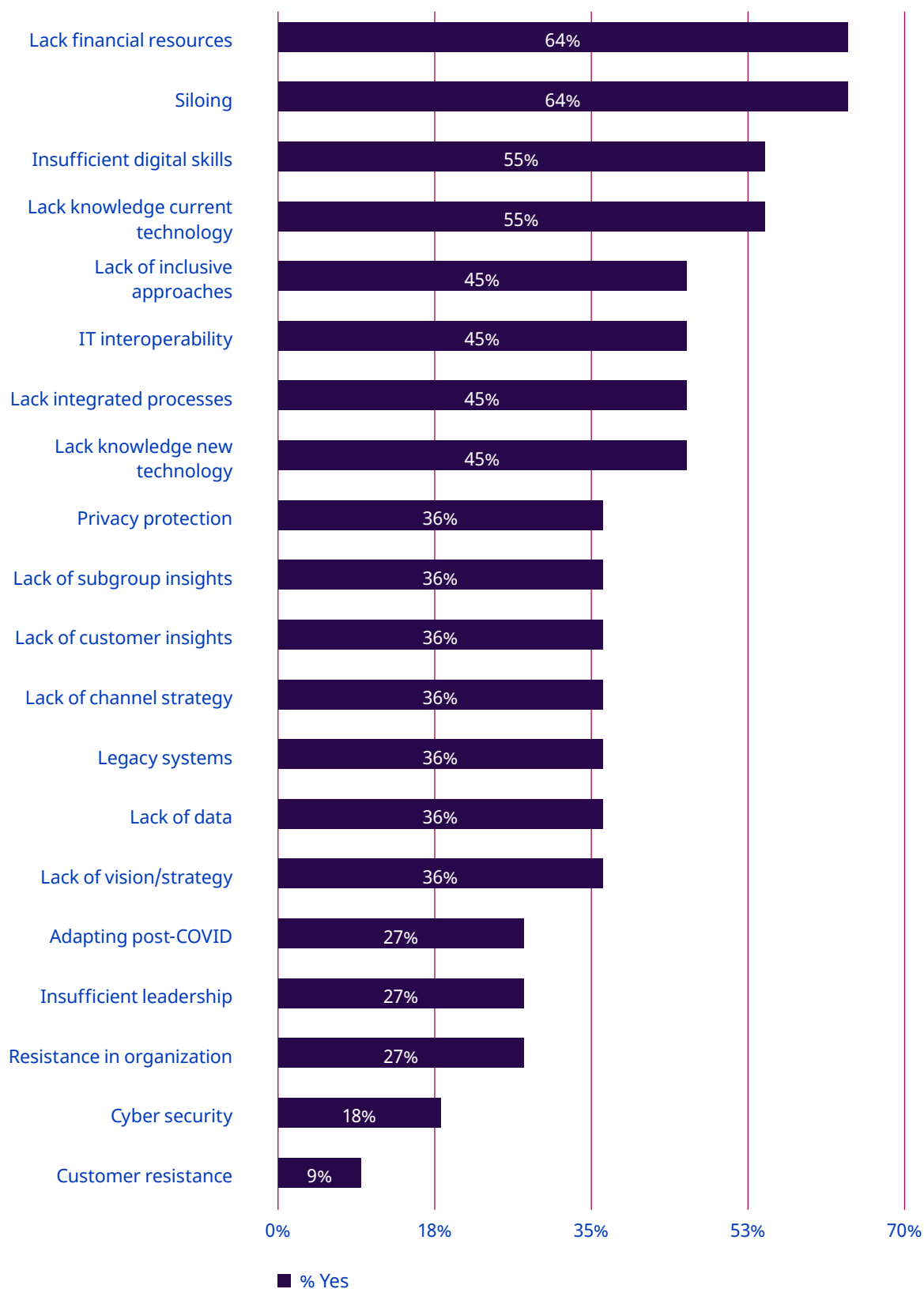


**Note:** 2020 data based on ILO 2020 survey and consists of n=9 countries that also participated in 2022.

This aligns with the key obstacles in the way of future digitalization identified and improvement of service delivery. Lack of financial and other resources was mentioned by 64% of PES in this study and this applies to both HIC and MIC. This points to an important challenge faced by PES, in order to reduce costs through digitalization, initial investment is often needed. While it could be possible for PES to find funding from their governments (as happened in some countries during the pandemic (Figure 7) the reality is that PES have to make decisions about where their investments potentially yield the highest return. This is also dependent on the degree of autonomy of the PES and developments within the entire governmental structure. One way is to explore in which contexts it would be effective for human interactions to be replaced by online interactions, thus freeing up human resources to be reallocated or strengthened where online solutions are not an option, e.g. in-person support and counselling. Another example is investments in database infrastructures that reduce reliance on manual labour and administrative tasks for staff.

Many of the important obstacles are of a 'soft' nature. Digital transformation is often thought of as physical computers, networking equipment, databases, and the software needed to run an application. However, there is a human side to digital transformation, often not sufficiently recognized. This is shown in the results below (Figure 8). Siloing in the organization, insufficient skills, lack of knowledge about technology and the lack of inclusive approaches are all important obstacles to PES, all concerning the human and organizational aspects of digitalization.

► Figure 8. Obstacles to future digitalization and improvements in service delivery

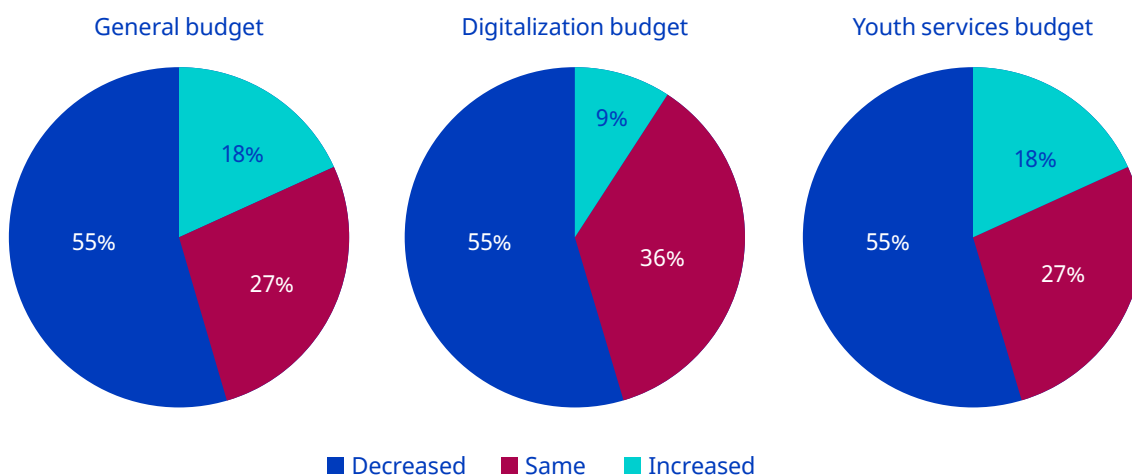


This suggests that PES could benefit from paying more attention to the human and organizational elements in their digital strategies and implementation. For example, change management may be needed to break down organizational silos, and training programmes could be needed to train both PES staff and clients in the use of new tools and applications.

## 2.1.1 The impact of COVID-19 on PES

Concerning the impact of the COVID-19 pandemic on PES, [Figure 9](#) gives an overview and in a majority of countries, the crisis has led to an increased budget for PES. Reasons being that the crisis in most countries has (negatively) impacted labour markets, thus increasing demand for PES.

► **Figure 9. The effect of the COVID-19 pandemic on the budgets/funding of the PES**



Two out of 7 MIC saw their general and youth services budgets decrease as a result of the crisis, whereas 3 out of 4 of the HIC saw an actual increase in these budgets as a result of the pandemic. The increase in digitalization budgets was often used for the introduction of online meetings and virtual job fairs. In general, most PES witnessed more practical and operational effects, such as the move from face-to-face (in-person) interactions to online contact. In some countries, such as China, the crisis led to an acceleration of the digital strategy, where more funding and elements such as staff training were allocated to support digitalization. In Australia, providers transitioned into other modes of delivery such as online, phone and videoconferencing. Online services were expanded to include self-management tools for jobseekers, contact centre support for online support to clients and a possibility for jobseekers to move to a different service provider online (see above [Figure 9](#)).

## ► 2.2 Back-office and IT developments

### **PES back offices are where deployment of IT and digitalization happened initially.**

The diffusion of IT within organizations in the past is often described as a succession of separate, yet overlapping, generations of innovation:

1. mainframe computing
2. personal computing
3. networking, mobile and ubiquitous IT (Gallouj, 2002)

This influences how PES use technologies to digitalize their processes and service delivery. In general, PES are observing positive effects from their current applications of digital technologies by increasing their efficiency, effectiveness and coverage. This allows them to better diagnose the needs of young people and improve targeting and profiling, using biometric and spatial data and connecting it to real-time labour market information. This, in turn, improves matching and counselling by complementing online interactions with face-to-face counselling when necessary. In addition, PES can use new technology to improve programme monitoring and coordination with other service providers. This should help tackle barriers to both employment and labour market participation in an integrated manner. The relatively low cost of ICT-based intermediation services allows developing countries to provide services to a wider clientele. The challenge, however, is the low rates of internet penetration in certain parts of the world. As part of a multi-channel strategy to deliver employment services, many emerging and developing countries have launched online job portals, such as India (see [Box 5](#)) (IDB, WAPES and OECD, 2015).

One of the key areas where PES have applied IT is to automate processes and digitize information in their back offices. Ejler and Sidelman (2016) observe that the efficiency of PES has been improved by digitalization. PES in general have automated services that give customers access to more and better information. Because services are becoming digitalized, staff have more time to help clients in other ways, focusing on their specific needs and capabilities rather than dealing with complicated or time-consuming administrative tasks or data searching. This is echoed by the results of the ILO 2020 survey where PES acknowledge that service delivery has improved for a majority of target groups through digitalization. One example is how the Transformation Support Group of Workforce Singapore is using process transformation in order to continue service delivery improvements ([Box 2](#)).

#### ► **Box 2. Business and process transformation in Singapore.**

Workforce Singapore has set up a Transformation Support Group to catalyse business and process transformation efforts in the organization, such as by making greater use of business process re-engineering, ops-tech collaboration, and innovation. Some initiatives spearheaded by the Transformation Support Group include:

- The launch of a Cloud-based, one-stop platform which empowers staff to manage their human resources / finance / procurement needs in real time, coupled with educational efforts to help staff ease into using the platform.
- Alternative approaches to traditional work undertaken by the organization: for example, instead of conducting physical job fairs, the Group experimented with virtual interview platforms which allowed employers to efficiently shortlist suitable candidates for interviews.

However, it is important to note that the drivers of these changes are often external. The disruptive nature of new digital technologies will push organizations, including governments, to change (Gill

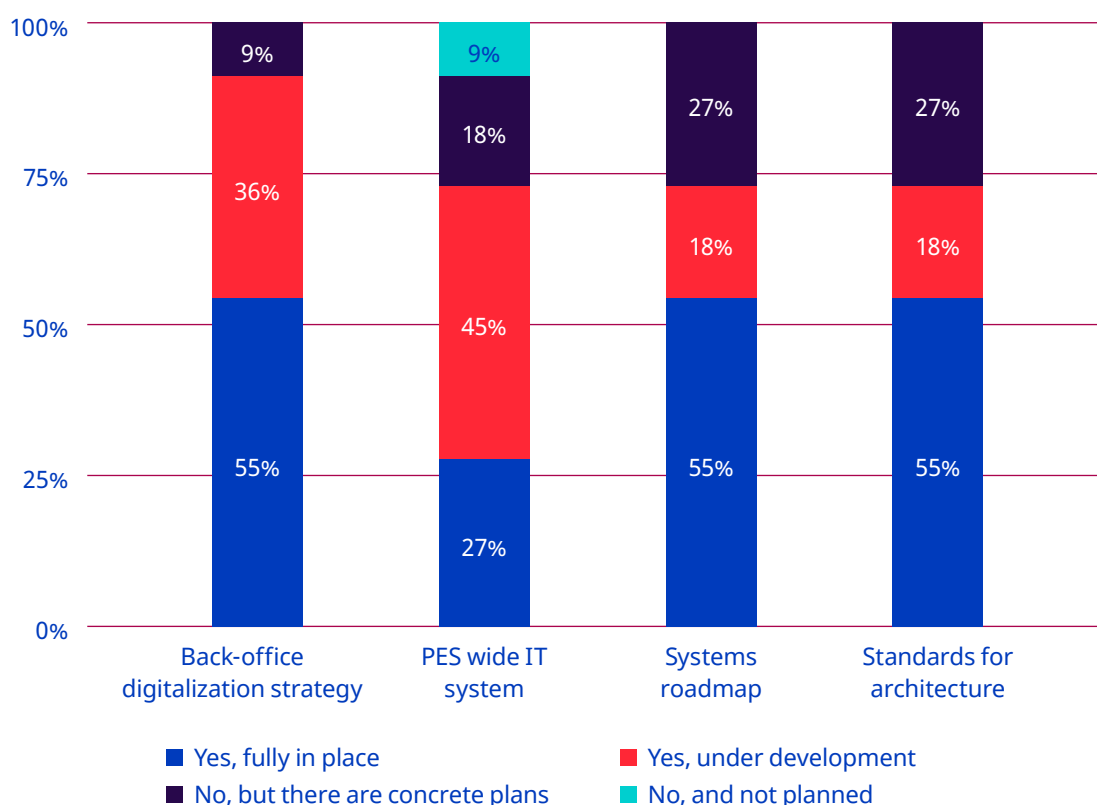


and Van Boskirk 2016). This means that change will be more continuous and exponential in a world where the speed of technological change is increasing. As a consequence, PES need to actively monitor technological changes to assess the impact on the own organization. PES recognize this, as both the 2020 and 2022 ILO surveys suggest that keeping up with technology trends is a driver that pushes PES forward.

The 2022 survey delves deeper into back-office and IT developments within PES in the Asia-Pacific region (see Figure 10). The results indicate that back-office digitalization is high on the agenda within participating PES. Most PES (55%) have a strategy to continue their back-office digitalization, accompanied by a systems roadmap and guided by IT architecture standards. However, only 27% of participating PES currently have an organization-wide IT system. Such systems are needed to connect individual back offices with each other and integrate information such as the number of jobseekers and vacancies nationwide. And to achieve:

- The collection of (near) real-time labour market information (LMI) about the country as a whole
- Facilitation of labour mobility across localities, regions and the country to help balance supply and demand for labour
- Improvement in the overall inclusive nature of the labour market.

► **Figure 10. Key back-office and IT developments**



One notable example is Viet Nam, where the country is advancing to connect its IT systems and create a unified digital back office. The Australian Government has developed the Australian Government Architecture (AGA) as part of its IT strategic plan to support the development of PES systems.<sup>10</sup>

Other countries' initiatives are very focused. For example, the Indonesian PES is working on a PES-wide IT system that allows the sharing of relevant data across regions, districts, and cities (Box 3).

<sup>10</sup> <https://www.dewr.gov.au/about-us/resources/it-strategic-plan-2018-2022>

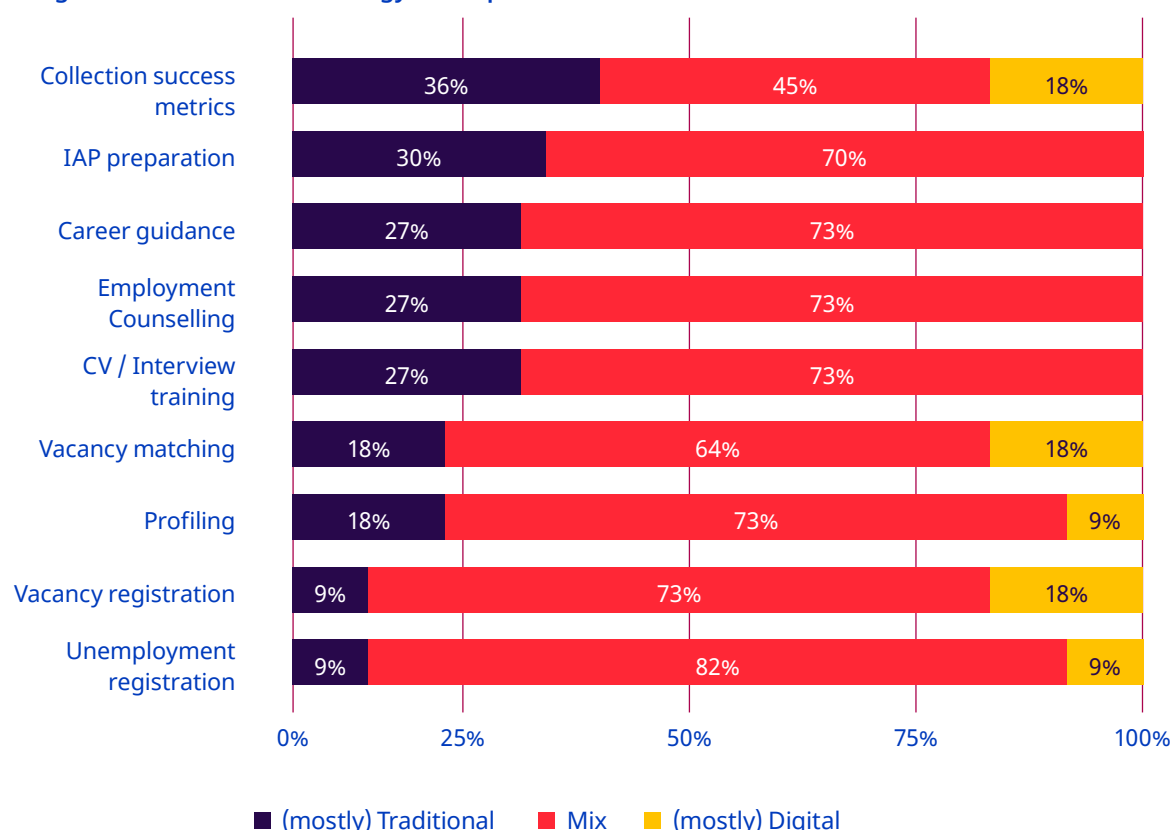
► **Box 3. Systems and data integration in Indonesia**

Indonesia recognizes that one of the key challenges in the organization is its fragmentation with the government structure, divided between provincial, district and even city level, leading to each level having its own systems. To solve this problem, the PES is working on an interconnected Employment Information System (SIAPkerja) so that data can be shared between offices and the PES can start working as a single platform.



A further look into the role of IT in various parts of PES offices sheds light on the degree of maturity of digitalization within the organization. The results indicate that, within most PES, the typical client journey involves a mix of the traditional approaches (such as records being processed manually), and the same activity online (see Figure 11 below). The important thing to note is that this might not be caused by a lack of willingness or availability of digital tools, but rather by legal frameworks and practicalities. For example, in Viet Nam, there is a legal obligation for jobseekers who apply for benefits to attend in person at a PES office at least once.

► **Figure 11. The role of technology in PES processes**



Digital strategies and labour market services require continued support and investment to remain effective, as shown in the example of Timor-Leste (Box 4).

► **Box 4. Labour Market Information in Timor-Leste with ILO support.**

In Timor-Leste, the ILO has, since 2007, led the support to the Secretariat of State for Vocational Training and Employment (SEFOPE) to establish a computerized Labour Market Information database (SIMU). The [software](#), intended to enable the collection of selected

labour market information, including jobseekers' profiles, training (needs, enrolment, completion and follow-up placement) and vacancies, staff of national employment services equipped with a practical tool to facilitate the in-person assistance to jobseekers. Aware of the need to progressively update its digital infrastructure, the Government, in early 2023, is exploring opportunities to further enhance the SIMU by integrating the latest IT developments.

## ► 2.3 Front office, services and channels

**The next area affected by digitalization is the front offices of PES. Newer channels emerge that allow PES to serve new clients and/or improve the effectiveness and/or efficiency of service delivery.** The existing literature provides insights into service channel developments, showing that progress in technological development has resulted in a number of 'service channel' generations (Pieterse, Ebbens and Madsen, 2017) (see [Figure 12](#)).

Most governments around the world have successfully implemented website channels and, to a lesser degree, email during the past decades and currently the use of social media is increasingly common. For example, China uses homegrown social media such as WeChat for several parts of the PES process, such as customer service, counselling, and labour mediation. Some countries are venturing into the use of social robots. For example, Australia has a 'Digital Assistant' on its website using artificial intelligence. However, the majority of PES in the region are very much focused on improvement of their existing websites. PES websites in the region vary from simple information provision-oriented applications towards full-blown portals that include the option to perform transactions. See [Box 5](#) for an illustration of this development in India.

► **Box 5. Development of the online job portal in India in 2015**

In India in 2015, the Government decided to overhaul its system and established the National Career Service based on an online job portal that brings together all players: employers, jobseekers, private employment providers, NGOs, training institutions, vocational guidance specialists, careers advisers.

Together with the physical employment exchange offices, the online portal (the NCS portal) forms the beating heart of the Indian digitalization efforts. Plans are underway to upgrade the portal in the coming years to be more robust and provide more functionality, including the transition towards a Cloud-based platform. Examples are competency-based matching (based on machine learning), better search functionality, the inclusion of a chatbot and dedicated pages for young people.

Across the world, these digital (or electronic) channels are becoming increasingly important for service delivery. However, there is a relationship with the digital maturity of the country. In the Asia-Pacific, countries such as the Republic of Korea (e.g. as a result of Korea's Digital New Deal 2.0), have developed online channels to complement, and in some cases replace, traditional means of service delivery with digital channels. The same applies to other countries with a developed electronic government infrastructure, such as Australia, Japan and Singapore. While electronic channels are gaining maturity

around the world, this does not always apply to the newer generations, such as social and mobile channels. These mobile channels tend to be growing in number. One example is New Zealand, where the Occupation Outlook app helps both jobseekers and those seeking to develop their career to find out about the employment prospects and characteristics of various occupations. An important reason to invest in these mobile applications is the consideration that apps might sometimes be the only way for the most vulnerable groups (e.g. migrants) to access employment services or for employment services to be offered in certain countries with wide geographical differences (inequality between rural and urban areas).

However, this does not mean that apps are the solution to every problem; the key question is whether dedicated mobile apps need to be developed or whether responsive websites or progressive web apps suffice. One key reason is that both development and maintenance of apps draws resources from other parts of the organization. While this suggests there are diverging views on the usefulness of apps, the more important lesson is that a careful analysis of the situation and development of business cases can help in determining whether mobile apps are a worthwhile investment, depending on the geographical context and possible target groups.

Thus, the channel landscape is constantly evolving and that creates the challenge that PES need to make decisions about which channels to deploy, for which types of services, for what client groups (e.g. youth) and in which situations. As there are significant costs involved with the deployment of each channel (Pieterse, 2017; Wirtz and Langer, 2017), PES need to consider the cost-effectiveness of developing new channels and/or maintaining existing channels. Such analysis should include:

- a. The creation of evidence-based business cases that prove the value of the new channels, e.g. by studying the adoption of channels by market segment and demand for new channels by conducting surveys.
- b. The regular evaluation of the success of existing channels by reviewing channel usage and evaluation by PES clients.

In many countries, face-to-face (in-person) services are still an important channel and certain countries continue to invest in them alongside investments in technology. One example is from India, showing the ambition of PES to meet the demands of the diverse Indian population (see [Box 6](#)).

#### ► Box 6. Role of Employment Exchanges in India

India's National Career Service in recent years started setting up Model Career Centres (MCCs), a brick-and-mortar model of NCS, having state-of-the-art infrastructure that are envisaged to become a hub of career counselling and providing all career related services for job seekers through outreach activities such as:

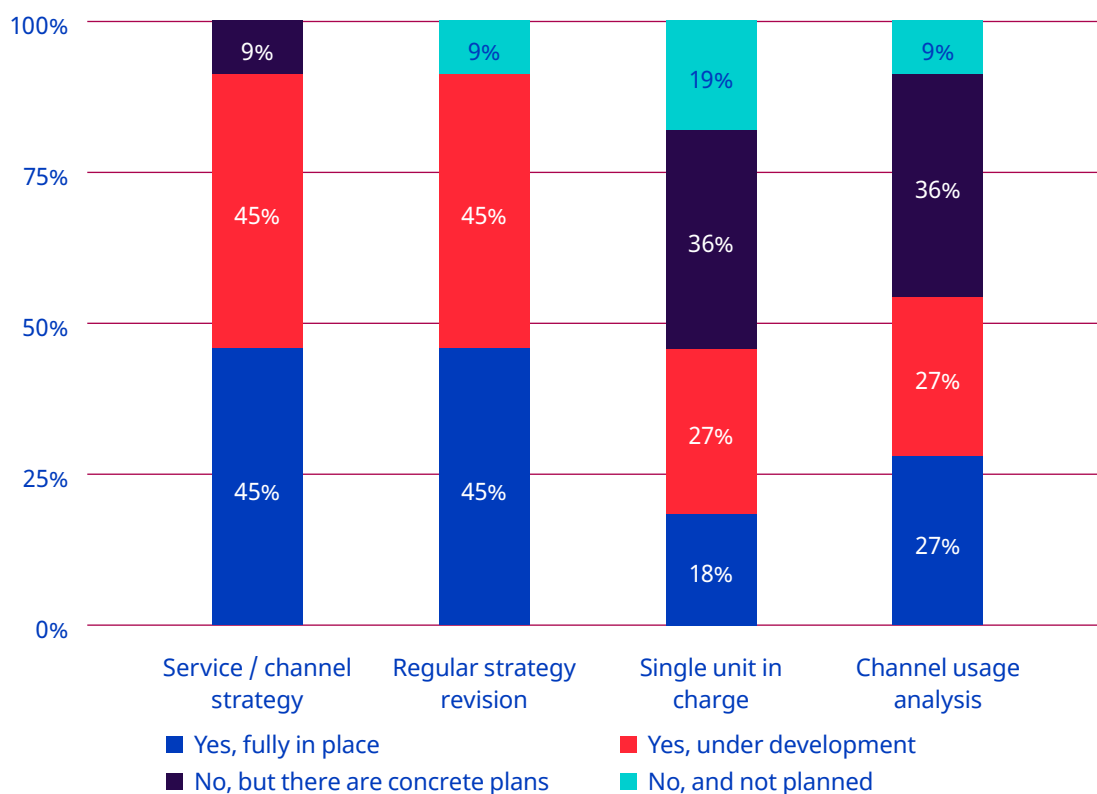
- Organizing job fairs
- Mobilizing employers (e.g. to submit vacancies)
- Providing counselling services tailored to the local context.

Employment exchanges which have been digitally transformed as Model Career Centres are supported by young professionals to manage relevant stakeholder relationships. In the future, the exchanges are expected to specifically connect local youth and other jobseekers with opportunities in the vicinity. Employment exchanges have been established and, together with the online portal, form the beating heart of the Indian digital strategy.

Thus, technological developments are affecting PES clients and their service interactions. PES could anticipate these changes by monitoring channel behaviours and skills. But to what extent do PES currently have accurate channel and service delivery strategies in place?

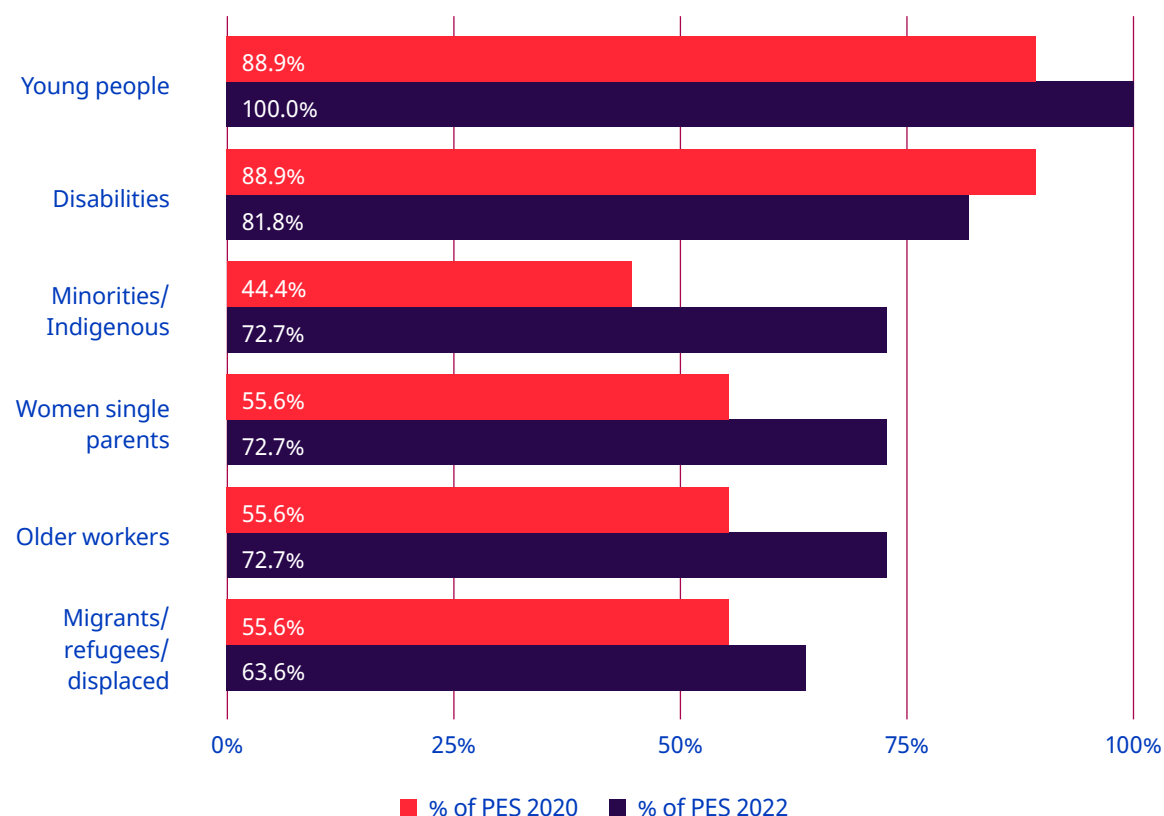
Whereas PES across the Asia-Pacific tend to have digital back-office strategies in place, most do not have such strategies in place for front-office development. Only 45% have a service and/or channel strategy in place and only a similar percentage regularly revises this strategy (Figure 12). It is interesting to note that this is equally divided between the HIC (Japan, Republic of Korea) and the MIC (China, India, Philippines). However, operationally, only a small number of PES (Japan and China) have put a single organizational unit in charge of all channels, and just a quarter of PES analyse the usage of existing channels which could be used to evaluate their effectiveness. While PES do have strategies regarding their services and/or channels, they could benefit from centralizing responsibility for them and collecting channel data (usage) to evaluate behaviours.

► Figure 12. The role of technology in PES front offices, services, and channels



PES in the region have made progress concerning inclusive approaches. In both the 2020 and 2022 ILO surveys, questions were asked about whether service delivery in recent years has improved for certain target groups. The results, and comparison over time, indicate that different target groups have increased in importance in recent years. For example, all respondents indicated that all youth had benefited from digital service delivery in 2022, compared to 89% in 2020. The biggest positive change applies to minorities and indigenous groups. However, it appears that people with disabilities receive less attention (see Figure 13).

► **Figure 13. Ways in which technology has improved service delivery for various target groups in 2022 and 2020**



**Note:** 2020 data based on ILO 2020 survey and consists of n=9 countries that also participated in 2022.

Certain groups, such as migrants, the elderly and female single parents have not benefited as much from improvements between 2020 and 2022. This points to the importance of developing and implementing inclusive approaches when developing technology for service delivery.

## ► 2.4 The role of data

**The role of data is increasing in importance. Data is becoming the core resource processed by PES, including as a means to measure performance and drive innovation.** In a sense, the evolution of data reflects the evolution of information technologies and evolution of the back-office and front-office landscape of PES. Globally, most PES are fascinated by big data and are focusing on the creation of data warehouses (or data lakes) where all data comes together (Pieterse, 2016, 2019). While the focus for many countries is on integration of data sources across government, there has been increased attention to the volumes of data that become available: 'big data'. In a more defined sense, big data is commonly defined by the three Vs (Burns, 2015):

- Volume (referring to the quantity of information)
- Variety (referring to the multitude of information types)
- Velocity (referring to the speed with which data is stored, analysed and/or changed).

Data integration across governments is a major theme in many countries and Estonia's X-road serves as an inspirational example of how to achieve this (see [Box 7](#)).

► **Box 7. Data integration through the X-Road in Estonia**



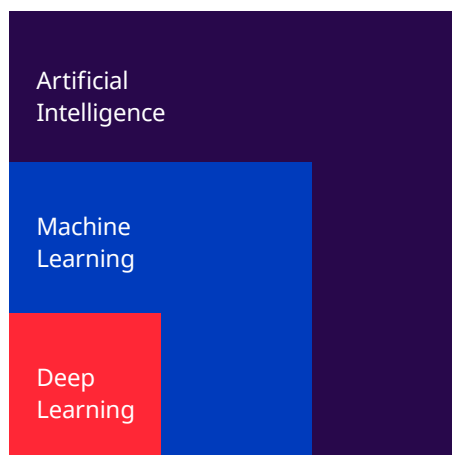
The X-Road is Estonia's infrastructure that connects databases from a multitude of governmental agencies. It allows databases to interact, making integrated e-services possible and creates opportunities for data integration that can be used for data analytics. Currently, more than 219 databases are connected to X-Road.

The initiative was so successful that it has been implemented in other countries such as Japan. The system even allows various X-Roads in different countries to be connected, leading to a link between Estonia and Finland from February 2018.

**More information:** <https://e-estonia.com/solutions/interoperability-services/x-road/>

While most PES in the Asia-Pacific will not have complete integration, some are using data for integration of services and monitoring. India, for example, is using data from its online job-matching platform to improve labour market monitoring and assess the demand for specific skills (Nomura et al., 2017).

The definition of big data ignores various aspects of data that have recently become more important, such as the proper protection of data and ensuring high data quality. For this reason, 'smart' rather than 'big' data could be a viable approach. Smart data is the combination of various aspects meaning the proper 'smart' use of the data rather than simply focusing on the volume of the data itself. Smart data is being used for a wide variety of purposes, including performance measurement and business intelligence (BI). However, most attention in the era of big data is being paid to the field of advanced analytics (or big data analytics). In a sense, advanced analytics can help to use big data in order to create smart data. Many of these advanced analytics are based on concepts rooted in artificial intelligence (which is a field in computer science) and we can make a distinction between the following types:



## Artificial Intelligence

Artificial intelligence (AI) is used to create smarter technologies that can make decisions or support decision-making. The main goal of AI is to create technologies that are so smart that they can think and act like humans. Artificial Intelligence is a broad concept that encompasses machine learning, deep learning and intersects with other types of analytics, such as data mining and statistics. Most well-known examples of AI applications are smart assistants such as those developed by companies like Google (the Google Assistant), Amazon (Alexa), and Apple (Siri).

## Machine learning

Machine learning is used to create better functioning algorithms and models by learning from ongoing analysis. A well-known example of machine learning is predictive texting (either in e-mail or SMS) where the system has learned that certain words are often used together so it can 'predict' which words could follow after a certain word has been typed (such as Thank + You or Happy + Birthday). Another example is formed by recommender systems, such as used by Netflix or Spotify, that recommend certain media for you based on your behaviours and that of others similar to you.

## Deep learning

Deep learning is used to explore data that is highly unstructured and abstracted and tries to create abstractions from this data. Deep learning is a subset of machine learning and the key difference between machine learning and deep learning is that deep learning focuses heavily on unstructured and abstract data as well as the combination of many layers of data. Machine learning tends to focus on structured data and discovering patterns in data that are well organized.

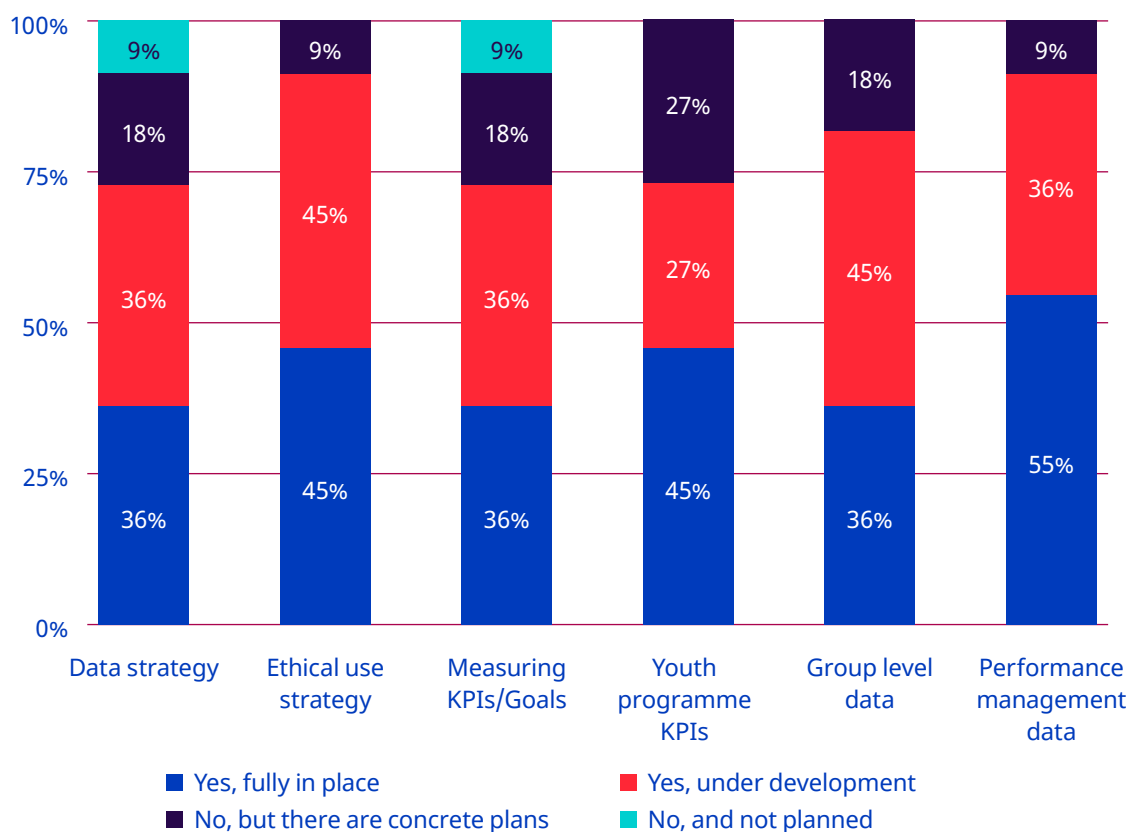
Relevant areas in PES where advanced analytics are being applied currently:

- fraud detection, prediction and prevention, for example whether benefit seekers are rightfully claiming unemployment benefits or wage subsidies are being accurately used;
- personalization of services, for example through segmentation and profiling approaches by PES and recommender systems (e.g. by recommending certain courses)
- vacancy matching (by going beyond traditional variables, methods and models used for matching); and
- better Labour Market Information (LMI) through improved prediction of labour market developments

Generally, only a minority of PES in this study have an integrated and cohesive data strategy in place (Figure 14) and the same applies to most elements concerning data, such as having an ethical use-of-data strategy (45%), measuring the progress towards goals using Key Performance Indicators (KPIs) and collecting data at group level (36%) and having specific youth KPIs (45%). It is important for PES to measure progress towards reaching goals or their impact. For example, impact evaluations have found that well-run employment services help young jobseekers find a job according to their skills and aspirations faster, and often with better quality, than when jobseekers find work themselves (Mazza 2017).



► Figure 14. The role of data and measurement within PES



This is an area with stark differences between countries are stark and they do not seem to depend on socioeconomic status or their electronic government development. For example, China, Japan, the Philippines and Singapore all report having most elements of a comprehensive data strategy in place. Singapore is probably the most advanced in this respect, and Workforce Singapore (WSG) has a centralized data division (Data Strategy and Analytics Division) that was established to lead the implementation and continuous improvement of WSG's organizational data strategy and provide better support to its business units. Beyond this, WSG is also responsible for putting in place policies/ programmes / processes / infrastructure to ensure proper data governance, uphold data quality and level up data capabilities to engender a strong organization-wide data culture. Another example is Cambodia, with the development of goals and their translation into KPIs (Box 8).

#### ► Box 8. Goals and KPIs in Cambodia

One of the most important recent initiatives in Cambodia has been the development of an integrated system of organization wide goals and KPIs. The overarching mission of the PES is to:

"Promote quality and efficiency of employment service delivery and labour market information in Cambodia"

This is subsequently translated in three main objectives:

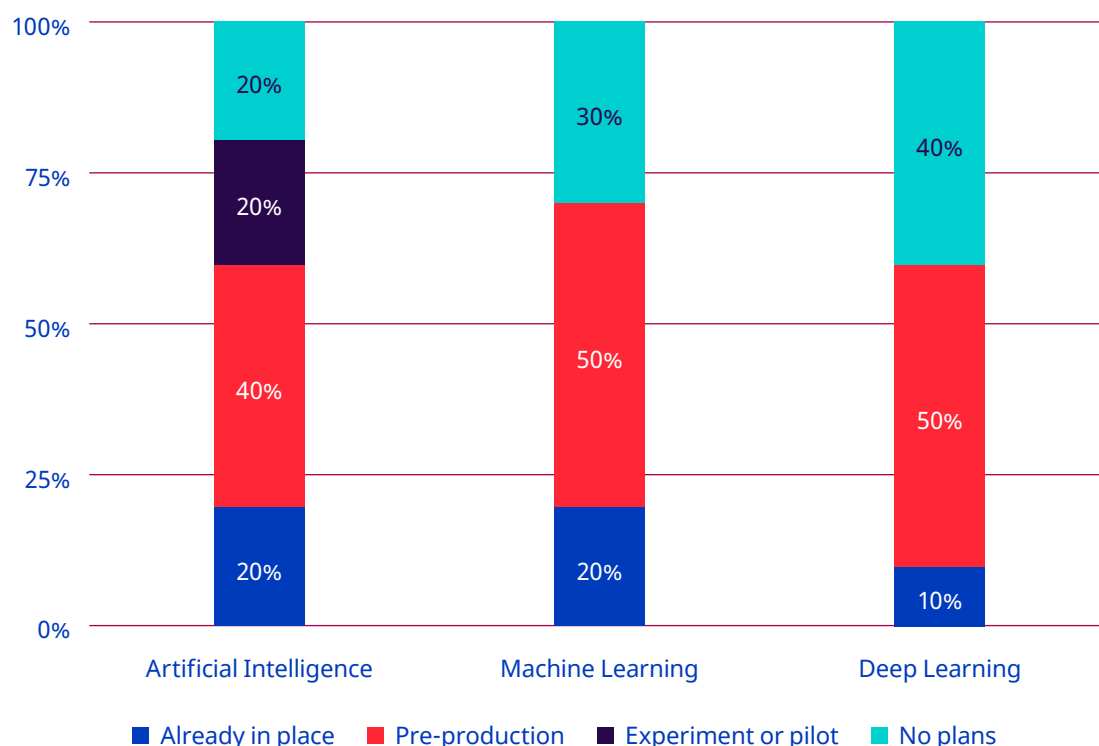
- Expanding mechanisms, scope and efficiency in providing better employment services to respond to service users' needs.

- Strengthening mechanism of the employment forum and expanding the collection and streamlining of labour market information.

- Increasing the productivity of the labour force and supporting labour market access

Each of these has been further refined into operational goals (e.g., "develop a forecasting system and estimate labour market information statistics") and, subsequently, each of these goals has been translated into KPIs that are measured regularly.

► Figure 15. The role of advanced analytics within PES



More innovative and less common is the role of advanced analytics for PES in the region (see Figure 15 above). The results from the 2022 study indicate that the current use of advanced analytics, such as machine and deep learning, is rather low, with only some 20% of PES having this already in place.

However, the appetite for these developments is large, with a great many PES looking to put advanced analytics into production. Here again there is no relationship with the economic or digital status of the countries. Certain advanced countries (e.g. Japan) have no plans to deploy advanced analytics, unlike others, such as India and the Philippines.

In general, there appears to be much to be gained from collecting data by PES, either for performance management matters or more advanced analytics purposes, thus showing the importance of utilizing existing resources efficiently.

## ► 2.5 Innovation

**The last area of interest regarding digitalization is how it impacts the organization itself and how it stimulates innovation within the PES.** Technologies are affecting how governments in all areas function, and this also affects the organization itself. This has often led to organizational change or modernization programmes over time. However, most public organizations are not very well equipped

to deal with these changes. A majority of all change initiatives in organizations related to IT fail<sup>11</sup>. PES should consider how their organization fits into the evolving digital world.

As organizations struggle with the adoption of technologies, they are wondering how to innovate and be part of these technological developments so that they can prepare themselves better for the required organizational changes.

In certain organizations, “innovation” has become a specific performance objective for government administrators. However, in order to become more innovative, the organization has to change accordingly (Gil-Garcia et al., 2014) by:

- Linking innovation to specific goals and objectives within the organization and
- Changing the organizational structure as necessary to support the changes.

The key reasons for lack of innovation in the public sector are the following:

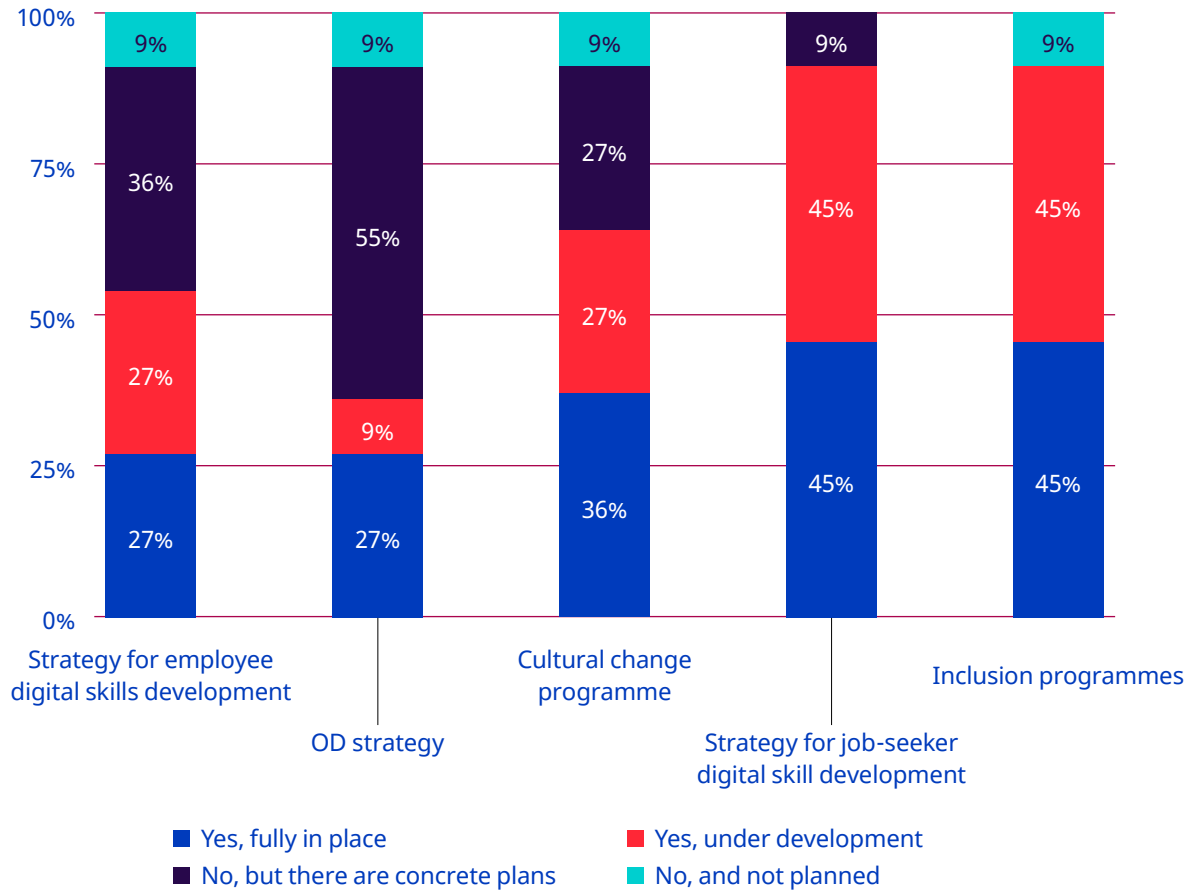
- Monopolistic nature, reducing competitive pressures
- Political pressure moves innovation to the margin of the rationalist economics of innovation
- Lack of resources that can be devoted to innovation projects
- No incentives for innovators and entrepreneurs
- Little pressure from clients or, if there is pressure, it is dissipated by rigid bureaucratic structures that induce inertia (Djellal, Gallouj and Miles, 2013).

The 2022 survey explores how PES in the Asia-Pacific deal with the organizational and innovation aspects of digitalization. Currently, these organizational elements are relatively underdeveloped. Most PES in the region have no organizational development (OD) strategy, the Republic of Korea, China and India being notable exceptions. In India, for example, organizational development has been on the radar since the 1960s when the National Institute for Career Service was established (in 1964). This stemmed from the realization that the efficiency of the employment service depends on well-trained officers and constant research.

Similarly, the majority of PES do not focus on cultural change, digital skills development and inclusion (Figure 16).

<sup>11</sup> See [http://www.businessperform.com/articles/change-management/change\\_management\\_practice.html](http://www.businessperform.com/articles/change-management/change_management_practice.html) and <http://www.forbes.com/sites/victorlipman/2013/09/04/new-study-explores-why-change-management-fails-and-how-to-perhaps-succeed/>

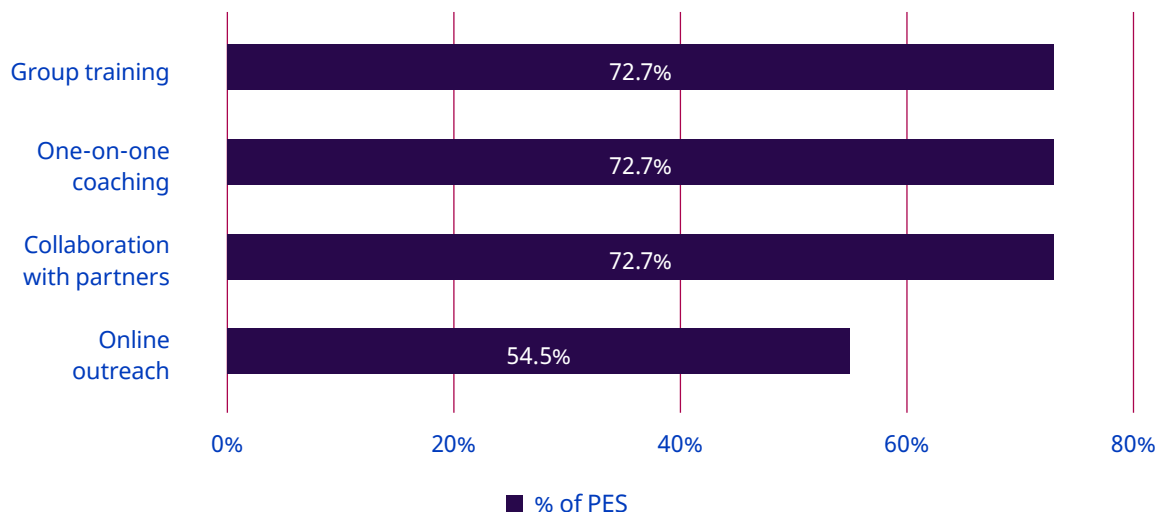
► Figure 16. The role of the organization, its people and innovation within PES



Note: OD stands for Organizational Development

In addition to digital skills for employees and strategies for jobseeker digital skills development, the survey asked which actual programmes were in place within the PES to build the capacity of digitally illiterate clients (e.g., develop digital skills for jobseekers). The positive finding is that most PES do have programmes in place to support their clients. For example, three in four PES say they have either group training, one-on-one coaching, or collaborative programmes in place (see Figure 17)

► Figure 17. Types of digital skills development programmes within PES



## ► 2.6 Conclusions and recommendations regarding the status of PES' digital transformation

Based on the analysis of the current status of PES' digital transformation, three main conclusions can be drawn.

- 1. PES in the eleven countries in Asia and the Pacific – regardless of country-income level – recognize the role of technology development and express interest in more targeted approaches**

All PES in the study are committed to technology development and express interest in having more targeted approaches to certain groups. While more basic services, such as providing information, job matching and, in some cases, registration are already provided online, the shift or intention to move towards more automation and AI can be recognized. The reasons concern both efficiency internally, in caseload management, and outreach, and externally, to ensure better coverage of the population for their services.

Recommendation for PES:

- Analyse recent trends in technology and PES and create opportunities to learn from internal development of PES at different levels (central, provincial, local), from other government entities, and from PES in other countries when developing better technology and integrating automation and AI. This is subject to their level of development and capabilities, and should be customized to meet their own and their clients' needs and challenges.
- 2. PES have digital strategies that focus on digitalization of their processes. Resources and limited digital skills and awareness of staff and organizations act as a constraint on full digital transformation**

The majority of PES in the region are focused on digitalization of processes and services with most attention going to the technical aspects in their front offices (e.g. building new online portals) and back

offices (such as the creation of unified IT-systems). While improving services and a focus on citizen needs are important drivers, the desire to lower costs has gained in importance since 2020, probably due to the COVID-19 crisis. PES are primarily hindered in their journeys towards digital transformation by a lack of resources, exacerbated by the COVID-19 crisis. The general lack of financial and other resources suggests that PES need, or should be supported to make smart decisions about where their investments yield the greatest return on investment, suggesting that a better understanding of the possibilities and limitations of current technologies should be a key priority. This needs to be coupled with a progressive approach based on pilots, experiments and scaling-up when needed and appropriate.

Other important obstacles relate to 'soft' aspects of digitalization, such as digital skills in the organization and a lack of knowledge about relevant technologies.

Recommendations:

- Undertake assessments to understand and take smart decisions about which areas technologies yield the greatest return on investment for PES. A better understanding of the possibilities and limitations of current technologies should be a priority.
- Strengthen staff technology skills development, including through peer-to-peer learning, sharing of knowledge and examples as well as tailored piloting with close monitoring and follow-up.

### **3. PES could benefit from increased attention on the organizational aspects of digital transformation such as breaking through silos and cultural change**

Ultimately, digital transformation is about changing the organization to fit the new digital age. While this requires investment in digital technologies, it is as much an organizational challenge. In particular, cultural change and organizational aspects require further efforts in most participating PES. For instance, while PES do focus on implementing technologies, there is less attention to how their employees respond to the changes or collaborate with and work within this changing environment. Furthermore, while PES invest in new front-office technologies and service channels, they typically have no single organizational unit in charge of all service channels.

As a result (and cause of the above) PES report that 'siloing' is one of their most important challenges. This siloing refers to: a) the degree to which parts of the organization are not connected, and b) the way in which the PES is not connected to other parts of government and other stakeholders. This is one of the most important challenges, as siloing could have negative effects on the performance of the PES as a whole and as a result could impact the degree to which it can successfully deliver youth programmes.

Recommendations are to

- Enhance organizational aspects of digital strategies of PES, especially in preventing internal siloing and see digitalization not only as a technological adaptation but a transformation of the organization and its relationship with stakeholders. A key aspect of this is for such processes to become iterative and continuous in transformation and development.
- Employ change management protocols like any other PES transformation, including ensuring a whole of organization involvement through a structured social dialogue mechanism, prioritizing cultural change and staff training.
- Align approaches with partners that could benefit PES, their clients and PES stakeholders such as other parts of the government, government agencies and private sector partners.

**4. PES recognize the relevance of advanced analytics (such as artificial intelligence), but could benefit from integrated approaches, a solid data foundation and measurement of progress towards smart goals to improve delivery**

Data is an increasingly important part of PES' functioning. Data is being used to measure performance and is an important ingredient of novel PES approaches. For example, artificial intelligence applications are driven by high quality big data stores. Therefore, data forms a key ingredient of a successful digital strategy. The Asia-Pacific PES are excited about the (new) possibilities of data. While not many PES actually have advanced analytics applications deployed in their organization, the majority is experimenting or planning to introduce these in production. This creates potentially viable ways to improve youth service delivery.

However, most PES have no data strategy and are not measuring progress towards goals using youth programme KPIs and data frequently appears not to be used as a tool to learn and improve. For example, most PES do not perform analytics such as channel usage, making it hard to assess how the youth and other groups are using the available means for service delivery. All of this is despite the finding that 'lack of data' is not an obstacle most PES suffer from.

Recommendations for PES:

- Invest in data analytics through adoption of the required technology and strengthening of skills in PES concerned
- Take holistic approaches to the use of data within their organization to ensure usage of data collected more efficiently and in developing operations.
- Explore use of data (analytics) to measure success towards goals as a way to operate more smartly.
- Consider use of data to segment and target subgroups (such as youth) and identify opportunities to improve service and programme delivery.
- Leverage data as a key resource to innovate, for example using artificial intelligence-based applications.
- Create a solid foundation from relevant systems across the organization to facilitate the use of data (see recommendation below on IT integration).



# ▶ 3

**Youth policies and  
programmes to support and  
enable youth employment**

---



In this second empirical chapter, the focus is on youth policies and programmes. It explores how PES currently have political mandates and resources to execute youth policies, as well as the nature of dedicated youth programmes.

## ► 3.1 Policies and mandates

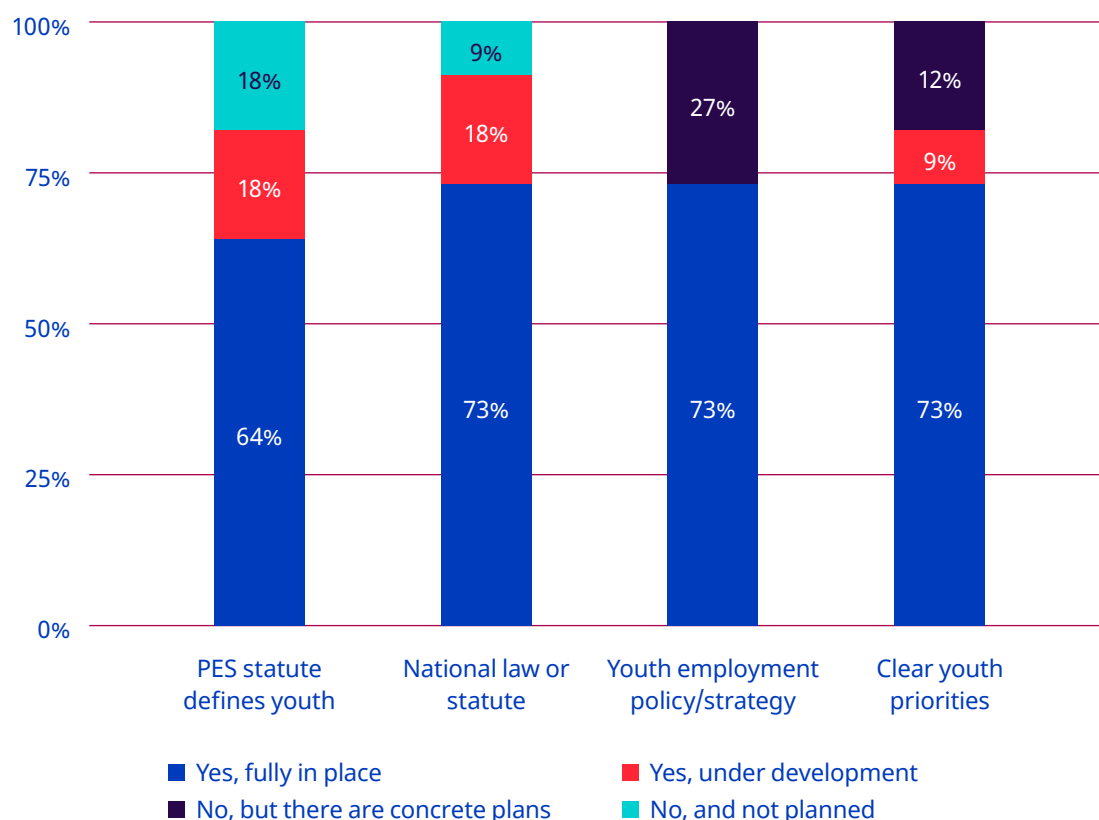
---

**Youth employment is an important topic for many governments around the world, emphasizing the importance of getting (and keeping) young people into the labour market.** An OECD (2013) study shows that inequalities in the youth population compound over a lifetime and, therefore, governments must try to create an atmosphere in which youth from various backgrounds enjoy equal access to youth rights, quality education, productive employment opportunities and health services, among other things. It requires strong mandates from governments for PES to develop the appropriate policies and programmes, including individualized support for all young people.

The importance of this cannot be overstated; being unemployed while young could “scar” someone in terms of long-term career paths and future earnings (OECD, 2016). Youth that have a history of periods of unemployment are more likely to get lower wages, and have poorer future job prospects (OECD, 2016). Lastly, disruptions in the transition from youth to adulthood and an independent life might create significant challenges for societies.

Governments around the globe are looking for ways to improve youth labour market outcomes and support their transition to the formal economy, including by formulating and implementing national strategies for youth employment (SDG 8.b.1). However, the youth employment challenge is a subset of the overall employment and earnings challenge in low-income countries. Holistic approaches that include economic transformation and related areas such as education are often needed in order to successfully tackle youth employment issues (Fox & Kaul, 2018).

PES can help to address structural employment challenges but the primary responsibility for such changes lies within macroeconomic and sectoral policies. This suggests that PES in the region need to be endowed with the right government mandates, capacities and resources in order to create and execute policies that support youth (see [Figure 18](#)).

► **Figure 18. Strategic level youth mandates and laws in participating countries 2014-18.**

The results indicate that a majority of PES in the Asia-Pacific region have the relevant mandates in place. 73% of them are backed by a national law or statute granting them specific powers. This translates into 64% of PES having a statute that specifically defines youth as an important group. The differences between the HIC and MIC are relatively clear, with most HIC having all surveyed elements in place, but fewer MIC. For example, 100% of HIC have a youth employment policy/strategy in place, compared to 57% of MIC. Japan is a country with a youth policy that is shifting focus towards career development (Box 9).

#### ► **Box 9. Youth employment policy in Japan**

On 18 September 2015, the Japanese government passed an “Act on the Partial Amendment of the Working Youth Welfare Law, etc.” It provides comprehensive measures concerning young people choosing suitable occupations for themselves, including development and improvement of vocational skills for the purpose of promoting the employment of young people and providing an environment that allows them to fulfil their potential.

The law has two main pillars:

##### ► Providing more information on workplaces

To solve the issues of early resignation of young

people caused by the mismatch of profiles and jobs, companies are obliged to endeavor to provide more precise information on working conditions and the actual state of employees. This pillar focuses on the creation of systems to collect and integrate relevant data to improve the PES’ functioning.

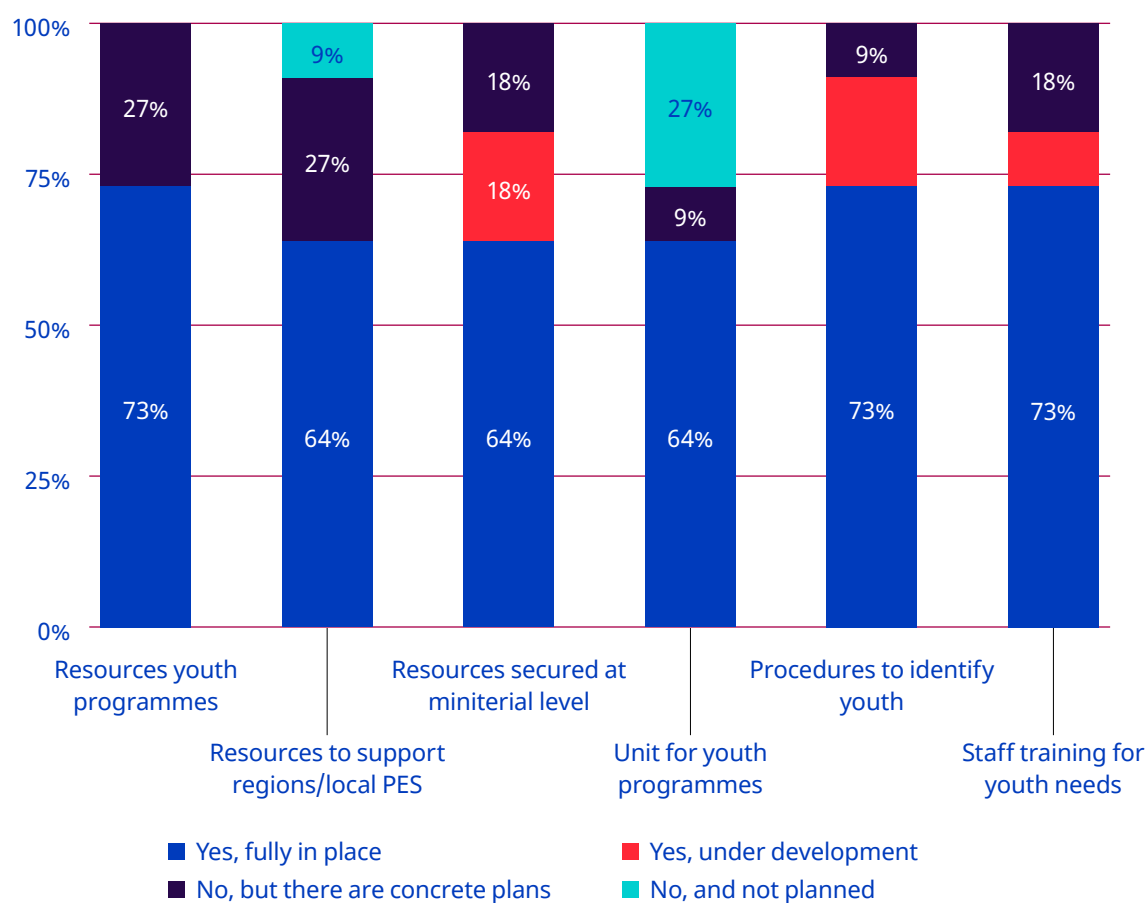
##### ► Youth Yell Certification System

Under the Young People Employment Promotion Law, a system has been established that the Ministry of Health, Labour and Welfare certifies small-to-medium-sized businesses that actively employ/train young people and have excellent management and working conditions for young employees as “Youth-yell certified companies”.

Another country that has a strong legal mandate in place is the Republic of Korea, which regulates and provides services for youth through the Youth Basic Law, Special Act on the Promotion of Youth Employment, and the Basic Employment Policy Act.

While having mandates is important, equally important is the degree to which PES can actually execute these mandates. For example, do PES have enough resources to implement youth programmes, in general and at regional/local level?

► **Figure 19. The extent to which youth resources and focus are in place**



In general, the answer to these questions is “yes” (see Figure 19). A large majority (73%) of PES in the region have confirmed resources to execute youth programmes and 64% have the resources to support regional and/or local PES offices. Interestingly, while two in three PES have a separate unit in place to execute youth programmes, 27% have no plans to implement such a unit and all of these countries are MIC. The main argument for not implementing a dedicated unit is that: a) either youth are the main focus of the PES to begin with, or b) are sufficiently covered by existing approaches. This can also be partly due to demographics, with certain countries having a predominantly young population in general. This should be seen in relation to the fact that where demand for labour is low, or jobs are inadequate, while the focus is on creating jobs in general, it is mainly on young people.

## ► 3.2 Services, programmes and partnerships

---

**Building upon the general mandates and resources are the concrete services and programmes provided to youth and young jobseekers.** At the core of these programmes are the Active Labour Market Policies (ALMPs) which are, typically, publicly funded programmes which aim to improve the employment prospects of participants. They involve one or more of the following elements:

- Employment services and job search assistance
- Employment incentives and subsidized employment
- Training
- Sheltered and supported employment
- Direct job creation
- Start-up incentives and self-employment

In addition, in LMICs, such programmes may also have as their focus the goal of poverty reduction and community development as well as the construction of local infrastructure to support development (O'Higgins, 2017). Moreover, in today's society, individuals are challenged to deal with more frequent and complex transitions within and between education and work, increasing the need for national career development support systems (ILO and ETF, 2021), thus ALMPs need to cover wider objectives. The importance of such support systems is highlighted by the Global Commission on the Future of Work which has urged governments to invest in public employment services so they can support labour market transitions, including by adopting efficient and effective combinations of digital and personal counselling and mediation services, as well as ensuring they have an up-to-date and relevant labour market information (LMI) system (Mwasikakata, 2019). LMI is a key basis for effective and targeted employment services.

Beyond the typical role of PES to focus on employment (labour mediation) services, PES have a growing role in education. In this regard, three aspects are important:

- Public employment services have direct access to information about vacancies and jobseekers. Thus, they are in an excellent position to identify skills requirements, developments and shortages.
- Public employment services already provide career guidance and recommend courses to aid jobseekers' skills development as well as advice to employers.
- Public employment services offer their own skills development and training programmes, covering, inter alia, job interviews, digital skills and CV-writing (Finn and Peromingo, 2019; Peromingo, 2018) and beyond.

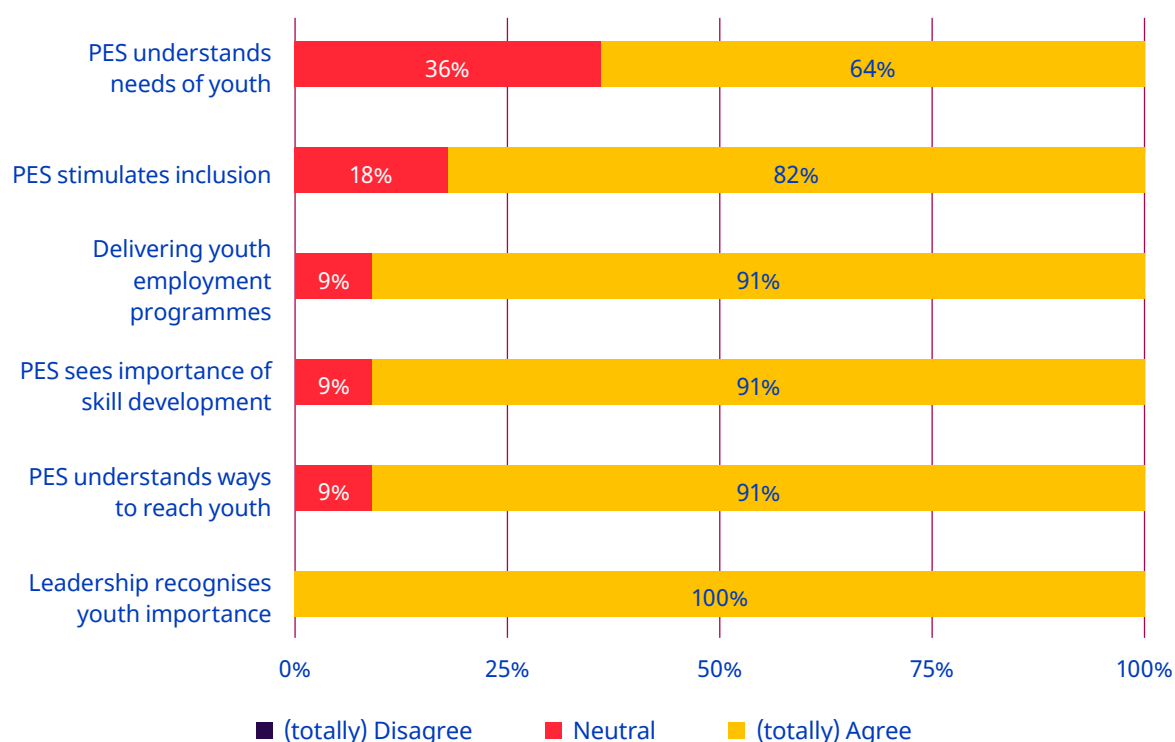
This highlights the role of PES slowly shifting from a focus on just labour mediation towards providers of career guidance. The OECD Career Guidance Policy Review defines career guidance as "services and activities intended to assist individuals, of any age and at any point throughout their lives, to make educational, training and occupational choices and to manage their careers" (OECD and European Commission, 2004). The OECD and European Commission (2004, p. 64), also mention three main goals of career guidance:

1. Lifelong learning goals: Combating early school leaving and ensuring an adequate knowledge and skills base to meet the challenges in creating knowledge-based societies in the context of economic globalization, and promoting adequate linkages between education, training and the world of work.

2. Labour market outcomes: Reducing mismatches between supply and demand for labour, dealing with unemployment and improving labour mobility.
3. Social equity and social inclusion goals: Promoting reintegration of marginalized and at-risk groups into education, training and employment and mainstreaming of excluded groups into general training programmes and labour market services

In order to achieve these goals, PES need to understand the needs of youth and target specific subgroups within the youth population. The 2022 survey asked Asia-Pacific PES about the importance of youth in their programmes and the degree to which youth and youth subgroups are targeted.

► **Figure 20. Degree to which PES focus on youth importance and targeting**



The results indicate that, in general, youth are regarded as important target groups and PES have youth employment programmes. For example, leadership in all the PES surveyed recognize the importance of youth programmes. Another positive finding is that PES argue in favour of stimulating inclusion (82%). However, at the same time, (Figure 20) a large percentage (45.5%) acknowledge that the lack of an inclusive approach is an obstacle to further digitalization and this applies to a majority (57%) of MIC. This suggests that inclusion is more of an ambition and less of a reality across PES in the region, especially in the MIC.

To a lesser extent, PES in the region (64%) understand the young people's needs. This is also an area where the difference between HIC and MIC is stark. Within MIC, just 57% say that they understand young people's needs compared with 75% in HIC. This does not mean that MIC are always lagging behind. One example is China, where the Chinese PES has initiatives to target youth during specific annual periods (Box 10).

► **Box 10. Youth targeting and programmes in China**

China's public employment service designates special months or time periods for activities for young people, e.g. aligning with university graduates when they are beginning to think about their transition to employment. Furthermore, the country has several dedicated ALMPs for youth. Examples are:

- Subsidies for internships/traineeships. To encourage employers to hire youth without previous work experience, allowing them to gain valuable experience.

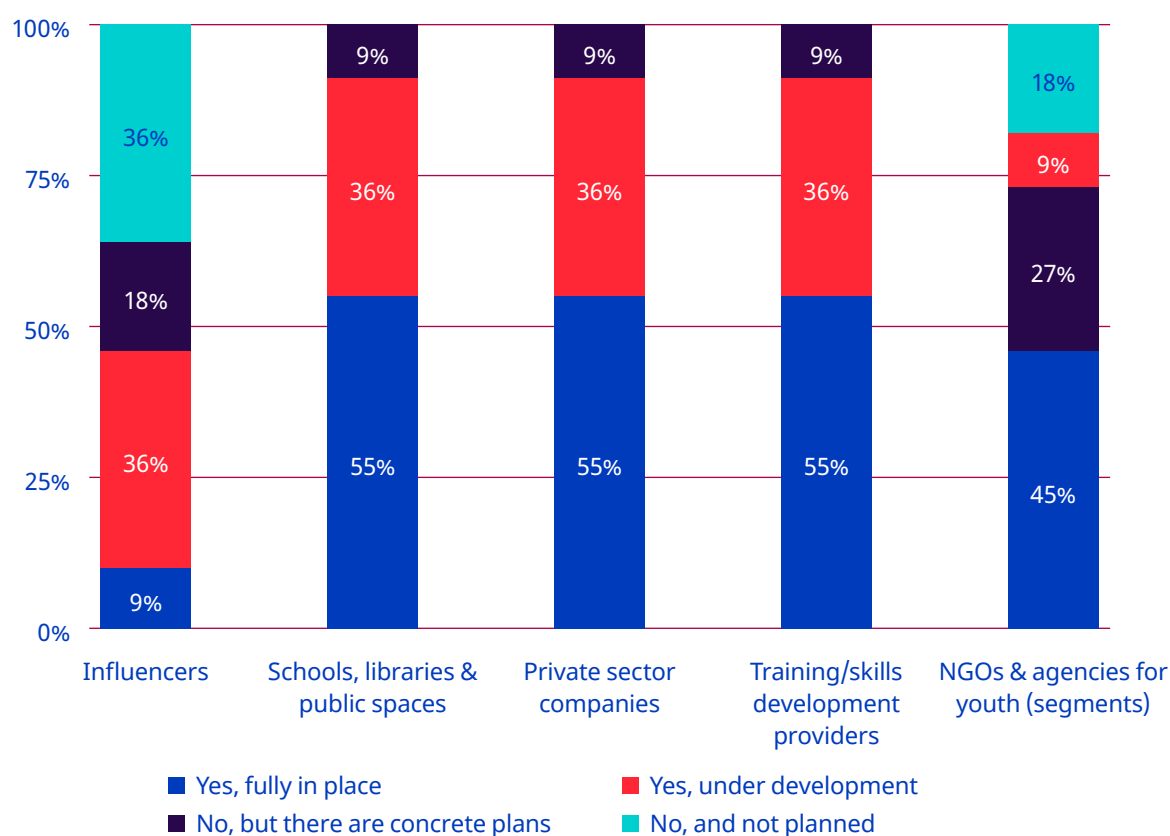
- A youth technology start-up programme that gives grants to young entrepreneurs who are creating a business.
- Regional revitalization programmes that encourage young people to bring technology and business ideas from urban to rural areas and stimulate national mobility.
- Programmes to stimulate businesses to hire young people with disabilities to enhance equality and promote inclusion.

In addition, there are specific programmes for college graduates, such as periodic job fairs and the use of dedicated social media.

**Note:** First part based on Avila (2021)

Another important topic in the 2022 survey is whether PES operate in isolation or whether partnerships are in place to provide youth services (see [Figure 21](#)).

► **Figure 21. The role of youth partnerships within PES**



The results indicate that partnerships are very much a mixed affair across PES. While a majority (55%) have partnerships with schools, libraries and public spaces, private companies, and training/skills development providers, fewer PES have partnerships with NGOs and agencies specifically aimed at youth. An even smaller number of PES have partnerships with social media influencers to target young people, the notable exception being India. However, several PES are developing strategies to use influencers (Cambodia, Indonesia, Singapore and Viet Nam), suggesting that these developments are independent of region, income status and/or electronic government development.

### ► 3.3 Conclusions and recommendations regarding youth policies and programmes to support and enable youth employment

---

**Based on results of the 2022 survey, three main conclusions can be drawn regarding the mandates PES have and how they target the youth:**

- 1. Inclusive approaches are lacking and client approaches are too generic in the PES covered by this study. A focused approach on youth in PES processes and on subgroups is needed to improve inclusion**

The PES in the eleven countries in the region have the mandates to deliver youth programmes are dedicated to supporting youth and the findings indicate that technology has contributed to improve service delivery for young jobseekers for all participating PES (up from 90% in 2020). Furthermore, on a political level, most PES have the right mandates in place. For example, 73% of PES have a national law or statute in place that covers youth services and programmes and 64% have a statute within the PES that defines the youth as an important target group. This permeates down in the organization, every PES in our study reports that PES leadership recognizes the importance of the youth as an important group, a majority of PES (64%) have dedicated resources secured at the ministerial level and even more PES (73%) have dedicated resources for youth programmes. Finally, operational levers such as staff training and procedures to identify youth in service delivery and outreach programmes are firmly in place in the region.

While PES typically have to deliver services to all their clients, they should pay special attention to the most vulnerable within their populations. In general, therefore, they need to develop inclusive approaches that ensure accurate targeting of groups and subgroups of clients, such as young women, young persons with disabilities, youth not in employment, education, or training (NEET). However, almost half the PES in the region report a lack of inclusive approaches (see [Figure 22](#)) and this is an obstacle in the organization and applies to a majority of MIC. This is supported by the finding that only a minority of PES currently have specific inclusion programmes in general and almost four in ten PES are unable to identify subgroups in service delivery processes.

Understanding of the target group and subgroups, therefore, need to be improved, especially in MIC where a large proportion report that they do not understand youth needs. This could be because a great many of them (45%) do not regularly conduct youth needs research or that some systems typically cannot identify youth needs, or even because of the predominantly young populations in some of the countries in the survey. Furthermore, this could be exacerbated by the relatively low utilization of data within PES, such as channel usage analysis.

Recommendation for PES:

- Increase PES understanding of user needs and behaviours to strengthen the focus on youth in general, based on user research and behavioural data analytics.
- Use the resulting labour market information concerning understanding of user needs and behaviours to ensure accurate targeting of PES service and programme developments, and alignment to labour market demands and changes.
- Increase PES focus on inclusion and develop programmes that help create equal opportunities for all client groups, including subgroups within the population. This increases the chances that ALMPs are effective and foster inclusion. Technology could facilitate this level of granularity.
- Develop a communication strategy to attract and convince young persons to use new digitized services, taking into account the new use and the digital culture of young people and enabling partnerships.
- Promote collaboration and partnership with relevant institutions, including through joined-up service delivery and one-stop shops.

## **2. PES are part of a wider ecosystem but could benefit from IT integration and partnerships with key stakeholders.**

PES are important but not the sole operators in the labour markets. Rather, they are part of a complex ecosystem of: a) government parties working to execute policies, laws and regulations, b) parties that are active in labour markets such as private labour mediators and partner organizations, that could play a part in executing ALMPs, and c) the social partners, employers', and workers' organizations. The study found that PES systems typically are not connected to other government systems, making it difficult to share information or prevent clients from entering information that is already known by government. Possible contributing factors could be participating PES reporting that integrated processes and IT interoperability are important obstacles to further improvement of service delivery. Another factor could be data privacy regulation preventing such integration. These could be an important part of the external siloing in PES. Only a small majority of PES have youth partnerships with schools, libraries and public spaces, private sector companies and training/skills development providers, and a minority of PES are partnered with NGOs and specific youth agencies

Recommendation for PES:

- Explore tighter integration with IT systems from relevant government institutions to improve PES processes, subject to the prevailing government data sharing and IT policy, ranging from enhanced links with educational organizations to verify diploma information or with tax entities to check for income/benefit status.
- Focus more on networks to improve service delivery and create or strengthen partnerships with other service providers and stakeholders.
- Governments should consider improving policy coherence and coordination at different levels.





# ▶ 4

## The role of technology in supporting youth labour markets

---

In this fourth chapter, the focus is on the role of technology within PES to discover how Asia-Pacific PES are using technology in their front and back offices to improve their functioning. Specific technology-driven approaches to segmentation, targeting and youth services are discussed.

## ► 4.1 Youth digital services and segmentation

---

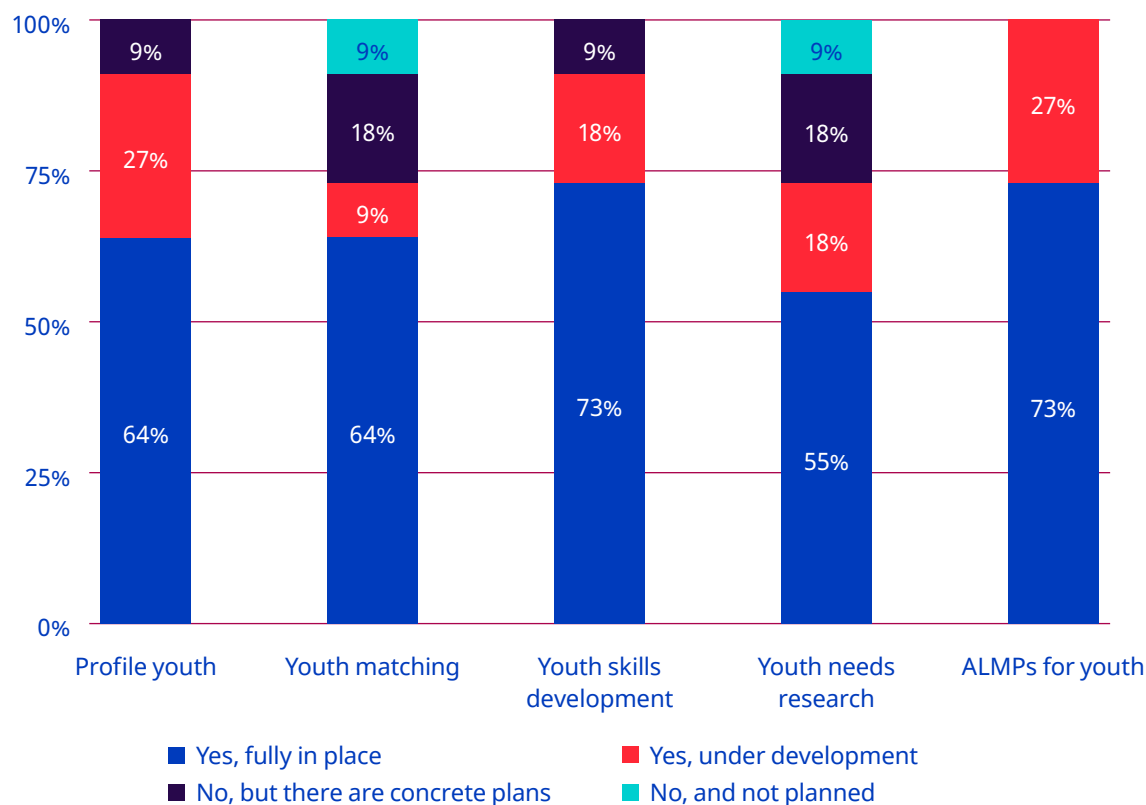
**To understand the role of youth services and technology, it is important to understand the degree to which the PES has specific youth services.** Technology plays an increasingly important role in this. The following elements are systematically present in successful interventions to help young people navigate the jobs market (Avila, 2021):

- Multi-channel approaches help to ensure that services are accessible and readily available to young jobseekers when they need them.
- Using digital technologies for service delivery is meaningful when combined with counselling support and adapted to young people's readiness for the labour market.
- A combined provision of labour market services and active measures yields higher placement rates and allows for correcting employability gaps.
- Providing soft skills improves youth employment prospects.
- Offering added-value services to employers has a direct effect on placement rates.
- Needs-assessment tools improve the targeting and sequencing of interventions.
- Packing and sequencing employment services for young people works best when adapted to the economic cycle and local context. Measuring cost-effectiveness of interventions prevents misallocation of scarce resources.
- Developing a transparent monitoring and evaluation system allows the best interventions to scale up.
- Multi-service interventions work best when guided by the availability of complementary services locally.
- Setting minimum performance standards for partners' and providers' delivery to youth reduces incentives for "creaming" of target populations

It is notable that many of these elements are either primarily technology driven (such as digital technologies for service delivery), whereas many others rely on technology to be successfully delivered, such as multi-channel approaches, monitoring and evaluation systems and multi-service interventions. The key point being that technology is making delivery of services and programmes much easier. For example, by using data extracted from systems, user profiles can be created and specific services or programmes can be targeted at very narrow segments of a population. PES are increasingly adopting such approaches with youth as an important target group.

The results of this 2022 survey in Asia-Pacific acknowledge the importance of specific methods of service delivery and segmentation to youth (see [Figure 22](#)).

► Figure 22. Degree to which general youth services are in place



Youth skills development and ALMPs for youth (both 73%) are the most regularly applied approaches towards the youth specifically. An example of skill development can be found in Singapore (see below [Box 11](#)). To a lesser extent PES profile and provide vacancy matching geared towards the youth (64%). These practices are much more prevalent within HIC, where all PES have these elements in place. In contrast, only 43% of MIC countries regularly conducts research to establish youth needs.

#### ► Box 11. Skills development in Singapore

“Under the MySkillsFuture programme, a credit fund has been available since January 2016 to all citizens of Singapore once they reach the age of 25; it provides financial support to help cover the fees of skills-related courses. The scope of the programme has recently been

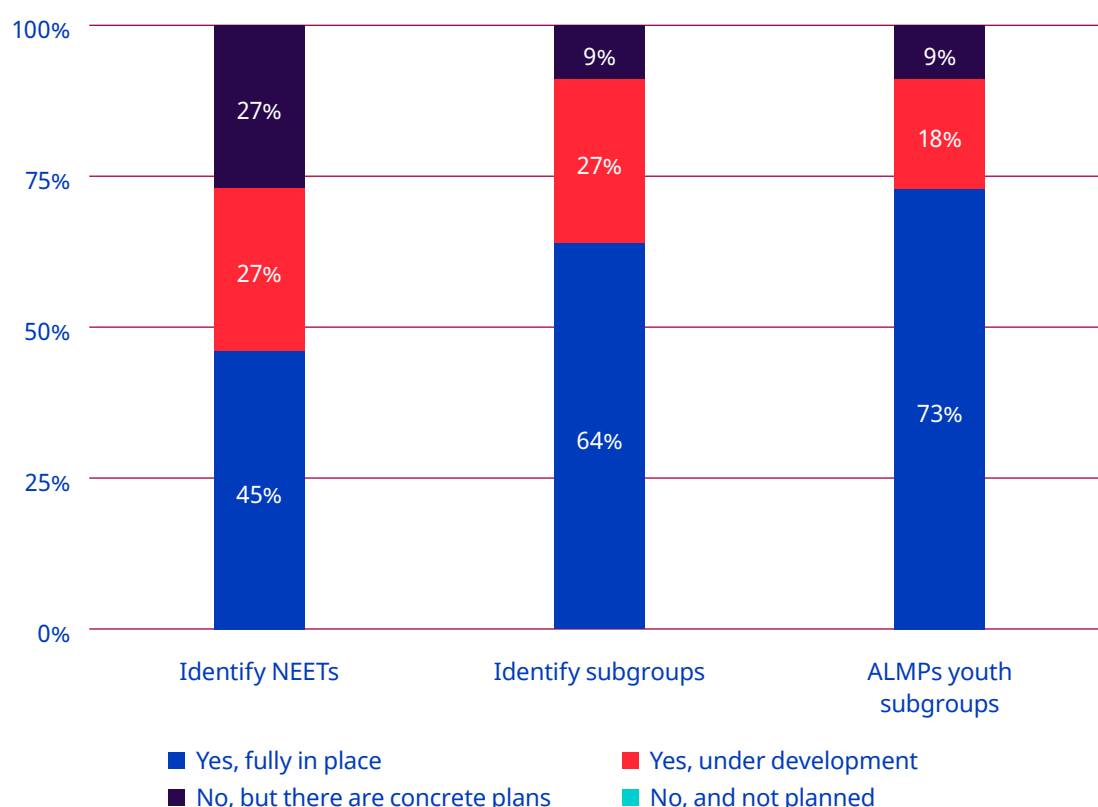
expanded to include various services for students and early- and mid-career employees. A one-stop online portal, MySkillsFuture, provides education, training and career guidance and can be used by pupils at secondary schools and students to gain a clearer idea of their interests, abilities and career ambitions”

Note, partially based on Avila (2021)

One relevant reflection is whether PES can identify specific youth subgroups, such as females, disabled or other disadvantaged youth, as this could help in creating more inclusive approaches and assure an equal approach in providing labour services. Currently, that situation is mixed. While a majority (73%) have ALMPs geared towards youth, the percentage of PES able to identify those needs is less (64%) and

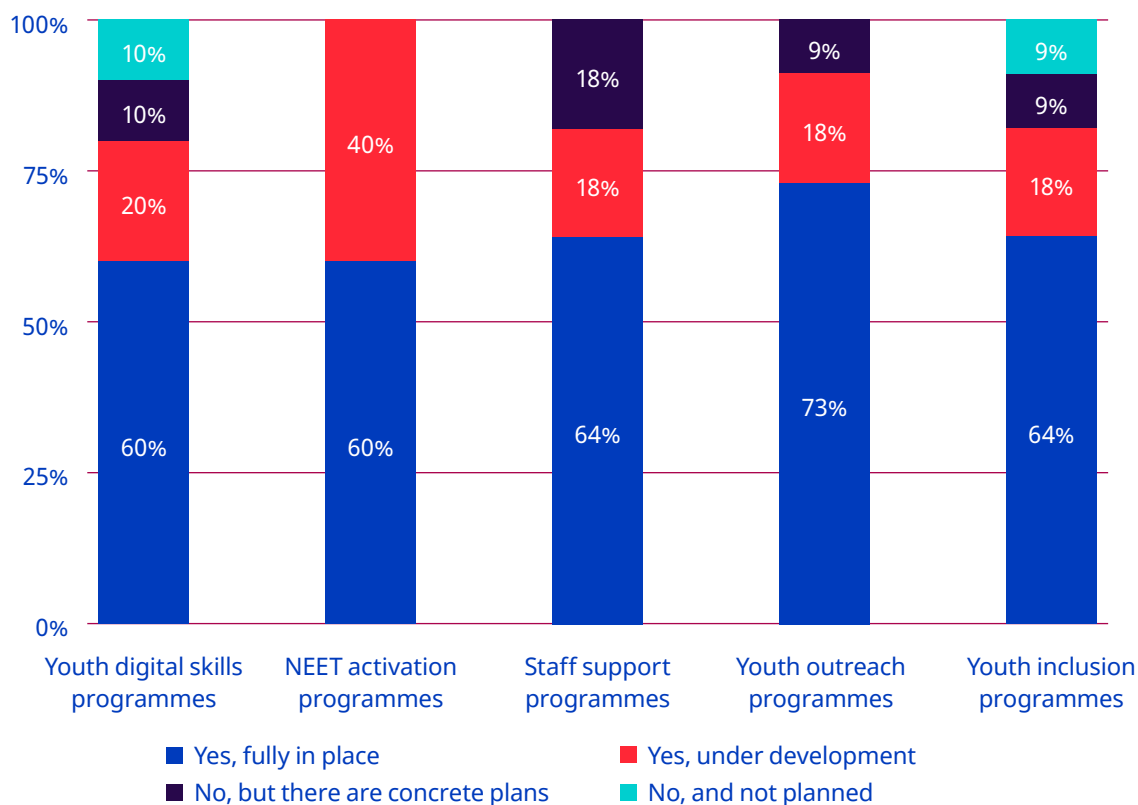
the percentage of PES able to identify NEETs (45%) is lower still (see [Figure 23](#)). This applies especially to the differences between countries. Whereas all HIC report the ability to identify NEETs, only 14% of MIC can do so (the Philippines being a notable exception).

► **Figure 23. The extent to which PES identify subgroups and segmentation**



A related matter is whether PES have services and programmes based on these segmentations in place to support their youth populations. For example, digital skills development is important today (van Laar, van Deursen, van Dijk, & de Haan, 2017) and typically seen in the realm of formal education. However, research shows that self-training and learning by doing might be effective approaches to digital skills development (Picatoste, Pérez-Ortiz & Ruesga-Benito, 2017). This could create opportunities for PES, for example by offering courses for young people that they can take at their leisure, but until recently marginally more than 40% of PES offer support to clients with low levels of digital skills (ILO, 2022a), most commonly through one-on-one coaching.

The results of this study suggest that the situation has improved in recent years. For example, 60% of participating PES have digital skills development programmes or NEET activation programmes. Slightly more PES (64%) have programmes to support their staff and youth inclusion programmes (see [Figure 24](#)).

► **Figure 24. Current scope of youth-oriented programmes in PES**

Almost all HIC have various types of programme in place but only half the MIC. HIC are more likely to have more elaborate youth programmes compared to LMIC due to capacity challenges in the latter. One exception is the Philippines, with three main programmes aimed at supporting the youth (Box 12).

#### ► **Box 12. Youth programmes in the Philippines**

The Department of Labour and Employment (DOLE) has developed three dedicated youth programmes:

##### ► **The Special Program for Employment of Students**

This is DOLE's youth employment-bridging programme which aims to provide temporary employment to poor yet deserving students, out-of-school youth, and dependents of displaced or would-be displaced workers. This applies during vacations or any time of the year to augment the family's income to help ensure that beneficiaries are able to pursue their education.

##### ► **JobStart Philippines**

This programme is aimed at enhancing the employability of young people by reducing their job-search period and increasing their employability through training (focused on life skills and technical skills), paid internships and full-cycle employment facilitation services.

##### ► **Government Internship Program (GIP)**

The DOLE-Government Internship Program provides three to six months internship opportunities for high school, technical-vocational or college graduates who want to pursue a career in public service in either local or national government. This is geared towards 18-30 year-olds with common degrees and no work experience.

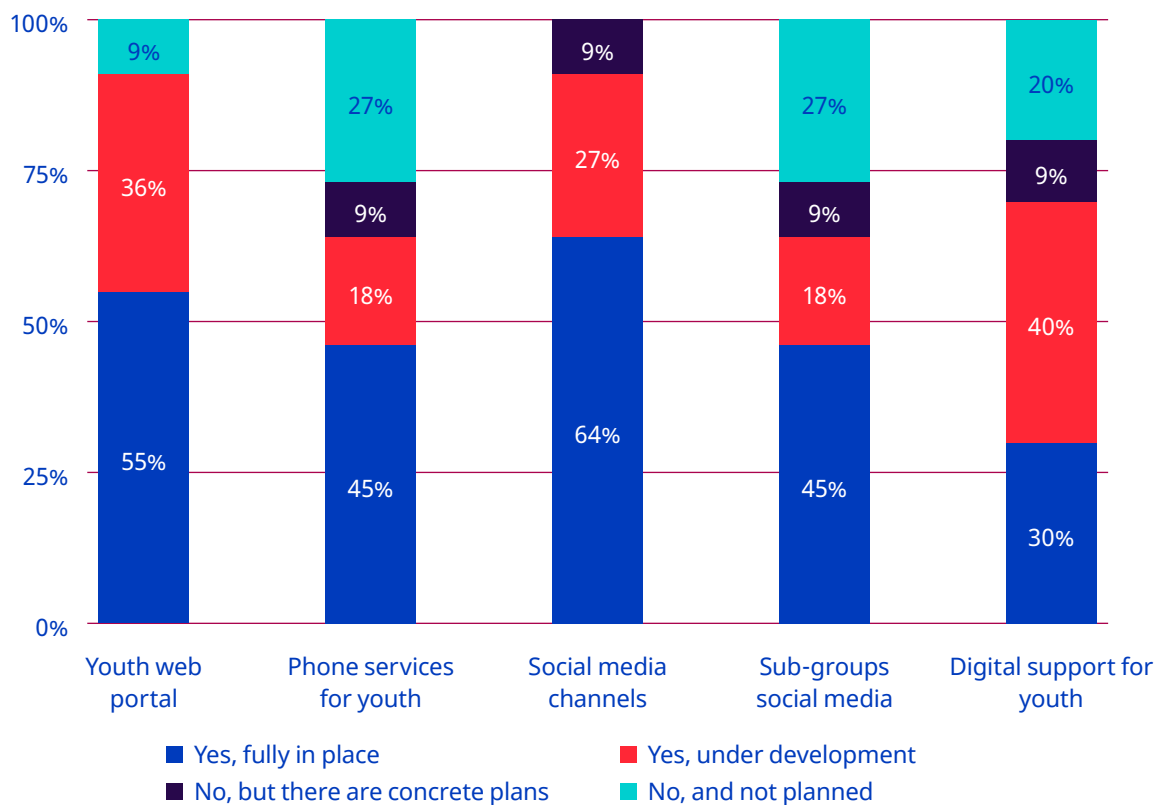
## ► 4.2 Youth front-office technologies

To focus more on digital technologies and their role in supporting youth, the survey asked to what extent certain, more common, technologies are in place to aid delivery of the programmes mentioned above. Results show that social media (64%, see [Figure 25](#)) are the most commonly used type of channel to reach young people. These social media are typically used for two purposes. The first is to send information to a wide audience, e.g. by posting on Facebook or Instagram. The second is as a tool to support jobseekers (e.g. by answering questions or by providing counselling services). China, for example, uses WeChat as a means of engaging with youth and provides a wide range of services through this application, including career guidance.

Fewer PES (45%) have dedicated social media channels to interact with youth subgroups or provide dedicated phone services to young people.

Even fewer (36%) PES have a dedicated portal for youth and the ones that do typically provide dedicated youth services through their main portal (thus creating a separate space for youth). It is typically the HIC countries that have these facilities in place (Australia, China, Republic of Korea and Singapore) (see [Figure 25](#)).

► **Figure 25. The use of common youth focused front-office technologies**



One interesting example of programmes aimed at youth which have a strong technological component is the “K-Digital” initiative in the Republic of Korea (see [Box 13](#)).

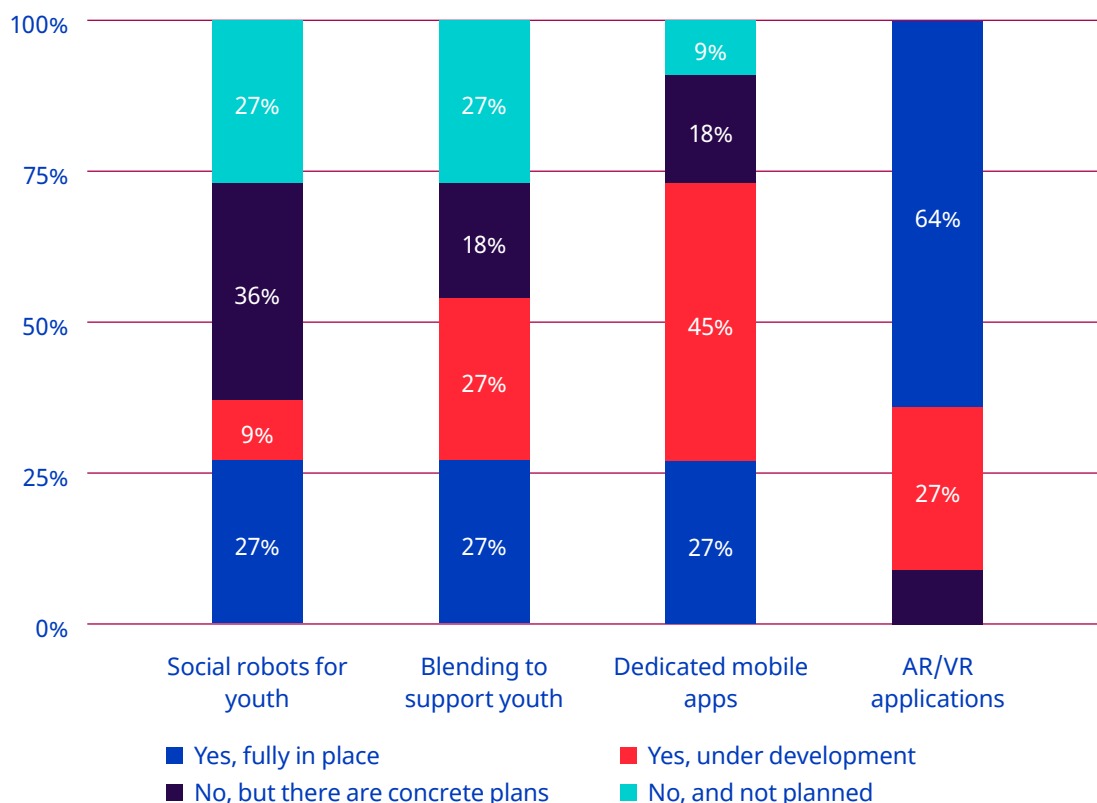
► **Box 13. The K-Digital initiative in the Republic of Korea**

The Ministry of Employment and Labour in the Republic of Korea promotes a “K-digital” training project for young people. This is a job-training project that provides various training courses so that young people can learn and use basic technologies used in

AI, big data, or other digital and new technology fields with the support of digital leaders such as Samsung and KT and private organizations such as Venture Business Associations. This leads to utilizing advanced technologies in practice. Interestingly, the initiative is not primarily aimed at digital skills, but rather more the use of newer technologies, such as AI, big data, and Cloud.government. This is geared towards 18-30 year-olds with common degrees and no work experience.

Besides the more mature digital channels, countries were asked whether they are using newer types of channels. This includes the use of social robots and having dedicated mobile apps to support youth. Use of these types of applications is typically low (27%) and not many other PES have plans to deploy such channels (see [Figure 26](#)).

► **Figure 26. The use of innovative youth-focused front-office technologies**



The difference in use and plans between the HIC and MIC is quite marked (see [Table 2](#)) suggesting that the use of more advanced channels is largely a factor in the more general electronic government development in the country.

► **Table 2. Use of newer technologies for service delivery to youth by country group**

	HIC		MIC	
	Yes, fully in place	Yes, under development	Yes, fully in place	Yes, under development
Subgroups social media	75%	0%	29%	29%
Digital support for youth	50%	0%	17%	67%
Phone services for youth	50%	0%	43%	29%
Social robots for youth	50%	0%	14%	14%
Blending to support youth	50%	0%	14%	43%

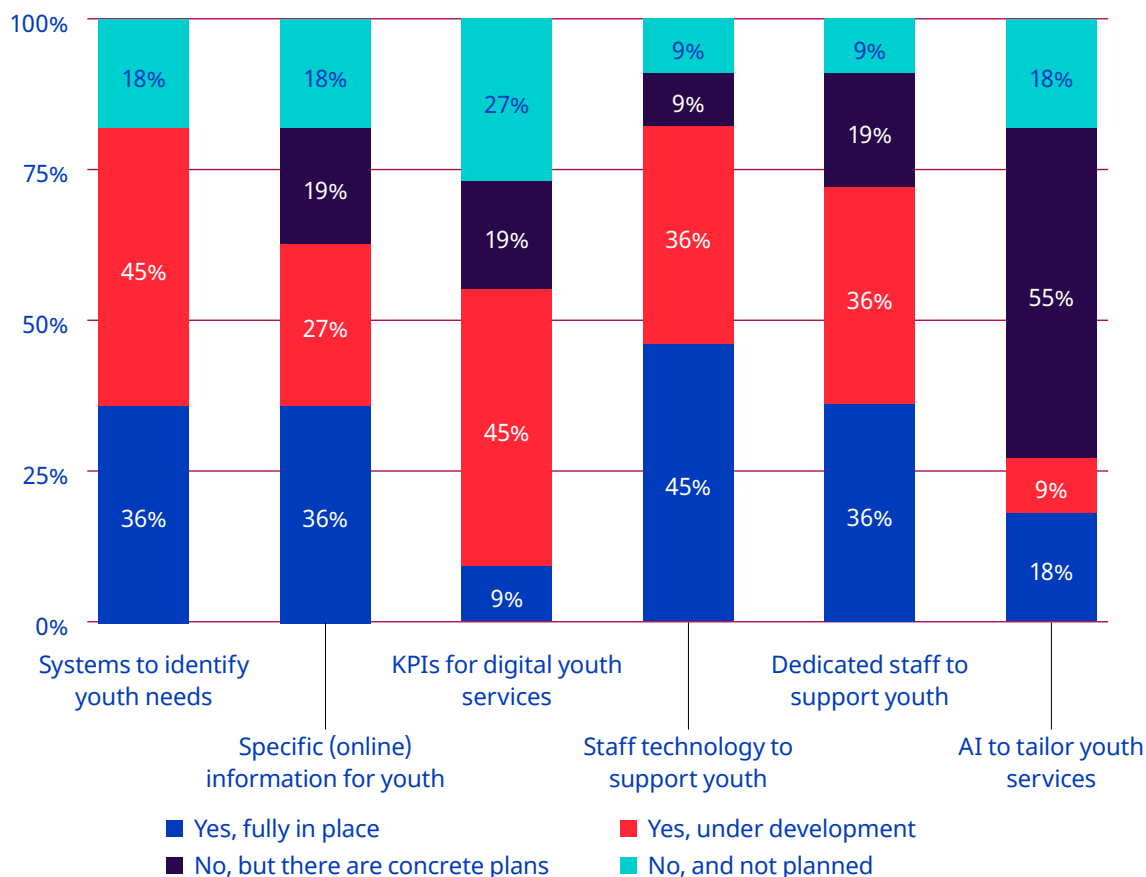
This does not mean that the HIC are leading in every single dimension. For example, youth services via the telephone are almost equally available in all of the countries. This probably correlates with the good penetration and availability of mobile telephone devices in most countries in the region.

## ► 4.3 Youth back-office technologies

In the previous section, specific front-office (or service channel) technologies used by PES use to target youth were discussed. But what about the use of digital technologies in back offices? These are, typically, systems to identify youth needs and technologies for staff (such as case workers) who support young people. The survey asked to what extent the following apply regarding the development and implementation of specific youth-oriented technologies for staff or in the back-offices of the PES ([Figure 27](#)).



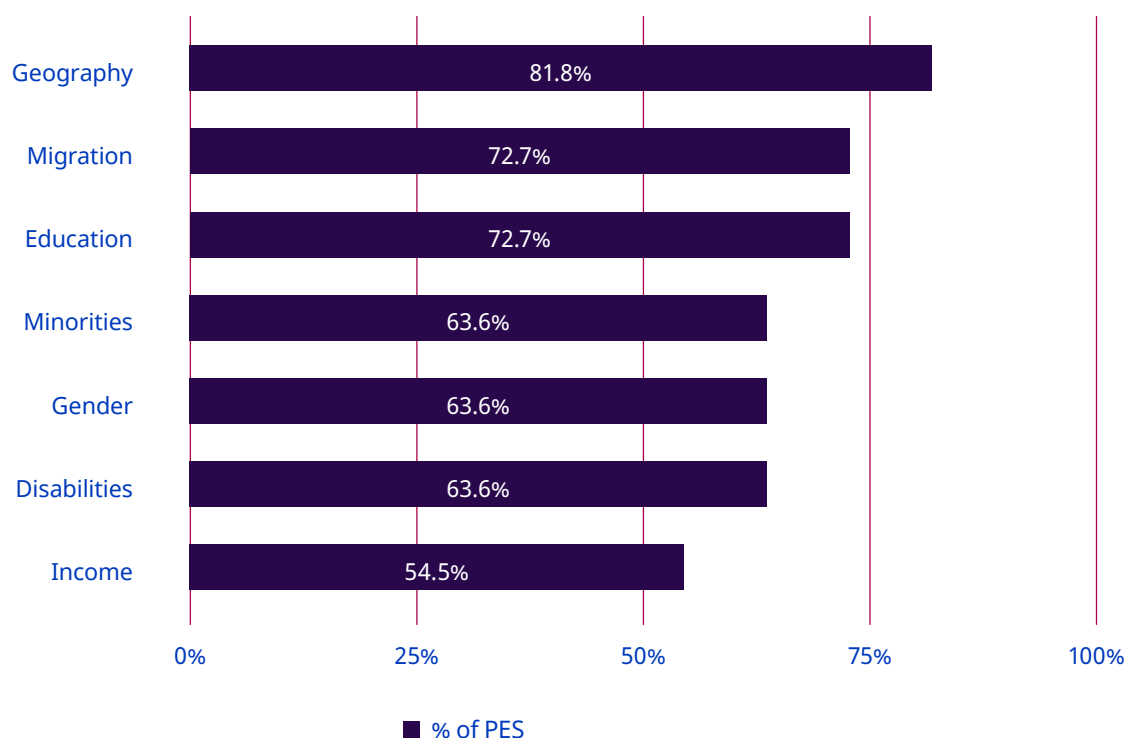
► Figure 27. The role of youth back-office and staff technologies



In general, the use of these technologies is not yet very well advanced and could not be expected to be, as many depend on further refinements of the general technologies used for all clients. While nearly 45% of PES have technologies for staff to support young people (and a further 36% of PES are developing this), fewer PES have other elements in place. For example, only 36% have dedicated systems to identify youth needs and provide them with specific online information. Differences between types of countries are relatively small.

The last part of the survey focused on the specific target groups for technology-enabled youth programmes in which PES were asked whether their organization delivers technology-based programmes to youth groups or subgroups based on various variables (Figure 28).

► Figure 28. Target groups for technology-enabled youth programmes



Geography is the most important variable mentioned and this applies specifically to large countries in the region that have major differences in socioeconomic status between urban and rural areas. The most likely variable used to segment youth services is geography (81.8%), gender (63.6%) scores lower and income (54.5%) is the least likely variable to segment the population for technology-enabled youth programmes.

One example is China, where labour mobility across regions is an important driver of PES services. This works in two ways:

- The first is the educational development of more or less remote regions and supporting jobseekers in these areas to find employment in urban areas with a shortage of labour
- The second is stimulation of the employed in the cities to return to their home regions to transfer knowledge, start businesses (and thus employment opportunities) and drive regional/local innovation.

Another example comes from the Cambodian PES which runs recruitment events specifically for rural workers to facilitate labour mobility based on geography (Avila, 2021, and this study).

## ► 4.4 Conclusions and recommendations regarding the role of technology in supporting youth labour markets

---

**This section presents the main conclusions that emerge from the findings of this 2022 survey and the accompanying recommendations.**

### **1. Youth are often targeted through the general social media, yet dedicated youth channels, where feasible, can offer possibilities for more effective service delivery.**

PES recognize the importance of youth and typically try to specifically reach them through general social media channels. However, these channels work well for outreach but less for actual service delivery. For PES that can afford to do so, using dedicated channels designed around the needs of youth could appeal to this segment and deliver services to youth and subgroups more effectively, for example, through dedicated youth web portals, mobile applications, and dedicated support channels. Development of youth-dedicated channels should include a careful review of PES communication policy and strategy to ensure that the channels respond to the needs and digital culture of young people to make them attractive to the target group.

Recommendation for PES:

- Where feasible, consider developing youth-oriented channels that offer targeted information, services and programmes.
- In developing such channels, look for possibilities of targeting subgroups within the youth population to improve service and programme effectiveness and inclusion and partnering with other specialized institutions.

### **2. Innovative technologies for youth are rare, but might provide a stimulus for digital transformation**

PES express interest and willingness to focus on innovation. However, newer technologies such as social robots, dedicated mobile apps, as well as augmented reality and virtual reality (AR/VR) have not yet been widely adopted, especially in MICs – not surprisingly, given the huge investment outlay required. These technologies, if targeted and adapted well, could be instruments to test ideas and fuel the digital transformation of the PES given that: a) youth are often the first to adopt newer technologies, and b) youth are likely to be the ones using these technologies most in their future careers and labour market transitions.

So, while recognizing that resources are limited, it could be worthwhile for PES with the necessary capacity and appropriate infrastructure to consider using newer technologies, aiming for a progressive approach as digital maturity develops both in the country and within the PES. The main reason is that these could, in the long run, be more cost-efficient in comparison to the more expensive face-to-face contacts.

Recommendations, while recognizing the limited resources within PES:

- Consider investing in advanced technologies when possible and put in place enabling policies to implement such technologies.

- Consider using newer technologies to support youth and improve organizational efficiency. Such efforts have to be accompanied by relevant implementation and skills development programmes. The design and implementation of newer technologies needs to be context-specific with relevant adaptations at country and local level.

### **3. Back-office technologies and processes could benefit from an increased youth focus**

PES in the region are focused on digitalization of their back-office systems. However, most PES currently do not have the mechanisms to identify and target youth. They often rely on self-segmentation and selection, meaning that youth need to actively contact the PES and select programmes that are relevant for them. PES typically do not have dedicated staff (technologies) to support youth and few PES have KPIs to measure the performance of youth services, including digital.

Recommendation for PES:

- Focus more on the development of data analytics based on granulated subtarget groups and the development and implementation of youth back-office technologies for staff.
- Assign dedicated staff (wholly or partly) to supporting youth accompanied by specific training efforts.
- Develop specific KPIs for the youth target group, with appropriate disaggregation, to ensure accurate follow-up.
- Explore possibilities of new or more inclusive outreach efforts and programmes to reach and provide effective services to youth

## ► References

---

- Burns, R. (2015). Rethinking big data in digital humanitarianism: practices, epistemologies, and social relations. *GeoJournal*, 80(4), 477-490.
- van Deursen, A.J., Helsper, E.J. and Eynon, R., (2016). Development and validation of the Internet Skills Scale (ISS). *Information, Communication & Society*, 19(6), pp. 804-823.
- Djellal, F., Gallouj, F., & Miles, I. (2013). Two decades of research on innovation in services: which place for public services? *Structural Change and Economic Dynamics*, 27(December), pp. 98-117
- Ejler N. and Sidelmann P. (2016) Application of process efficiency techniques in PES, Analytical Paper of the European Network of Public Employment Services, Luxembourg, Publications Office of the European Union.
- Gallouj F. (2002), *Innovation in the service economy: the new wealth of nations*. Cheltenham, Northampton: Edward Elgar
- Gill, M. & Van Boskirk, S. (2016). *The Digital Maturity Model 4.0*. Cambridge, MA. Forrester
- Gil-Garcia, J. R., Helbig, N., & Ojo, A. (2014). Being smart: Emerging technologies and innovation in the public sector. *Government Information Quarterly*, 31, pp. 11-18
- Inter-American Development Bank (IDB); World Association of Public Employment Services (WAPES); Organization for Economic Co-operation and Development (OECD). 2015. *The world of public employment services* (Washington, DC)
- ILO (International Labour organization) (2017). *Global Employment Trends for Youth 2017*. Geneva, Switzerland: International Labour organization
- Kim, G. H., Trimi, S., & Chung, J. H. (2014). Big-data applications in the government sector. *Communications of the ACM*, 57(3), pp. 78-85.
- OECD (2018), *Digital Government Review of Brazil. Towards the Digital Transformation of the Public Sector*. p. 44
- Pieterse, W., Ebbers, W., & Madsen, C. Ø. (2017, September). New channels, new possibilities: A typology and classification of social robots and their role in multi-channel public service delivery. In *International Conference on Electronic Government* (pp. 47-59). Springer, Cham.
- Pieterse, W. (2017). Multi-channel management in PES: From blending to omni-channelling. Analytical paper. European Commission. DOI: 10.2767/73549
- Avila, Z (2021). *Public employment services that work for young people* (Geneva, ILO).
- Brynjolfsson, E., & McAfee, A. (2011). *Race against the machine*. Digital Frontier, Lexington, MA.
- Dema, G.; Díaz, J.J.; Chacaltana, J. 2015. What do we know about first job programmes and policies in Latin America? (Lima, ILO Regional Office).
- European Commission, ETF, CEDEFOP, OECD, ILO & UNESCO (2021). *Investing in Career Guidance, Revised Edition 2021* (Brussels, European Commission).
- Finn, D. & Peromingo, M. (2019). Key developments, role and organization of public employment services in Great Britain, Belgium-Flanders and Germany (Geneva, ILO).
- Fox, L. & Kaul, U. (2018). *The Evidence Is In. How Should Youth Employment Programs in Low-Income Countries Be Designed?* (Washington, DC, World Bank).

- Hansen, E. (2006). *Career Guidance. A resource handbook for low- and middle-income countries*. (Geneva, ILO).
- O’Higgins, N. (2017). *Rising to the Youth Employment Challenge. New evidence on key policy issues* (Geneva, ILO).
- ILO & ADB (2020). *Tackling the COVID-19 youth employment crisis in Asia and the Pacific*. International Labour Organization, Bangkok (Thailand), and Asian Development Bank, Manila (Philippines), 2020.
- ILO & ETF (2021). *Developing national career development support systems Pathways to enhance lifelong career guidance, career education and career development support for workers*. (Geneva, ILO).
- ILO (2019). *ILO Centenary Declaration for the Future of Work*. (Geneva, ILO).
- ILO (2020). *Global Employment Trends for Youth in 2020* (Geneva, ILO).
- ILO (2020a). *ILO Monitor 4th Edition: COVID-19 and the World of Work – Updated Estimates and Analysis*. 27 May. Geneva.
- ILO (2020b). *COVID-19: Public employment services and labour market policy responses* (Geneva, ILO)
- ILO (2021a). *Global call to action for a human-centred recovery from the COVID-19 crisis that is inclusive, sustainable and resilient* (Geneva, ILO).
- ILO (2021b). *Public Employment Services pressing ahead with digitalization should be aware of the digital divide*. (Geneva, ILO).
- ILO (2022a). *Global report Technology adoption in public employment services Catching up with the future* (Geneva, ILO).
- ILO (2022b). *Global Employment Trends for Youth 2022. Investing in transforming futures for young people*. (Geneva, ILO).
- ILO (2022c). *Youth not in employment, education or training in Asia and the Pacific: Trends and policy considerations*. (Geneva, ILO).
- Kluve, J., Puerto, S., Robalino, D., Romero, J. M., Rother, F., Stöterau, J., Weidenkaff, F. & Witte, M. (2019). Do youth employment programs improve labour market outcomes? A quantitative review. *World Development*, 114, 237-253.
- van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, 72, 577-588. doi:10.1016/j.chb.2017.03.010
- Lee, S. H. (2018). “Public employment services and big data”, in *Managing workforce potential: A 20/20 vision on the future of employment services* (Utrecht, WCC), pp. 37–41.
- Nomura, S.; Imaizumi, S.; Areias, A.C.; Yamauchi, F. 2017. *Toward labour market policy 2.0: The potential for using online job-portal big data to inform labour market policies in India*, Policy Research Working Paper No. 7966 (World Bank).
- Mazza, J. 2017. *Labour Intermediation Services in Developing Countries: Adapting Employment Services for a Global Age*. London: Palgrave Macmillan Press. Available at: [www.palgrave.com/us/book/9781137486677](http://www.palgrave.com/us/book/9781137486677).

- Mwasikakata, M. (2019). "Overview: Key features of the role and organization of public employment services in Great Britain, Flanders-Belgium and Germany", in D. Finn and M. Peromingo (eds), pp. 8–33.
- OECD and European Commission (2004). *Career guidance: A handbook for policy makers*. (Paris, OECD/ European Commission)
- OECD (2013). *Crisis squeezes income and puts pressure on inequality and poverty Results from the OECD Income Distribution Database* (May 2013) (Paris, OECD).
- Peromingo, M. 2018. "Rethinking public employment services for the digital era", World Bank Blogs, 29 Aug. Available at: <https://blogs.worldbank.org> [8 Oct. 2019].
- Picatoste, J., Pérez-Ortiz, L., Ruesga-Benito, S., A new educational pattern in response to new technologies and sustainable development. *Enlightening ICT skills for youth employability in the European Union, Telematics and Informatics* (2017)
- Pieterston, W. (2018). *Creating digital strategies* (Luxembourg, Publications Office of the European Union).
- Schwab, K. (2016). *The Fourth Industrial Revolution*. Crown Business. New York.
- Wirtz, B. W., & Langer, P. F. (2017). Public multichannel management-An integrated framework of off-and online multichannel government services. *Public Organization Review*, 17, 563-580.
- Yan-ping, L., & Ai-qin, Q. (2022). Replace or create: Analysis of the Relationship between the Artificial Intelligence and Youth Employment in Post Epidemic Era. *Procedia Computer Science*, 202, 217-222.

## ► Annexes

### Annex 1. Country profiles

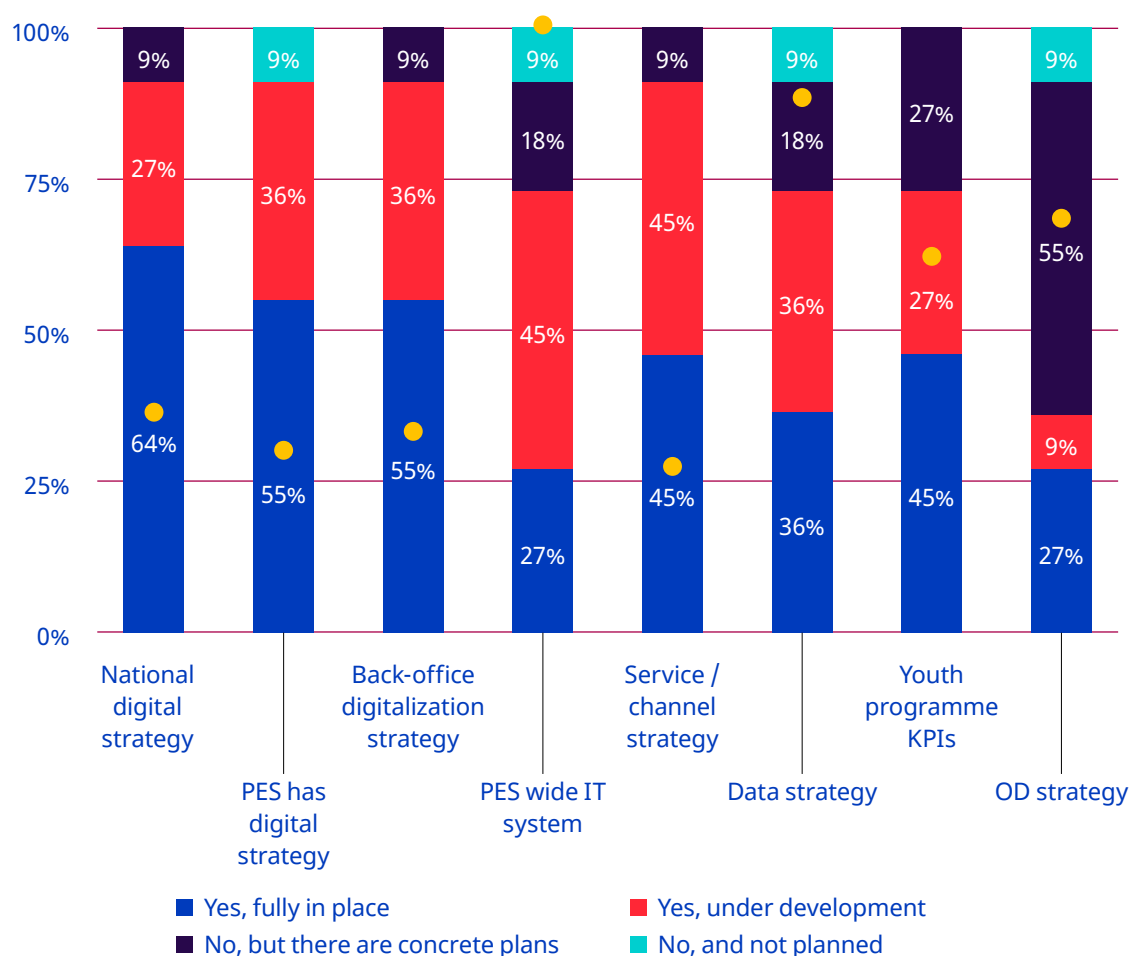
The country profiles provided in this Annex are based on the survey responses, supporting documentation and interviews conducted with PES for this study.

#### Australia

Income category	High Income Countries
Egovernment Development Index (2022)	7
PES digital orientation	Digitalization

#### Digital maturity of PES

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) in key selected areas across all participating countries. It shows Australia highlighted.



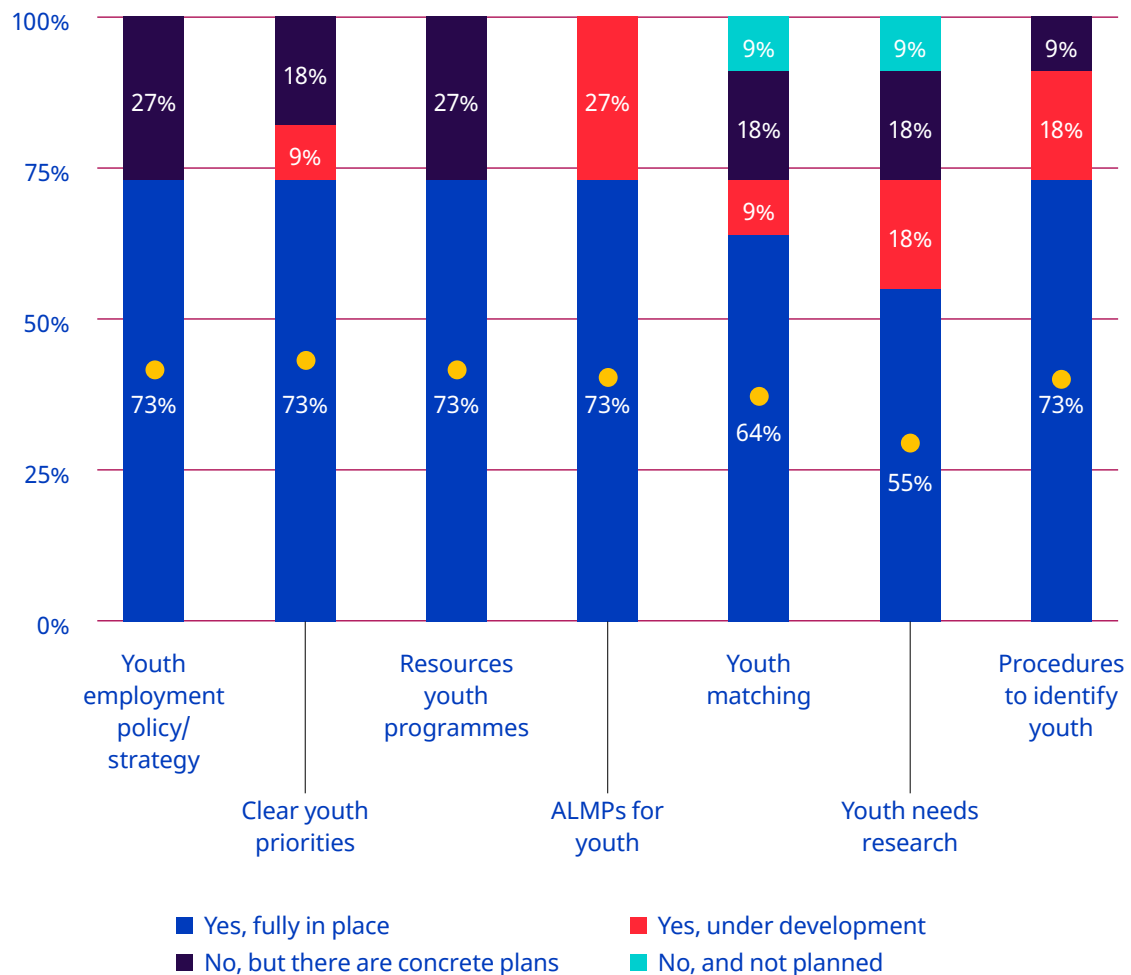


Australia has four of the eight dimensions being measured including national and PES digital strategies, back office and channel digital strategies. Probably due to the privatized PES functional model, there are no plans to develop a PES wide IT system. There are however plans to develop a data strategy and its organizational development (OD) strategy. Currently, the PES faces the following issues:

- Lack of financial and other resources
- Legacy systems
- IT operability
- Privacy protection

## Youth services and programmes

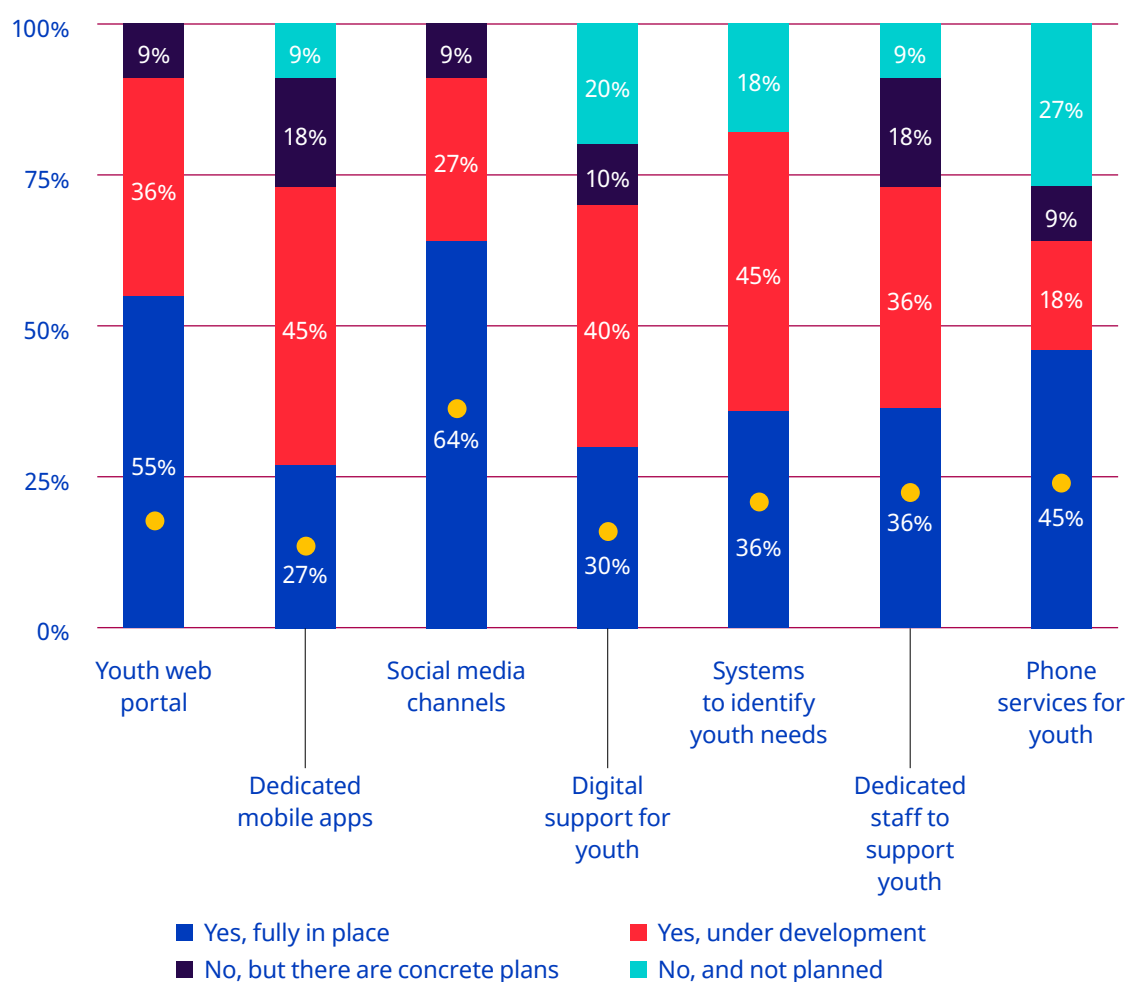
The following figure highlights key elements of youth services, programmes and approaches, as well as the Australia's position on it. It illustrates the degree to which a wide range of youth services are in place.



This is clearly an area where Australia is performing well and where other countries could learn from its experiences.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and the Australian standing in these areas.



The Australian PES is also a leader in this field. All relevant and current youth technologies are in place and the PES is developing dedicated mobile apps.

## Good practices and learning points

The following points are areas where other countries could learn from Australia, followed by areas where Australia could improve and/or learn from other PES.

- The Australian PES services are largely outsourced to contracted providers. Jobseekers can access face-to-face support from third party employment service providers while the online services are run directly by the Australian Government.
- The Australian PES has dedicated youth services. One example is Job Jumpstart (<https://www.jobjumpstart.gov.au/>) which provides resources and activities to support young people aged 15 to 25 in their job search and build their employability skills.

Learning points:

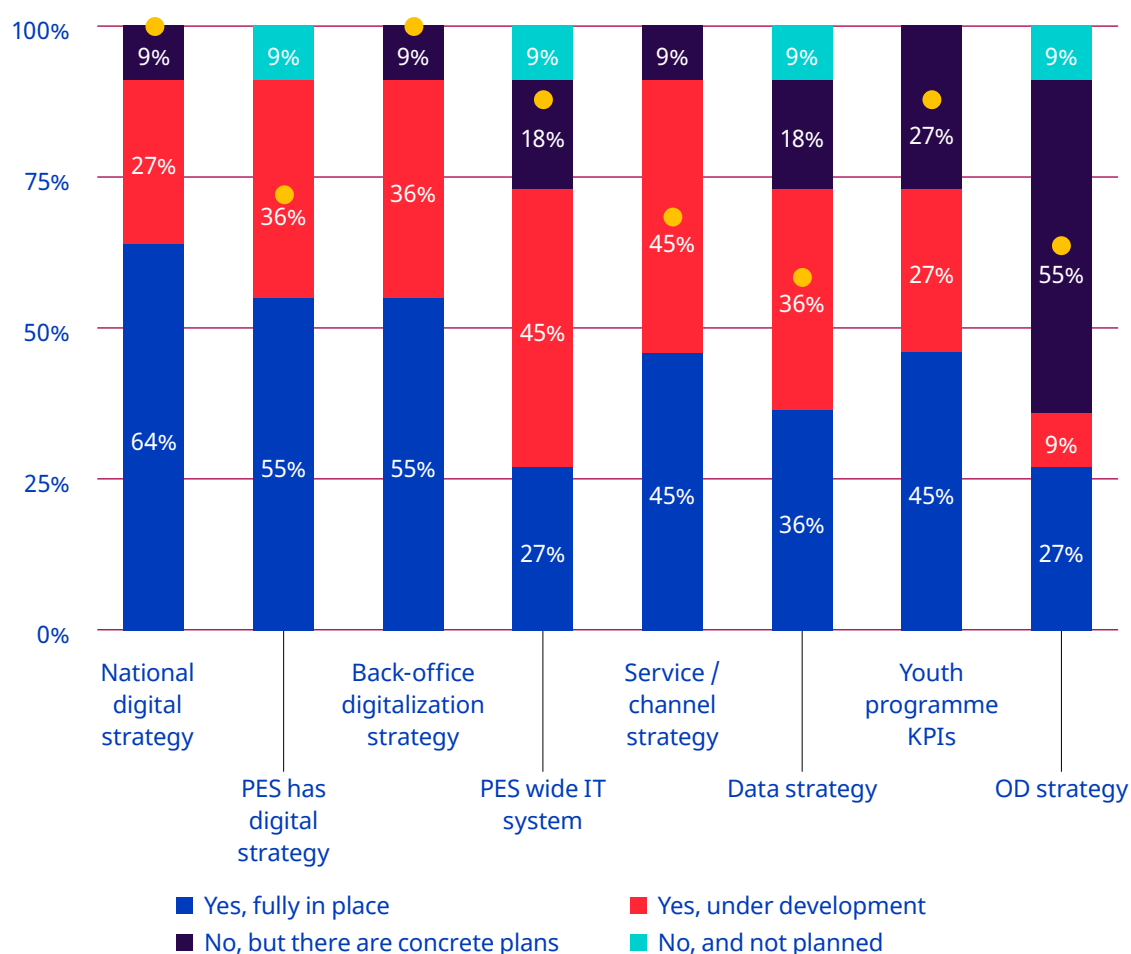
- Development of an integrated data strategy as well as an organizational development strategy

## Cambodia

Income category	Middle-Income Countries
Egovernment Development Index (2022)	127
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) across all participants, with Cambodia highlighted.



All digital elements are under development or being planned. The following areas were identified as affecting the performance and effectiveness of the PES:

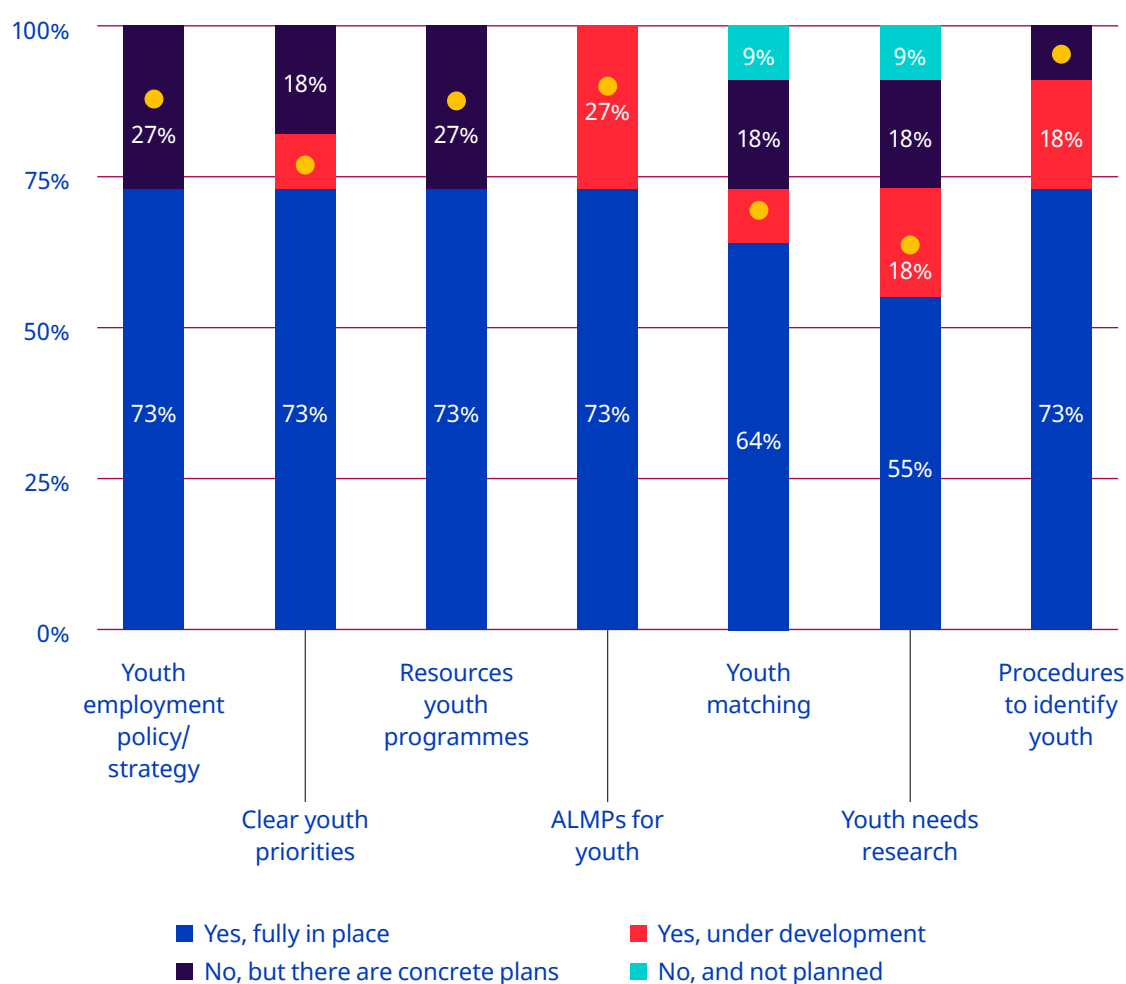
- Lack of financial and other resources
- Lack of vision/strategy
- Insufficient leadership
- Lack of channel strategy
- Privacy protection
- Lack of knowledge technology

- Lack of inclusive approaches
- Siloing
- Lack of data
- Persistent legacy systems
- Lack of customer insights

Developing a vision/strategy, as well as appointing the appropriate leadership are good starting points to make improvements.

## Youth services and programmes

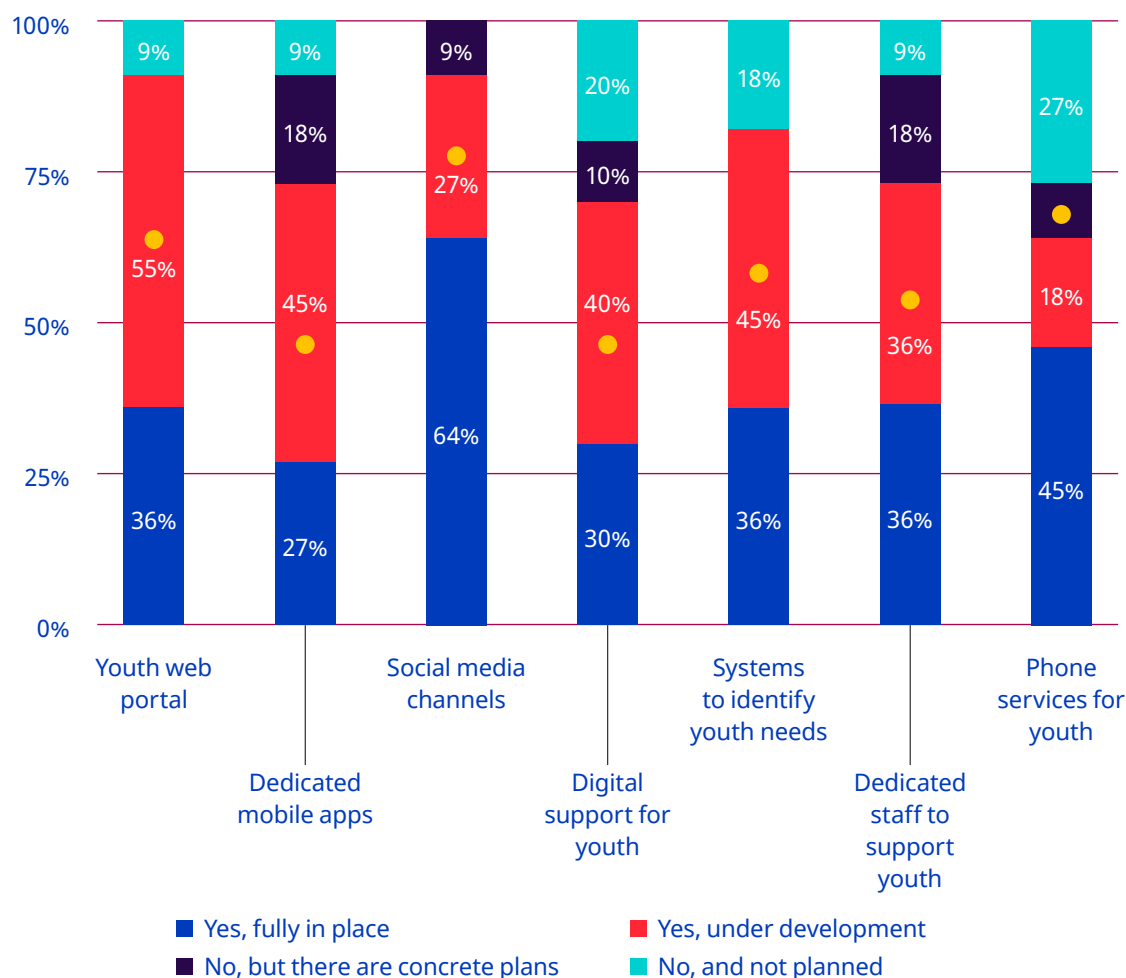
The following figure highlights key elements of youth services, programmes, and approaches, as well as the Cambodia's position on it. This illustrates the degree to which a wide range of youth services are in place.



Similar to the digital area, Cambodia is developing its youth services. It is encouraging that most types of programmes/services are being developed or planned. Certain youth services are already in place, such as CV training or interview training and while these are not specifically targeted at youth, most clients are young. Furthermore, the PES is developing an employment programme that focuses on specific target groups, including young people.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and the Cambodian standing in these areas.



Cambodia is actively and rapidly expanding its national portal. For example, it plans to allow jobseekers to upload their CVs to the website in the near future, and, further, to integrate youth services in the portal.

## Good practices and learning points

The following points are areas where other countries could learn from Cambodia, followed by areas where Cambodia could improve and/or learn from other PES.

- The Cambodian PES is relatively advanced in the use of Key Performance Indicators (KPIs). The country has developed a comprehensive set of goals at various levels that are translated into KPIs.

Learning points:

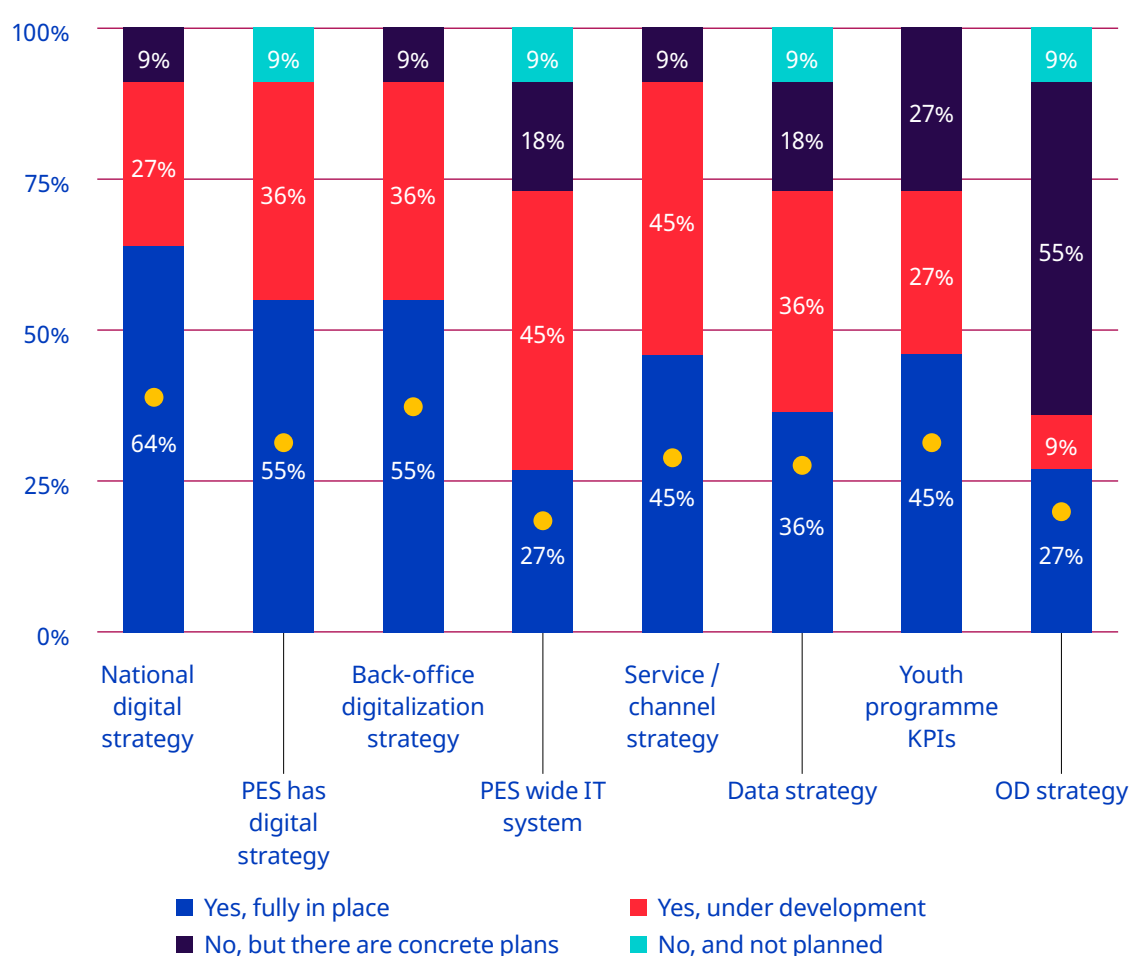
- The overall digital strategy and leadership are areas where the Cambodian PES could potentially learn from the experience of other PES.
- Cambodia could work more actively on dedicated youth programmes as well as active outreach to youth to also include those not currently in the PES system.
- Clearly identify major current obstacles and work to mitigate them.

## China

Income category	Middle-Income Countries
Egovernment Development Index (2022)	43
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) across all participants. China is shown highlighted.



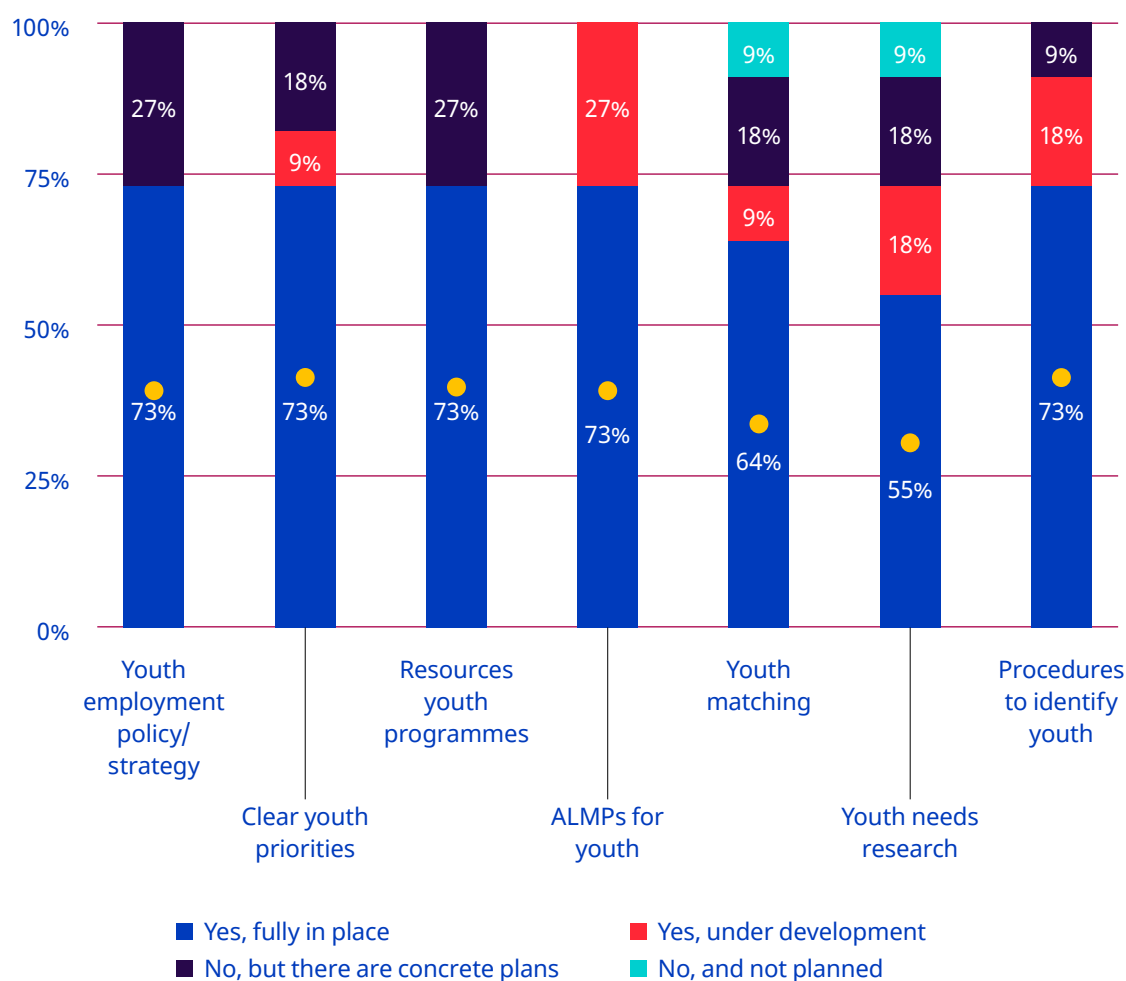
At the strategic level in China, all key elements are in place. It is therefore no surprise that most of the obstacles reported by China itself are outside its control (such as the lack of resources) or generally at a more tactical/operational level:

- Lack of financial and other resources
- Insufficient digital skills
- Siloing
- Adapting post-COVID-19
- Lack of knowledge of technology

Adapting post-COVID-19 is a challenge for many PES in the region, a new challenge for which no clear lessons so far exist. Furthermore, China is a very large country with large differences based on geography and economic development. This could in part explain the siloing in the organization.

## Youth services and programmes

The following figure highlights key elements of youth services, programmes, and approaches, as well as China's position in this area. It illustrates the degree to which a wide range of youth services are in place.



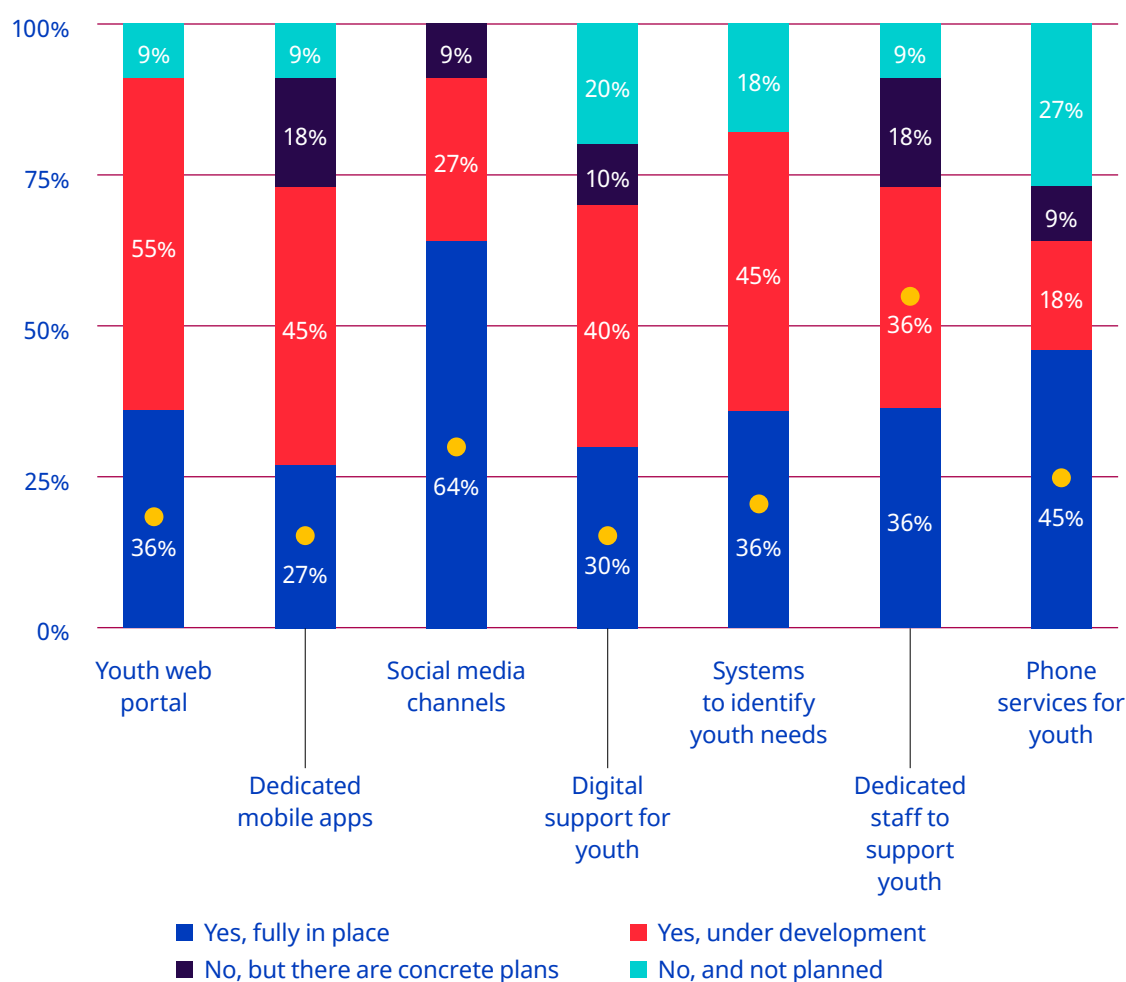
The PES has a youth focus at the strategic level as well as practical ALMPs for youth in place. Examples of these are:

- Subsidies for internship/traineeships.
- A youth technology start-up programme.
- Regional revitalization programmes focusing on urban-to-regional technology transfer and migration.
- Programmes to encourage businesses to hire young people with disabilities to promote equality.

In addition, there are specific programmes for college graduates, such as periodic job fairs and the use of dedicated social media.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and the China's standing in these areas.



The use of youth technology is relatively advanced. There are dedicated mobile apps and social media. China deploys many locally developed social media, such as WeChat, QQ and TikTok. The only area where China might improve is to accelerate the assignment of dedicated staff to support young people.

## Good practices and learning points

China has made significant strides and achievements in the recent couple of years, especially following the nationwide consultations and subsequent adoption of the “Guiding Opinions on Promoting All-round Public Employment Services” in December 2018. The following points are areas where other countries could learn from China, followed by areas where China could improve and/or learn from other PES.

- The speed of digitalization in China in the past decades is impressive and many countries could learn from China's approach.
- The use of social media to target youth is relatively advanced and well-integrated into the overall PES business model, which could be an inspiration to other countries.



- China is a leader in the development and implementation of youth programmes, including those focusing on inclusion and reducing regional and other inequalities.

Learning points:

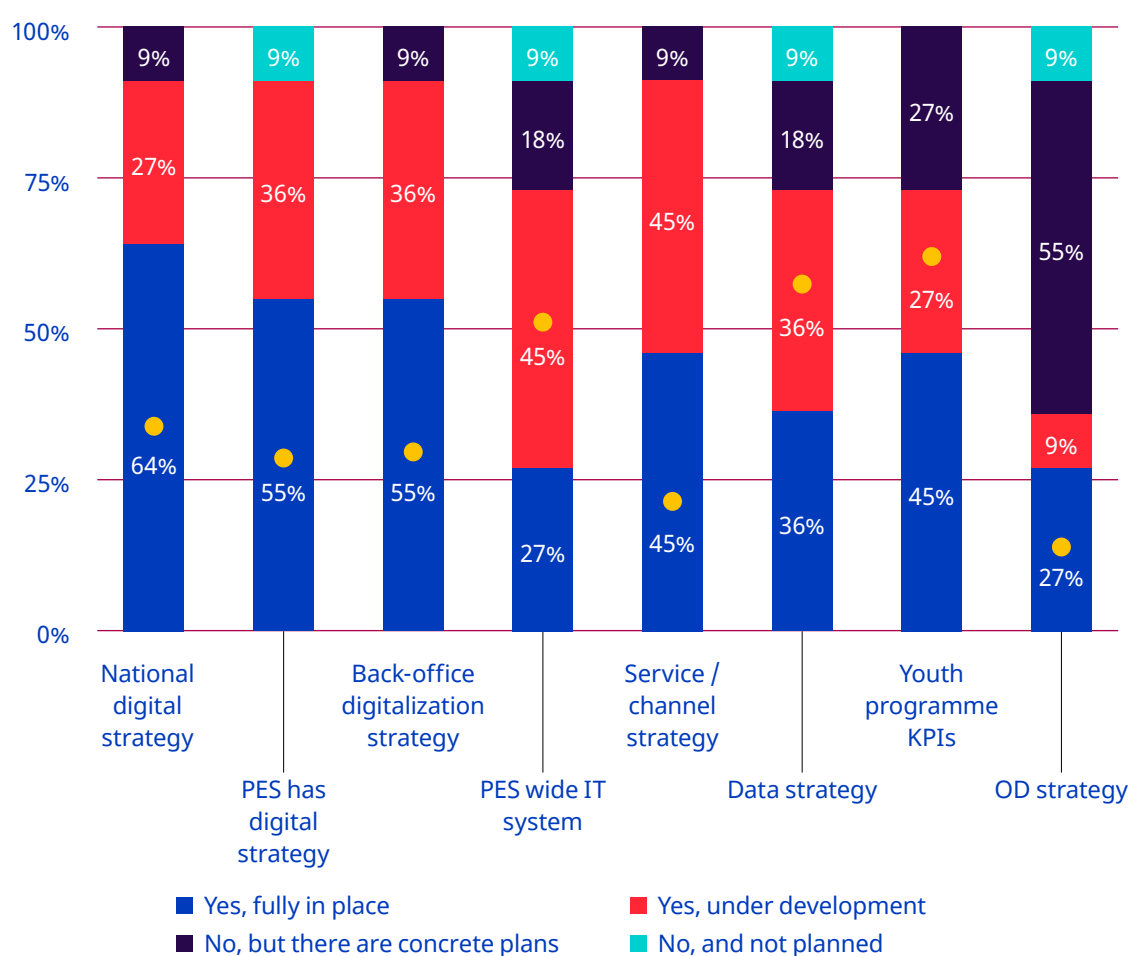
- The country's size and regional variety pose a challenge and this contributes to siloing in the organization. As noted in the above mentioned guidance, efforts being made to achieve a better coordination and service standardization across all government level and between urban and rural areas could be strengthened.
- Further improving and strengthening the monitoring and evaluation mechanisms of the PES could further enhance the efficiency and effectiveness of the entire national PES system.

## India

Income category	Middle-Income Countries
Egovernment Development Index (2022)	105
PES digital orientation	Digital Transformation

### Digital maturity

The figure below provides an overview of PES digital strategies in five areas (overall strategy, back office, front office, data and organization) across all participants. It shows India highlighted.

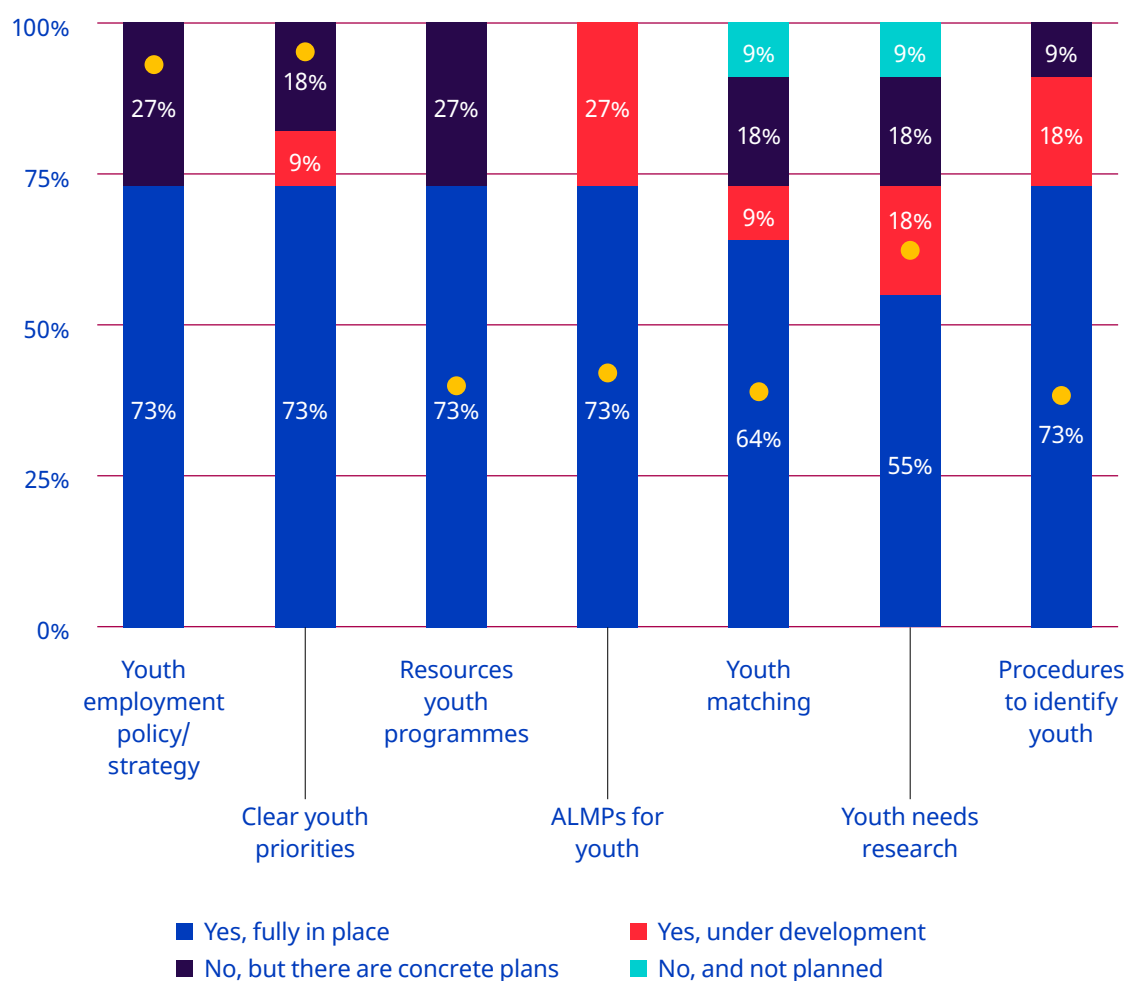


India in general is doing reasonably well. Many strategic elements are in place; now it is time to execute these strategies (e.g. in the implementation of a PES-wide IT system). In addition, India is one of the few countries that have an organizational development (OD) strategy in place, resulting from the realization that the efficiency of the employment service depends on well-trained officers and constant research. India could however consider addressing some of the significant issues currently faced:

- Siloing
- Lack of inclusive approaches
- Insufficient digital skills

## Youth services and programmes

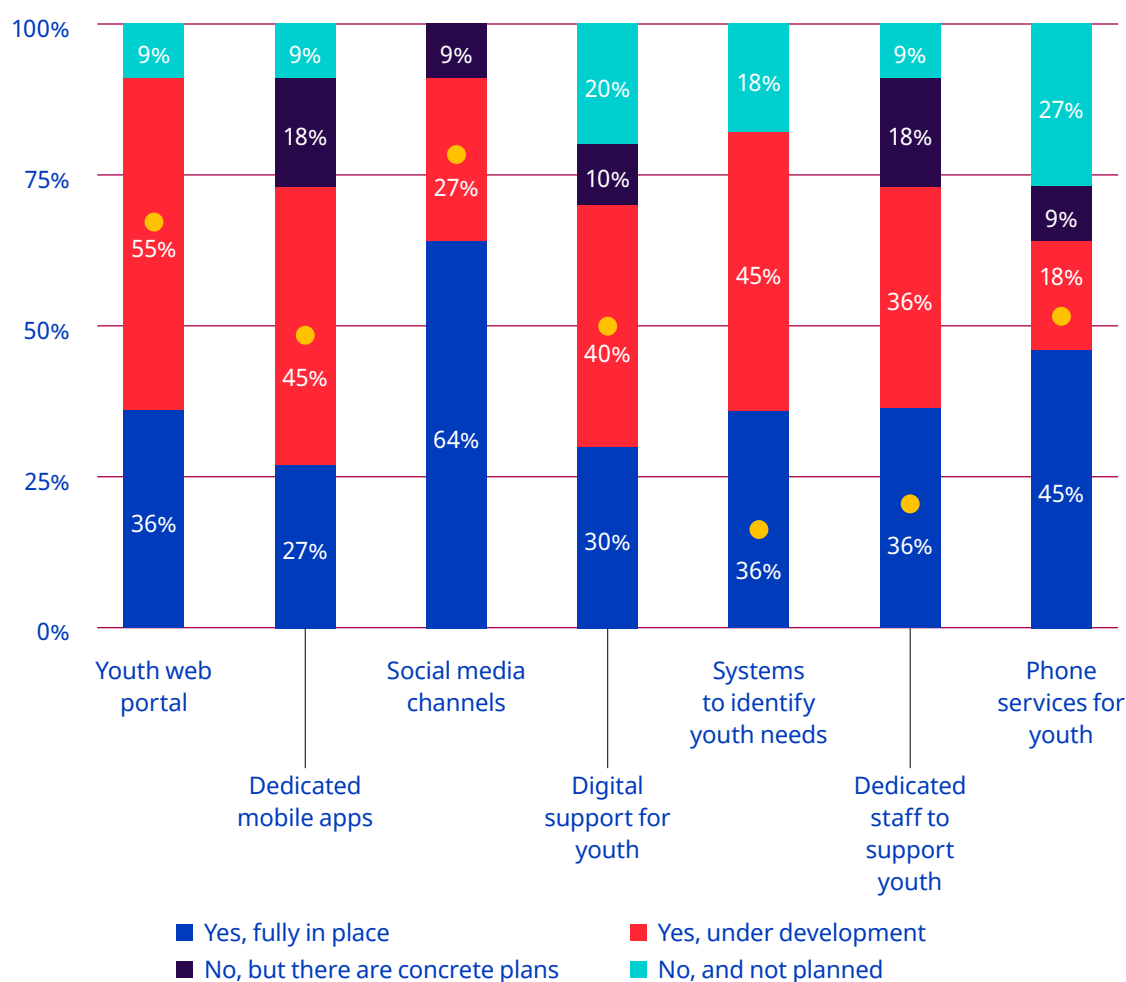
The following figure highlights key elements of youth services, programmes, and approaches, as well as India's position of India in this area. It illustrates the degree to which a wide range of youth services are in place.



There are specific ALMPs and resources to execute youth programmes. A key component of these programmes is the Employment Exchanges in the country envisaged as a central hub for youth as well as other target groups.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and the standing of India in these areas.



India has many elements under development. Examples of digital support that are in place for the youth are the digital skills training (“DigiSaksham”) provided by the National Career Service under the Ministry of Labour and Employment in collaboration with Microsoft, digital literacy training implemented by the Ministry of Electronics and Information Technology, and skill, re-skill and up-skill training, including digital literacy/training, delivered by the Ministry of Skill Development and Entrepreneurship.

## Good practices and learning points

The following points are areas where other countries could learn from India, followed by areas where India could improve and/or learn from other PES.

- The Employment Exchanges are an example of a modern approach towards providing face-to-face services, while being heavily supported by technology and having a distinct youth focus.

Learning points:

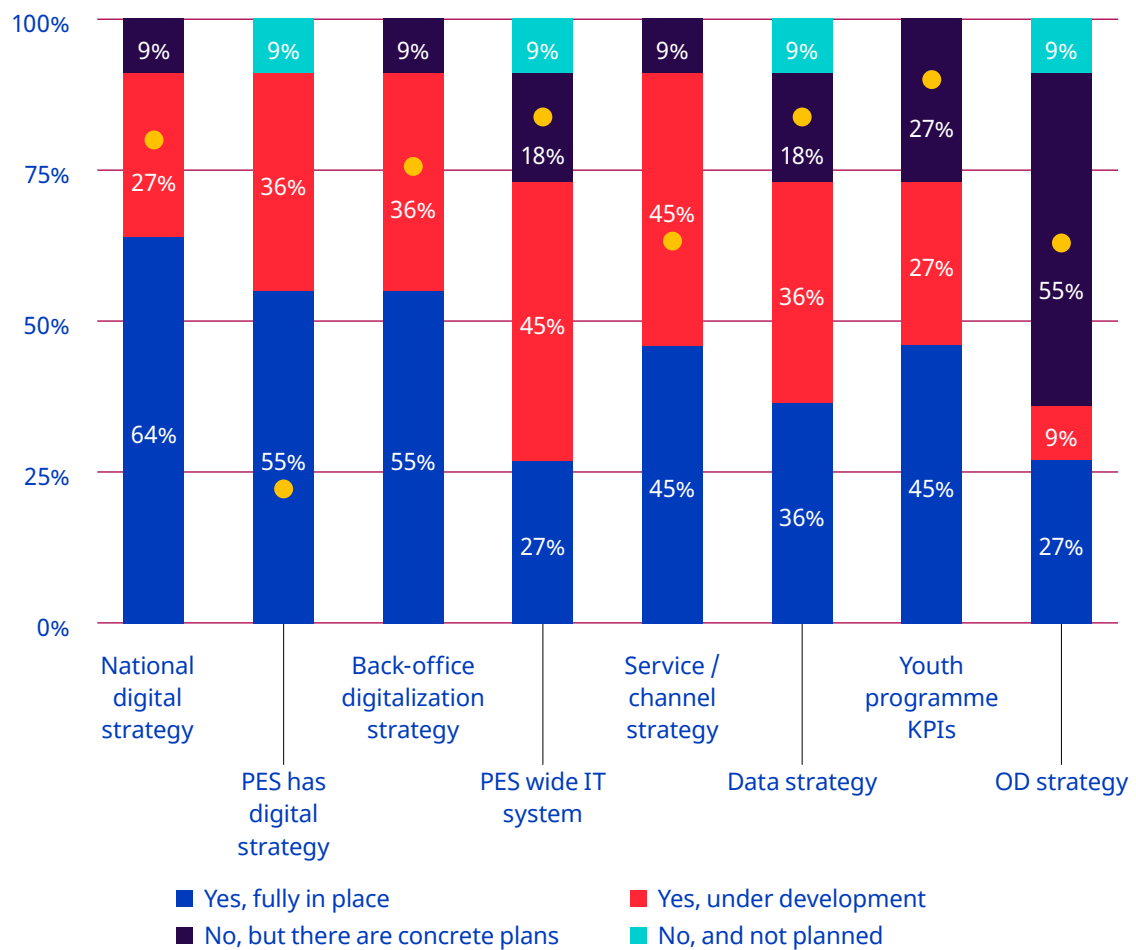
- Many youth programmes and technologies are under development and more efforts in this space could greatly support India’s youth.

## Indonesia

Income category	Middle-Income Countries
Egovernment Development Index (2022)	77
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data & organization) for all participants. Indonesia is highlighted.



Indonesia in general is in the 'planning' stages of many of their strategic elements. Other areas identified where there is room for improvement of the performance and effectiveness of the PES are:

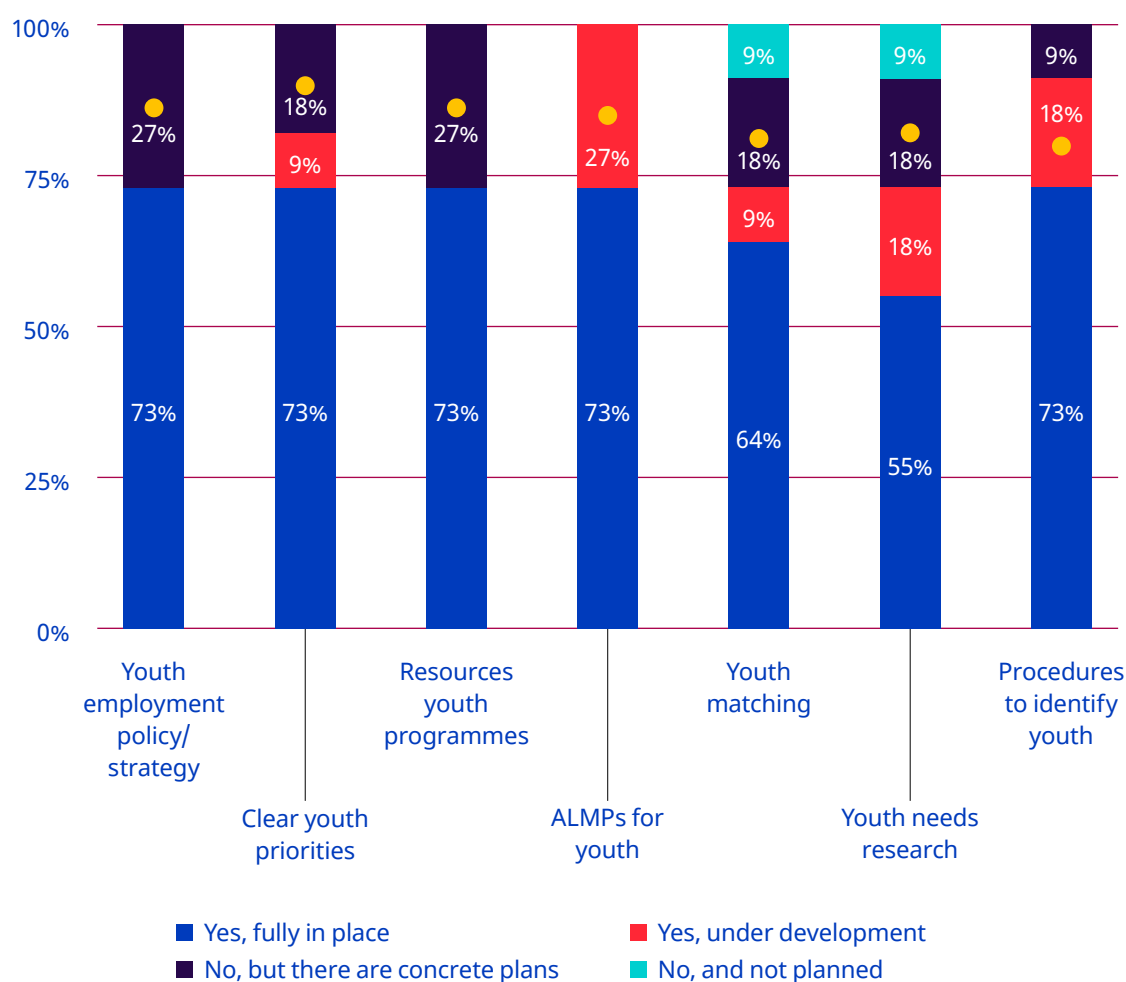
- Siloing
- Resistance in the organization
- Legacy systems
- Lack of inclusive approaches
- Lack of subgroup insights
- Privacy protection
- Lack of financial and other resources
- Lack of integrated processes

- Lack of knowledge technology
- IT interoperability
- Lack of data
- Adapting post COVID-19

Indonesia is making attempts at addressing the challenge of siloing through for example the SIAPkerja initiative which is meant to create one platform that connects the fragmented offices across the country to facilitate data sharing.

## Youth services and programmes

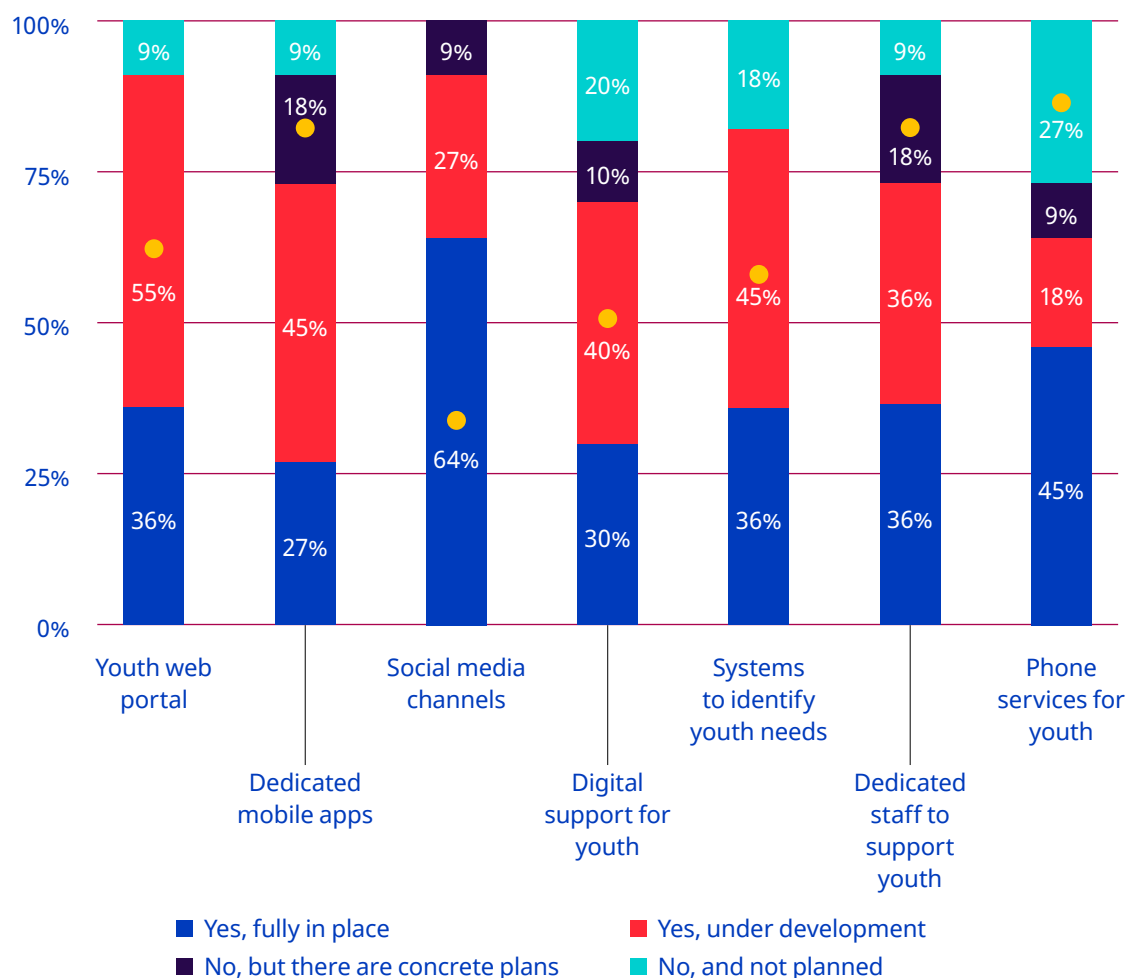
The following figure highlights key elements of youth services, programmes, and approaches, as well as the position of Indonesia on it. It illustrates the degree to which a wide range of youth services are in place.



This is very much an area of planning and development for Indonesia. Focus of the country is to first connect all systems and have their data in order. Based on this, the country expects to develop dedicated ALMPs.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and Indonesia's standing in these areas.



The PES is fairly advanced in this area, with most elements being under development and some at the planning stage. The PES has digital skills training opportunities for young people as well as dedicated YouTube channels that use influencers who play an active role in the world of employment, an area where Indonesia has a leading role.

## Good practices and learning points

The following points are areas where other countries could learn from Indonesia, followed by areas where Indonesia could improve and/or learn from other PES.

- Indonesia actively uses influencers to create YouTube content aimed at youth and this could be an inspiration for other countries.

Learning points:

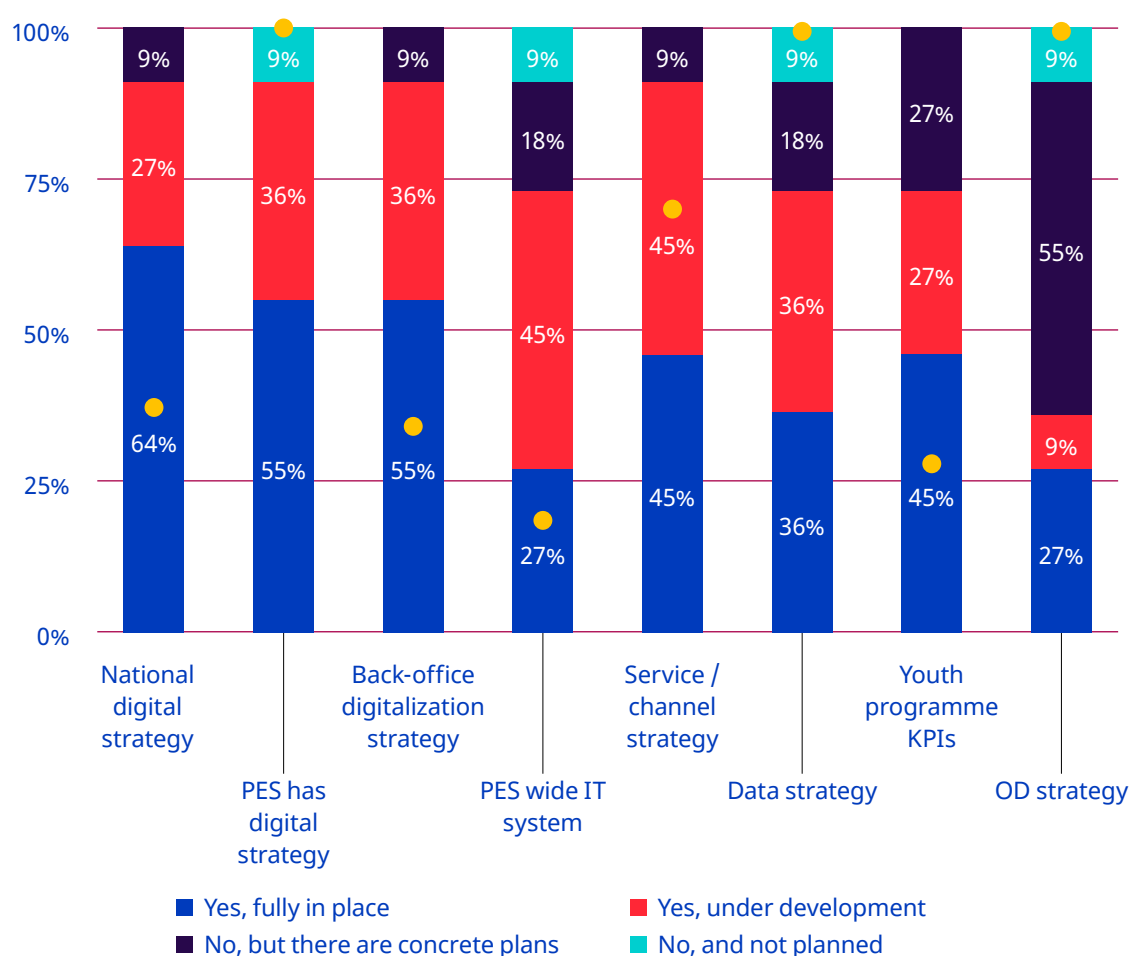
- In the actual implementation of youth programmes and making more use of youth technologies, Indonesia could learn from more advanced countries in the region.
- The prioritization of obstacles and development of a strategy to mitigate them.

## Japan

Income category	High Income Countries
Egovernment Development Index (2022)	14
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) for all participants. It shows Japan highlighted.



Japan in general is an advanced country, with many of the digital strategy elements already in place for many years. The country has no plans to develop a data strategy or have a dedicated organizational development strategy and these might be areas which the PES might consider addressing. Japan could also benefit from efforts to address the following issues:

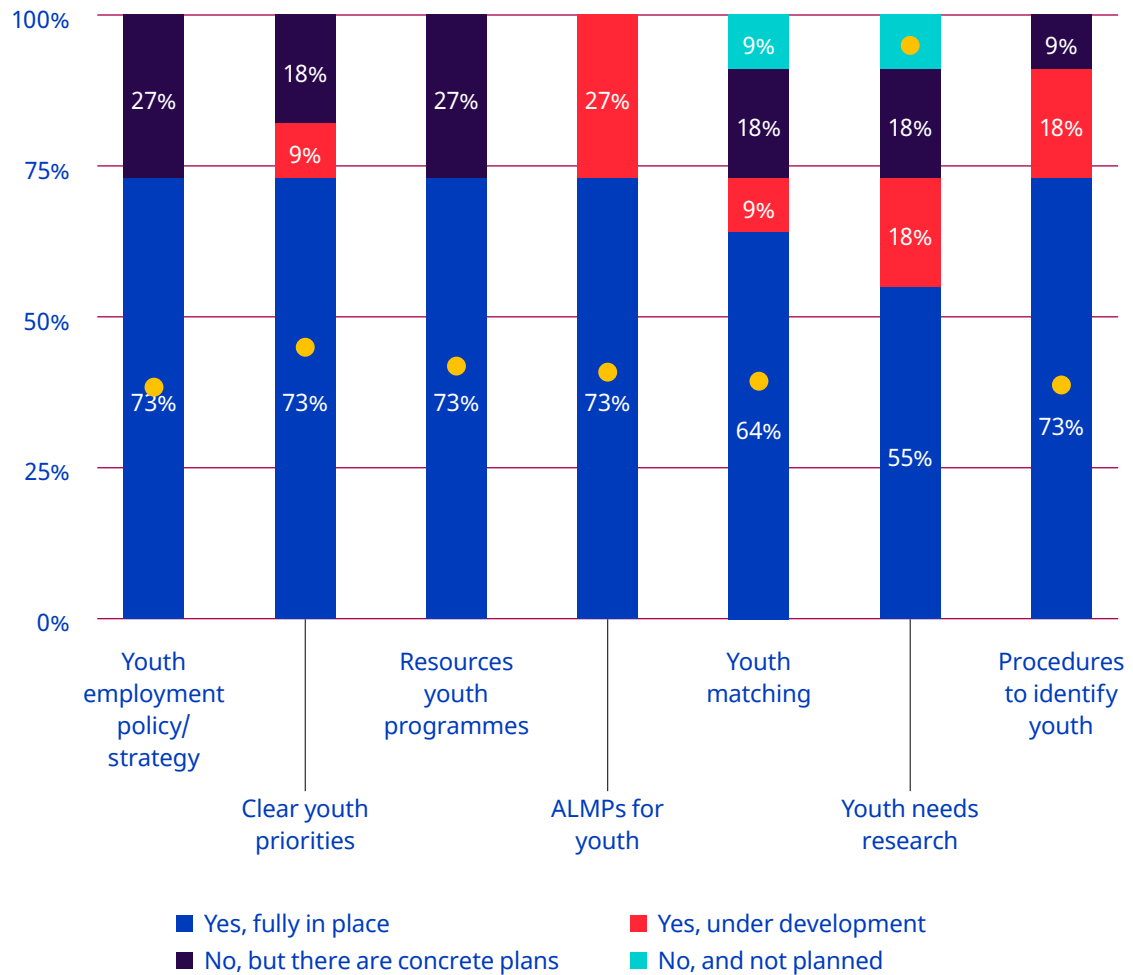
- Insufficient digital skills
- Lack of knowledge technology

Lack of knowledge and insufficient digital skills are areas where the country could generate many benefits with relatively modest investment.



## Youth services and programmes

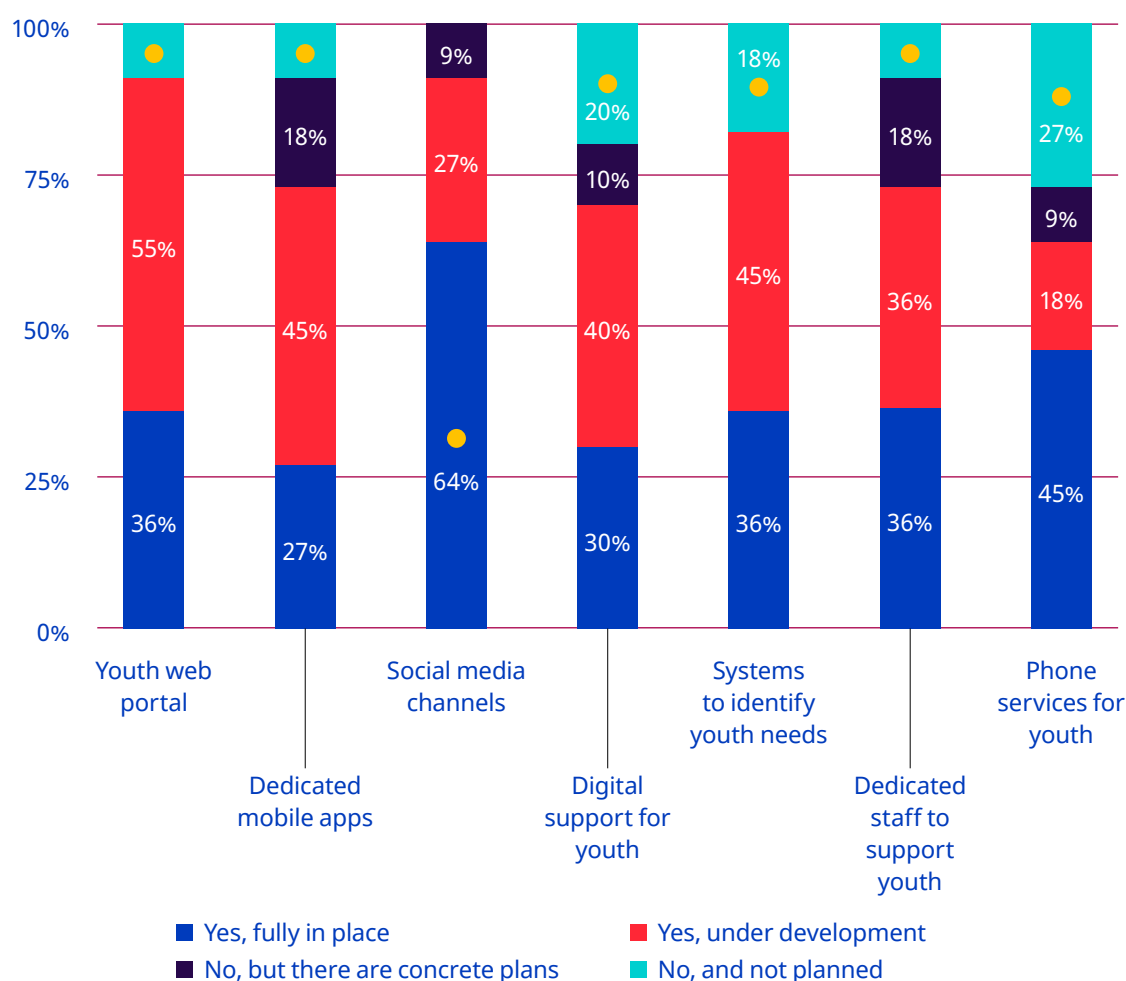
The following figure highlights key elements of youth services, programmes and approaches, as well as Japan's position in this area. It illustrates the degree to which a wide range of youth services are in place.



This is clearly an area where the PES is advanced. Many elements are in place and this no doubt stems from the clear basic Policy on Youth Employment that the country put in place and implemented in 2015. The country could, perhaps, benefit from conducting dedicated youth research to further refine provision and ALMPs.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and Japan's standing in these areas.



The PES only deploys social media to target youth specifically, but has no plans to develop other youth-specific technologies. This mainly stems from its generic approach towards technology which is targeted at all jobseekers.

## Good practices and learning points

The following points are areas where other countries could learn from Japan, followed by areas where Japan could improve and/or learn from other PES.

- The Japanese PES has clear youth policies in place and other PES could benefit from this approach.

Learning points:

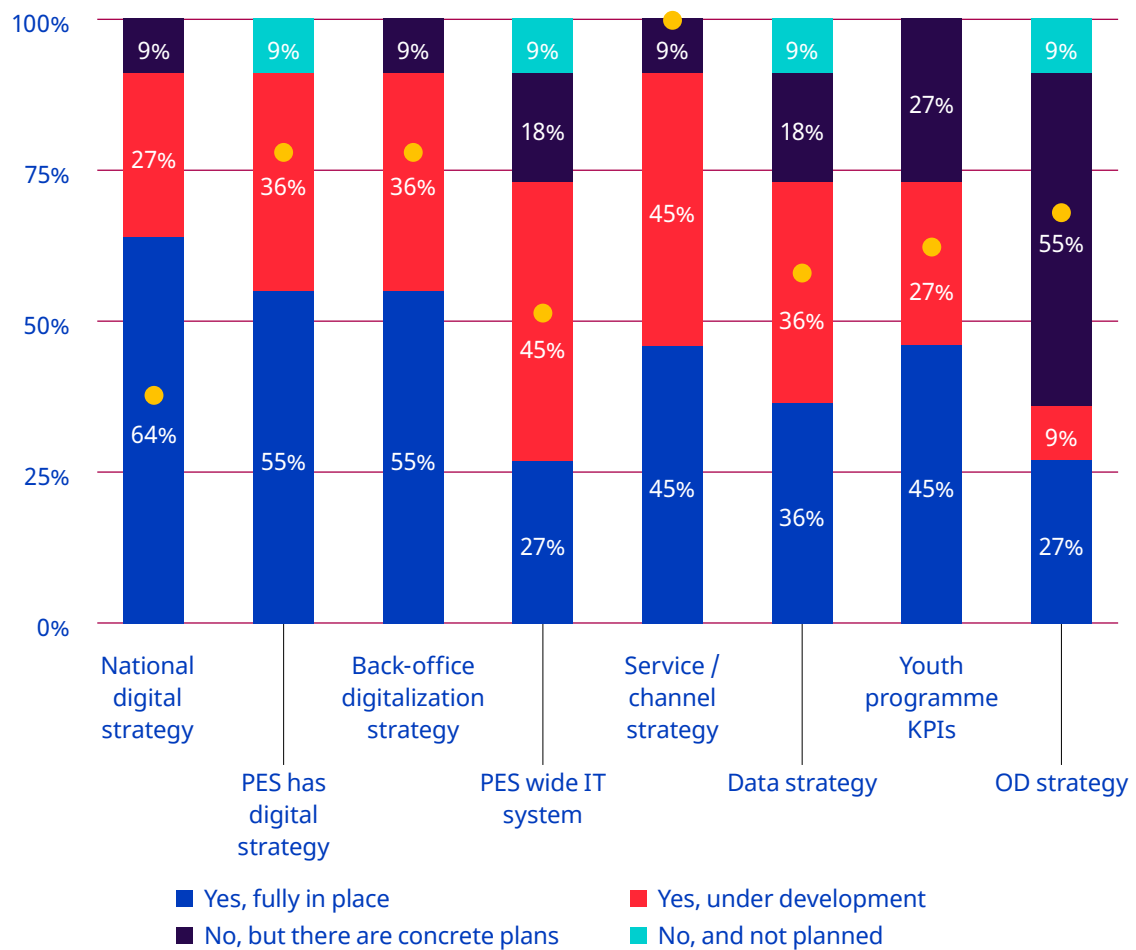
- The PES could benefit, for example, from focused youth research, (including profiling and segmentation), which could help in tailoring ALMPs and developing specific youth services. Dedicated youth technologies could be a way to serve this part of the population in ways that appeal to young people.

## Nepal

Income category	High Income Countries
Egovernment Development Index (2022)	125
PES digital orientation	Digitalization

### Digital maturity

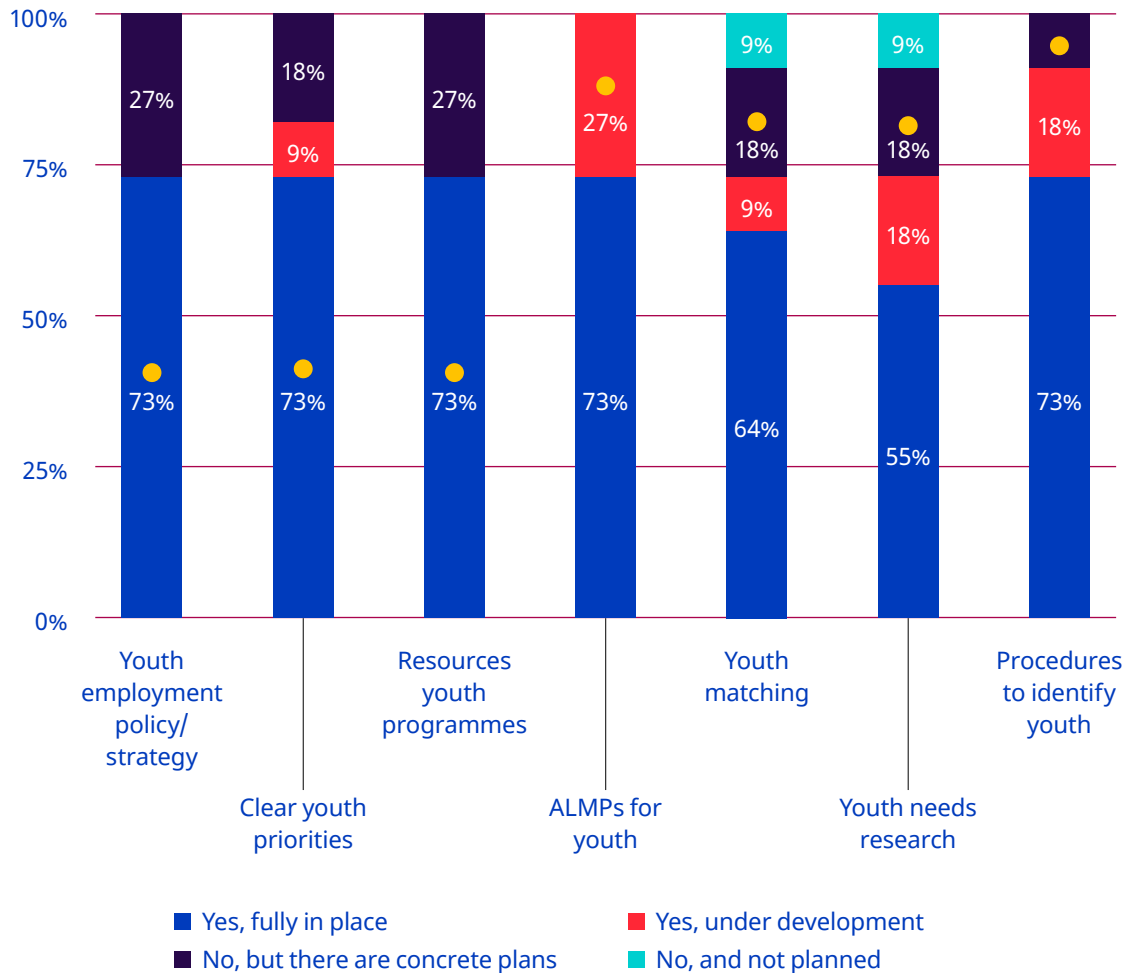
The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) for all participants. It shows Nepal highlighted.



There is a comprehensive national strategy that guides digital development of the country. Beyond that, most elements are in development or planning stages. Furthermore, Nepal should seek to enhance IT interoperability.

## Youth services and programmes

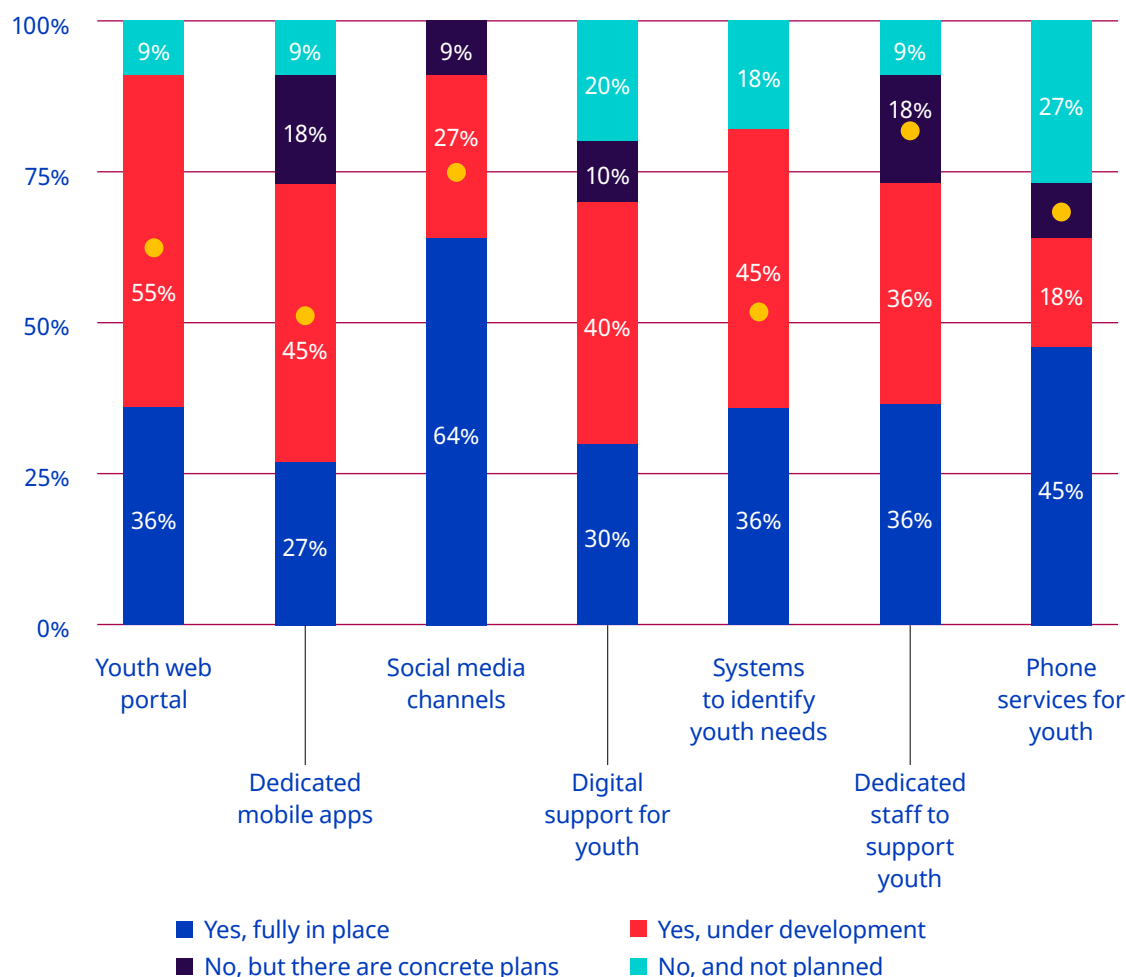
The following figure highlights key elements of youth services, programmes, and approaches, as well as the position of Nepal on it. It illustrates the degree to which a wide range of youth services are in place.



This is a more developed area. There is a youth employment strategy in place and the PES has clear youth priorities and the resources to execute youth programmes. The other areas are under development or being planned. Investments in these areas could help the PES move forward.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and Nepal's standing in these areas (note: Nepal did not reply the question about digital support for youth).



The PES currently has no dedicated youth technologies in place. However, many technologies are under development, which shows the potential for the future. The PES could benefit from having dedicated staff to support youth.

## Good practices and learning points

The following points are areas where Nepal could improve and/or learn from other PES:

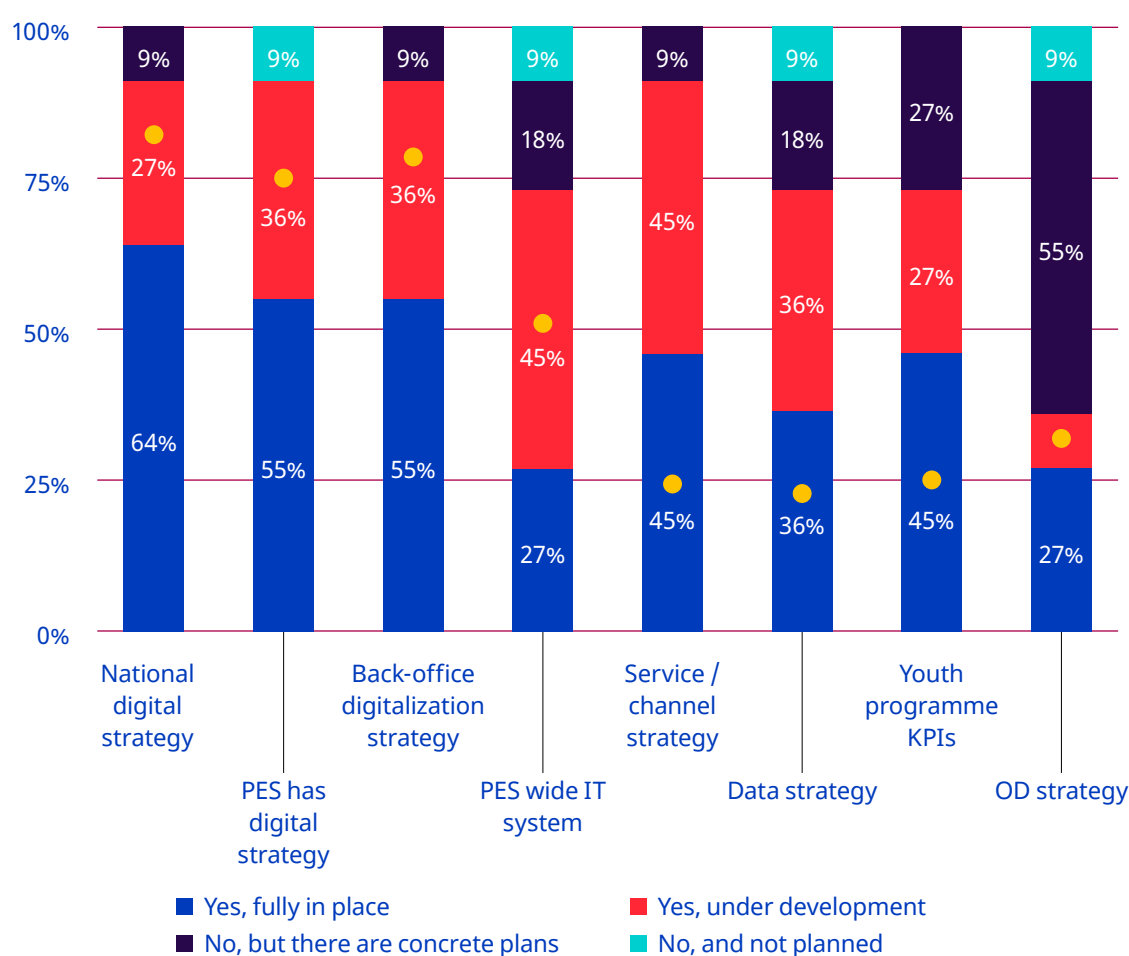
- Development of dedicated PES strategies (e.g. in back office, front office, or data) that help guide development of the PES, ideally linked to the national digital strategy.
- Implementation of dedicated ALMPs, youth-focused matching and youth research could enhance the PES' support for young people.
- Few technologies dedicated towards the youth are currently in place. A good starting point, based on the experience of others, might be the social media.

## Philippines

Income category	Middle-Income Countries
Egovernment Development Index (2022)	89
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) for all participants. Philippines is highlighted.



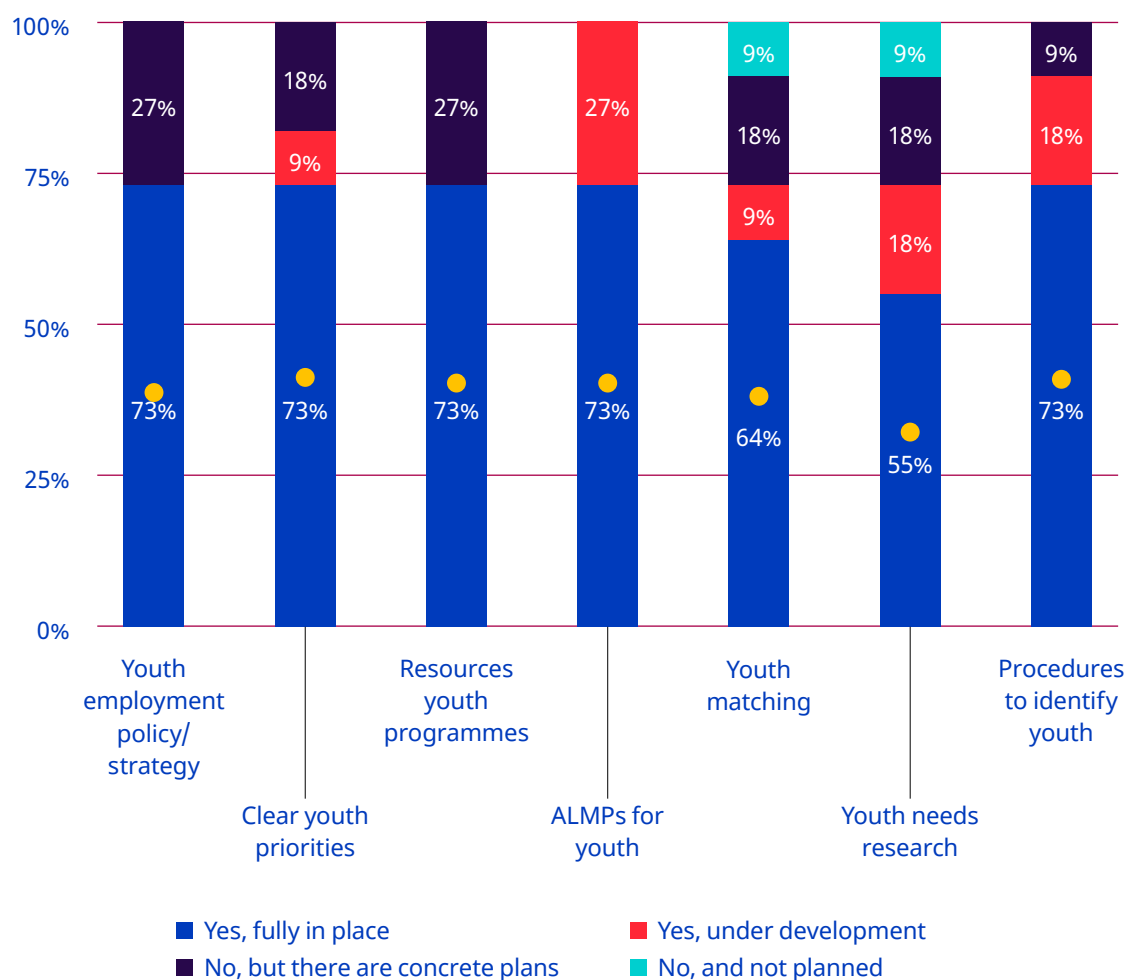
Philippines in general is a developing country in terms of digital technology. Most strategic elements are being developed, but on the positive side the PES has a service/channel as well as data strategy. Implementing the overall digital strategy should be beneficial in guiding overall digital developments. The Philippines could also benefit from efforts to address the following areas:

- Lack of knowledge technology
- Insufficient digital skills
- Lack of data
- Lack of inclusive approaches

- Lack of channel strategy
- Lack of subgroup insights
- Lack of financial and other resources
- Lack of integrated processes
- Lack of vision/strategy
- Insufficient leadership
- Lack of customer insights
- Cybersecurity

## Youth services and programmes

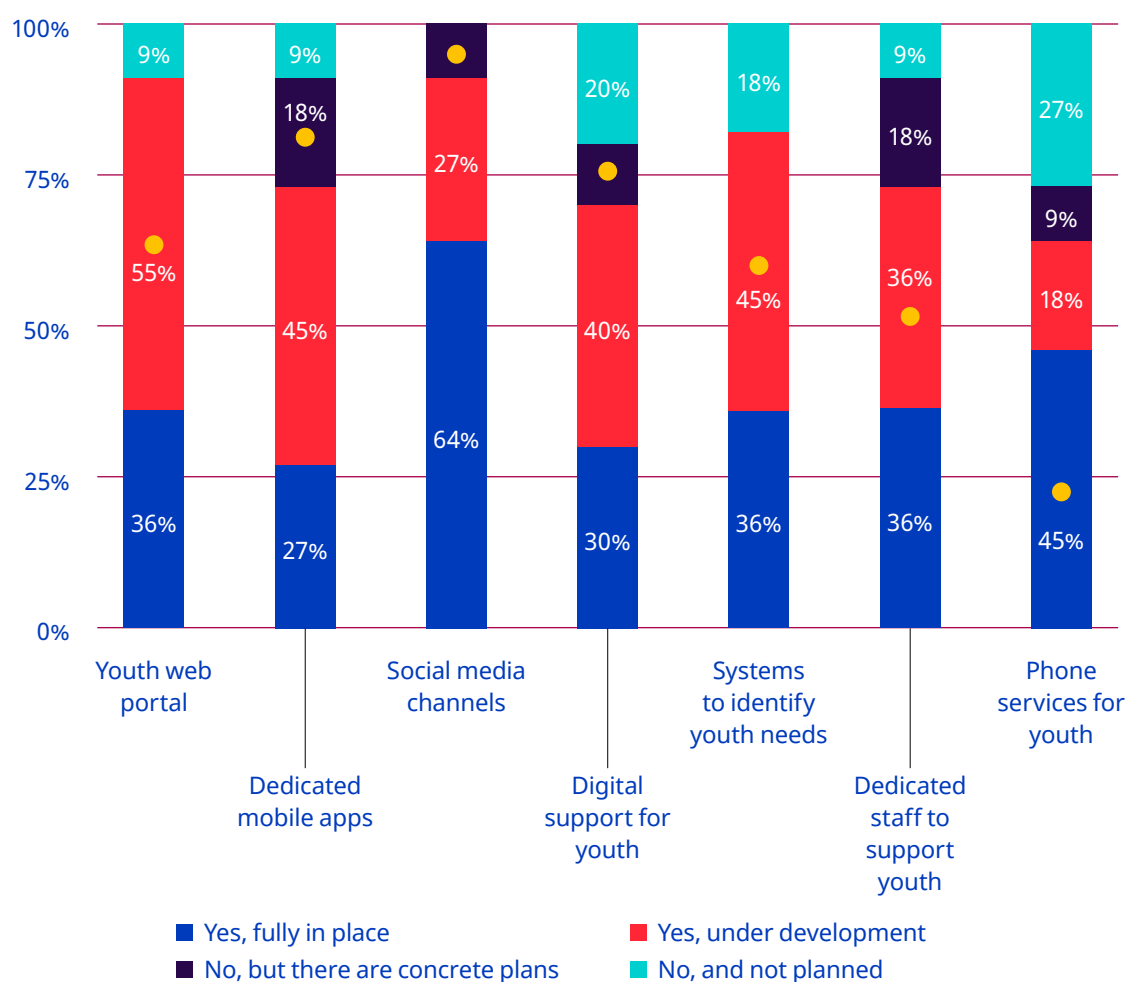
The following figure highlights key elements of youth services, programmes, and approaches, as well as the Philippines' position in this area. It illustrates the degree to which a wide range of youth services are in place.



In the Philippines, all the youth-oriented elements are fully in place and this is exemplified by specific youth ALMPs such as the Special Program for Employment of Students, JobStart Philippines, and the Government Internship Programme.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and the Philippines' standing in these areas.



Many elements are either under development, such as a youth web portal, systems to identify youth needs and dedicated youth staff). Other elements are well advanced at the planning stage and this includes mobile apps, social media and digital support for youth. The PES should ensure that plans in these areas are translated into actions.

## Good practices and learning points

The following points are areas where other countries could learn from the Philippines, followed by areas where the Philippines could improve and/or learn from other PES.

- The PES has advanced youth programmes that could serve as an inspiration to other countries in the region.

Learning points:

- The Philippines is faced with many issues standing in the way of further digitalization. Clearly prioritizing these, and starting with the highest-level (such as lack of a vision/strategy) could create an umbrella to address other obstacles more efficiently.
- Youth-oriented technologies appear to be underdeveloped in the country. Technology could clearly be relevant to support young people properly, ensuring the inclusion of all youth segments.

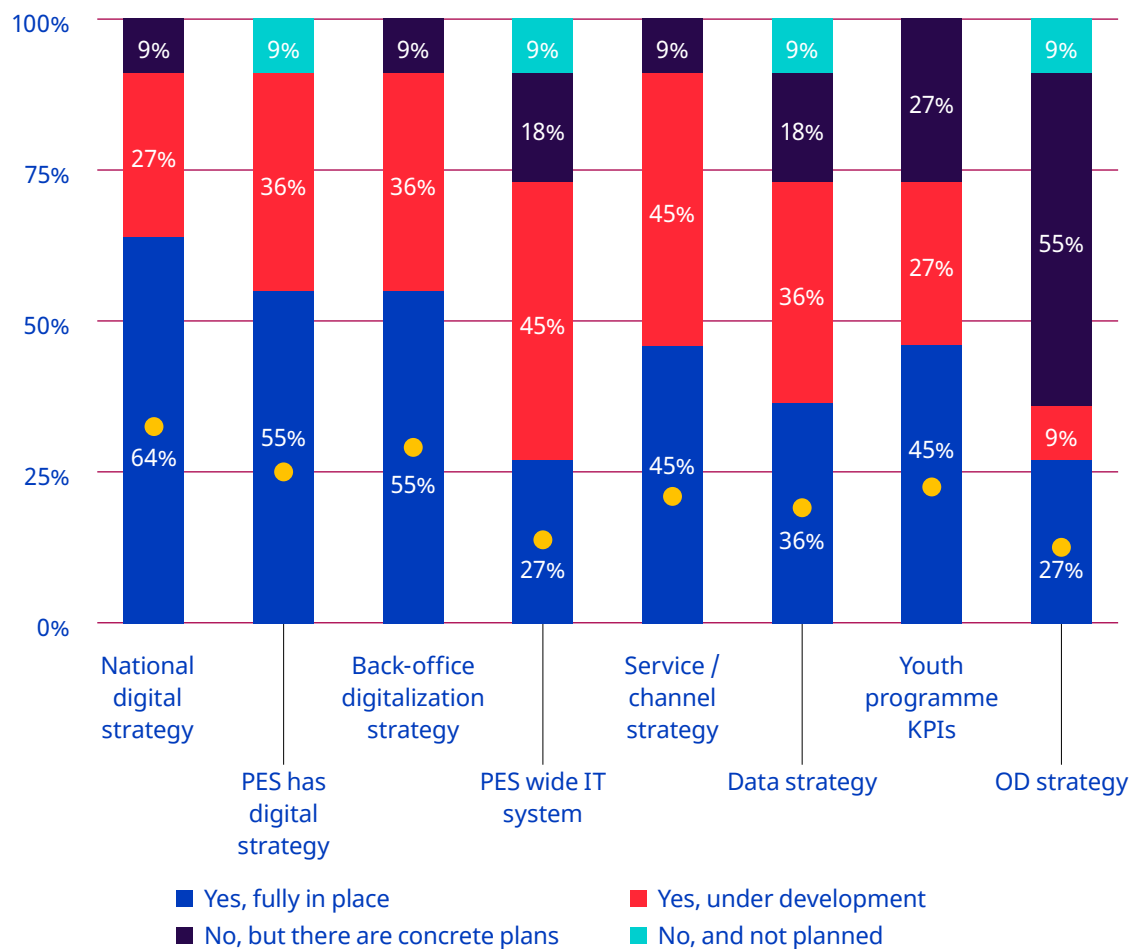


## Republic of Korea

Income category	High Income Countries
Egovernment Development Index (2022)	3
PES digital orientation	Digital Transformation

### Digital maturity

The figure below shows of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) for all participants. The Republic of Korea is highlighted.



The Republic of Korea in general is an advanced and well-developed country. All of the more digital strategy elements are in place. This does not mean that there are no challenges. Korea could benefit from efforts to address the following areas:

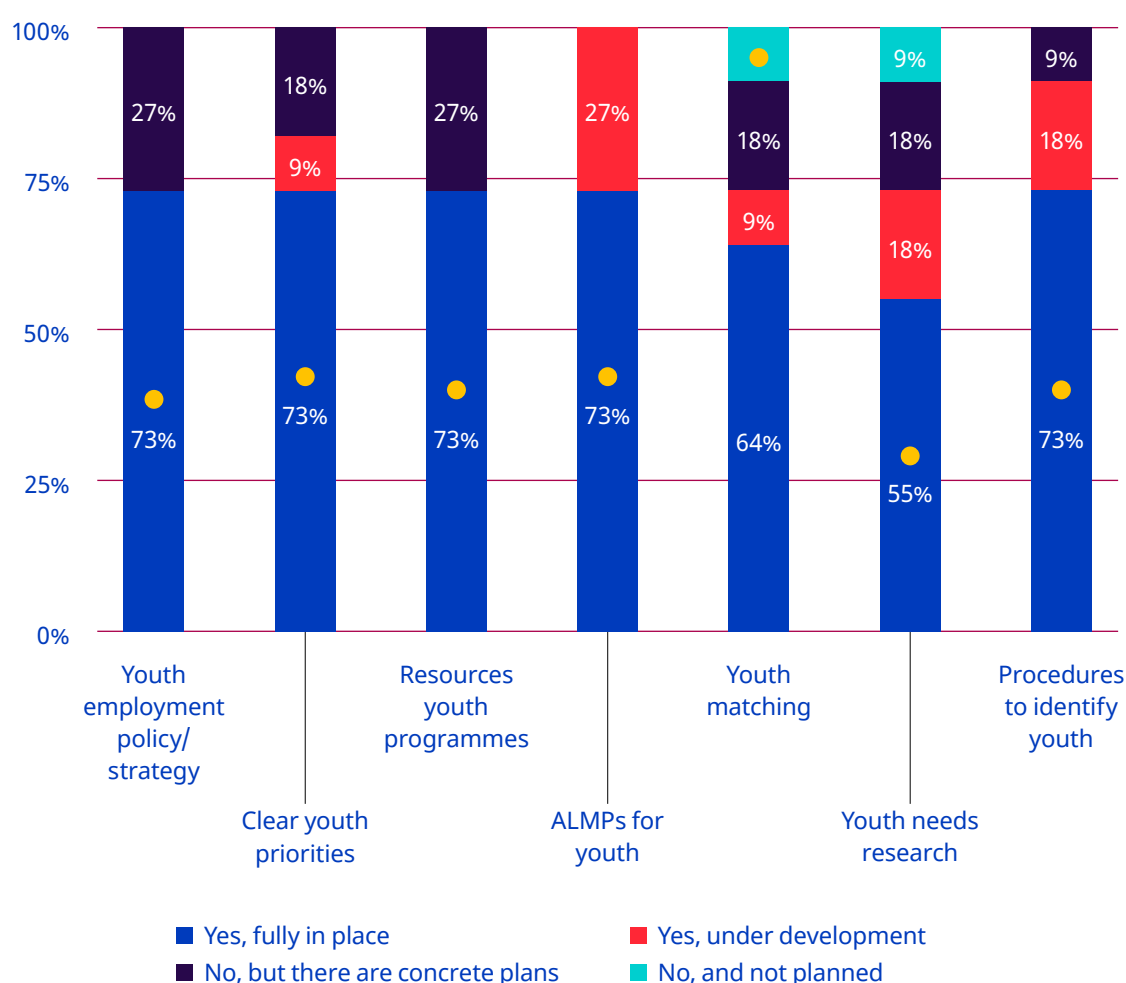
- Siloing
- Resistance in the organization
- Lack of channel strategy
- Lack of (financial) resources
- Lack of vision/strategy
- Insufficient digital skills
- Lack of inclusive approaches

- Lack of subgroup insights
- Lack of integrated processes
- Lack of knowledge technology
- Lack of customer insights

While the PES has all the strategic elements in place, it still lacks a longer-term vision – that could be a could starting point for eliminating the various obstacles.

## Youth services and programmes

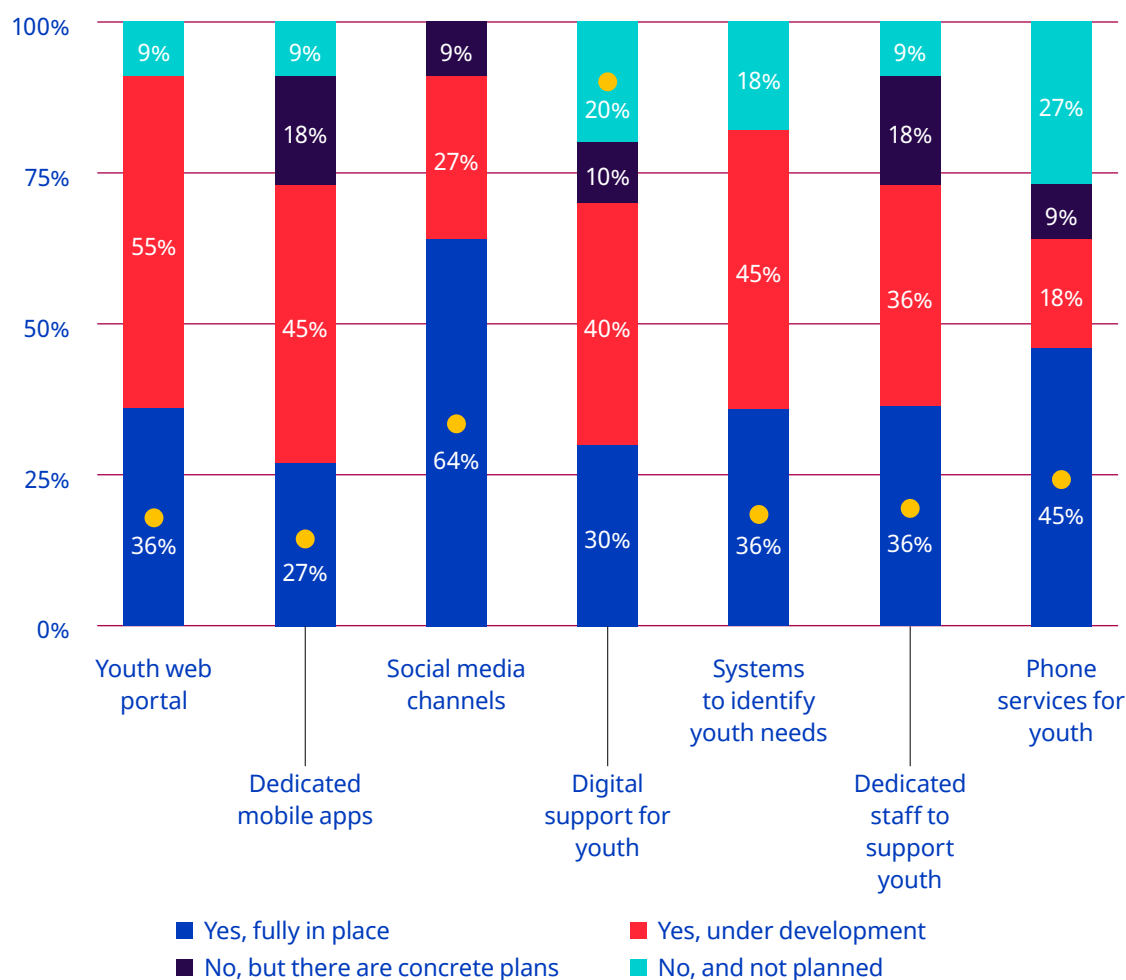
The following figure highlights key elements of youth services, programmes, and approaches, as well as the Republic of Korea's position in it. It illustrates the degree to which a wide range of youth services are in place.



This is another area where the PES is advanced. Underpinning this is the legal framework that regulates and provide services for youth through the Basic Act for Young People, Special Act for Youth Employment Promotion, and the Basic Employment Policy Act. The PES currently has no plans to focus specifically on vacancy matching for young people, although that could further benefit if youth populations and youth subgroups.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and Korea's standing in these areas.



This, again, is an area where the Republic of Korea is advanced, as most areas are fully in place. The only area where the PES has no plans is providing digital support. While it does not plan to do this specifically, the Ministry of Employment and Labour does promote a “K-digital” training project for youth.

## Good practices and learning points

The following points are areas where other countries could learn from the Republic of Korea, followed by areas where the Republic of Korea could improve and/or learn from other PES.

- With the Korean PES being one of the most advanced PES in the study, many PES could benefit from the Korean experience in digitalization. This applies to the more strategic level, youth services and programmes, as well as youth technologies.

Learning points:

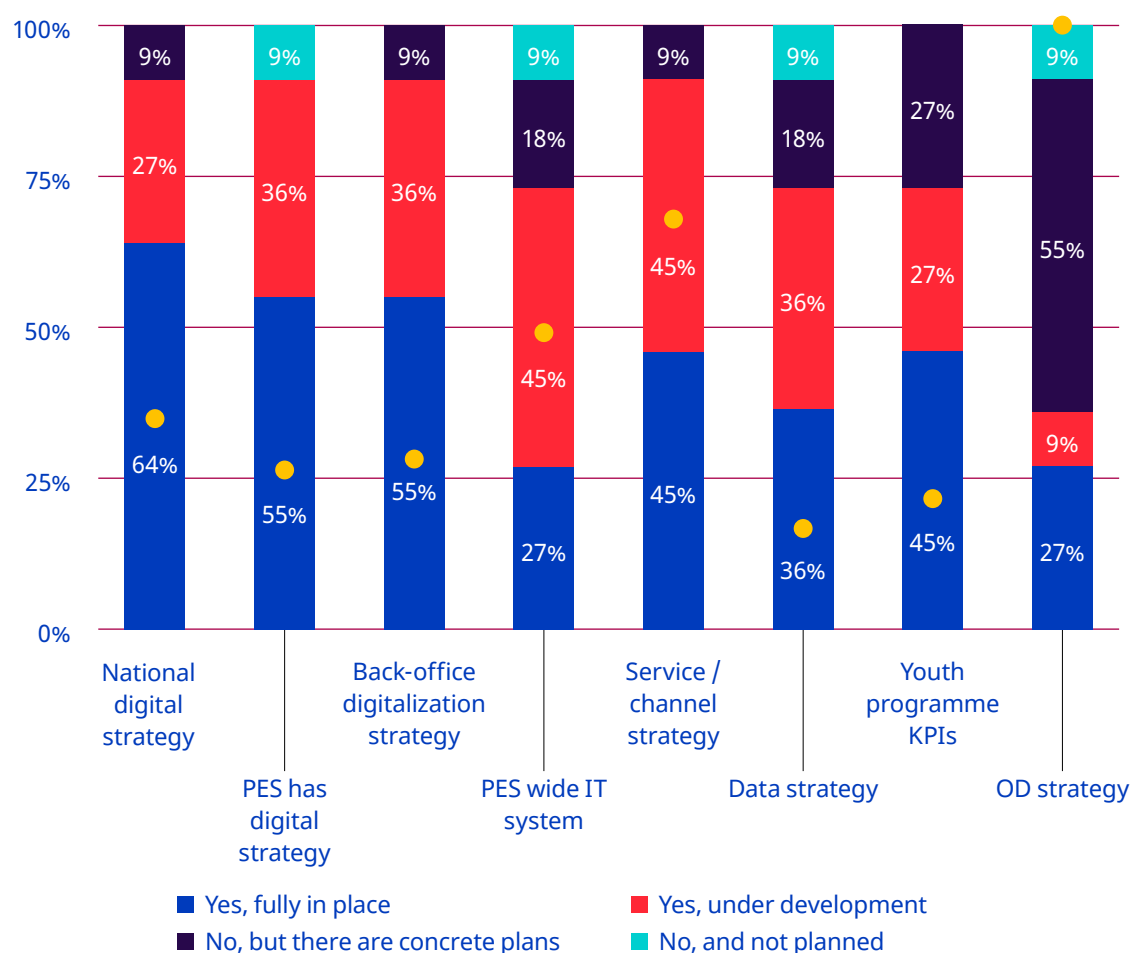
- Despite its advanced level, the PES does face many challenges for the future and could benefit from the development of a longer-term vision in order to keep up-to-date.

## Singapore

Income category	High Income Countries
Egovernment Development Index (2022)	12
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) across all participants. Singapore is highlighted.

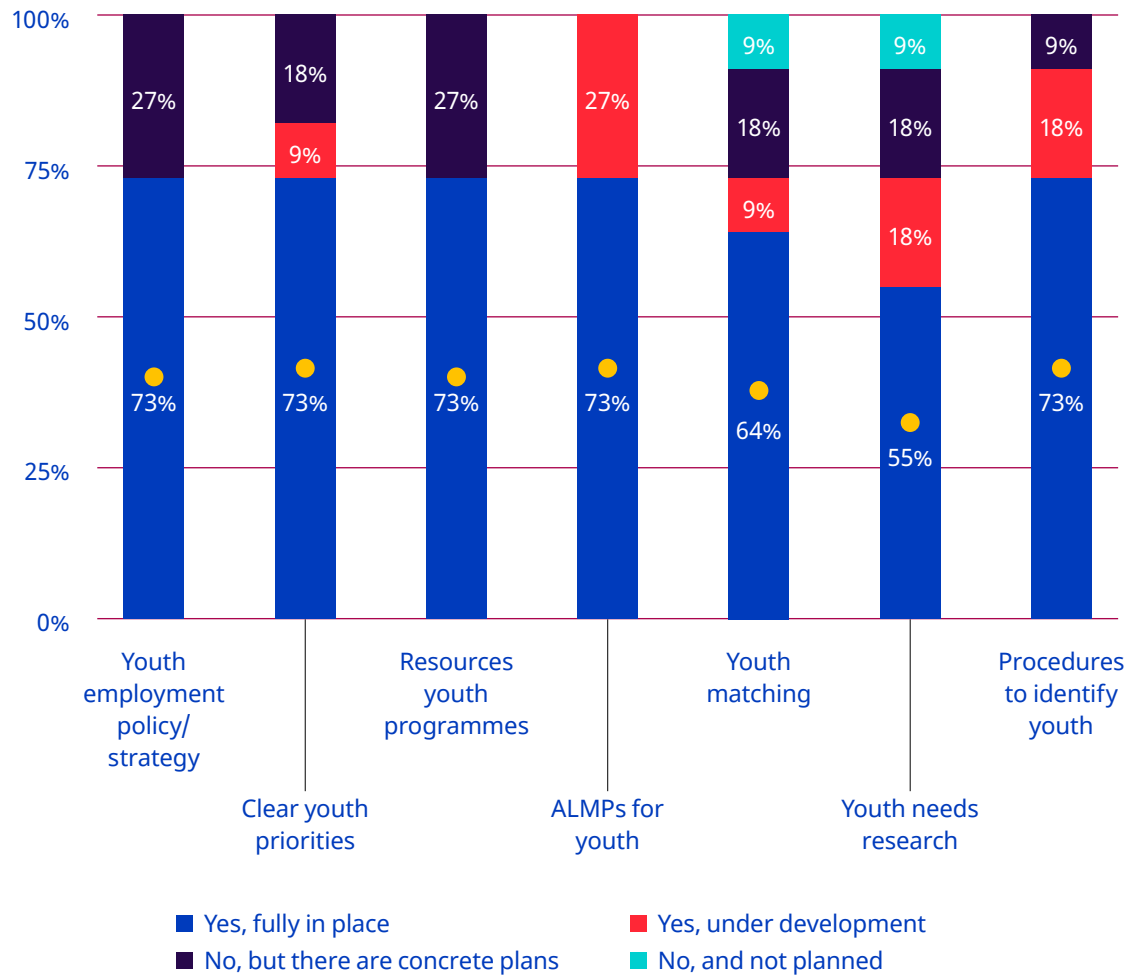


Singapore in general is an advanced country and many of the digital strategy elements are in place. Notable examples are the business and process transformation efforts and the data strategy. However, not all is in place yet and the PES could benefit from efforts to integrate further aspects in its PES-wide IT system, as well as implementing a service/channel strategy. Furthermore, the PES has no plans to implement an organizational development (OD) strategy, which could be beneficial. Lastly, the PES could benefit from a greater focus on addressing the following areas:

- Lack of financial and other resources
- Legacy systems
- Lack of integrated processes
- IT interoperability

## Youth services and programmes

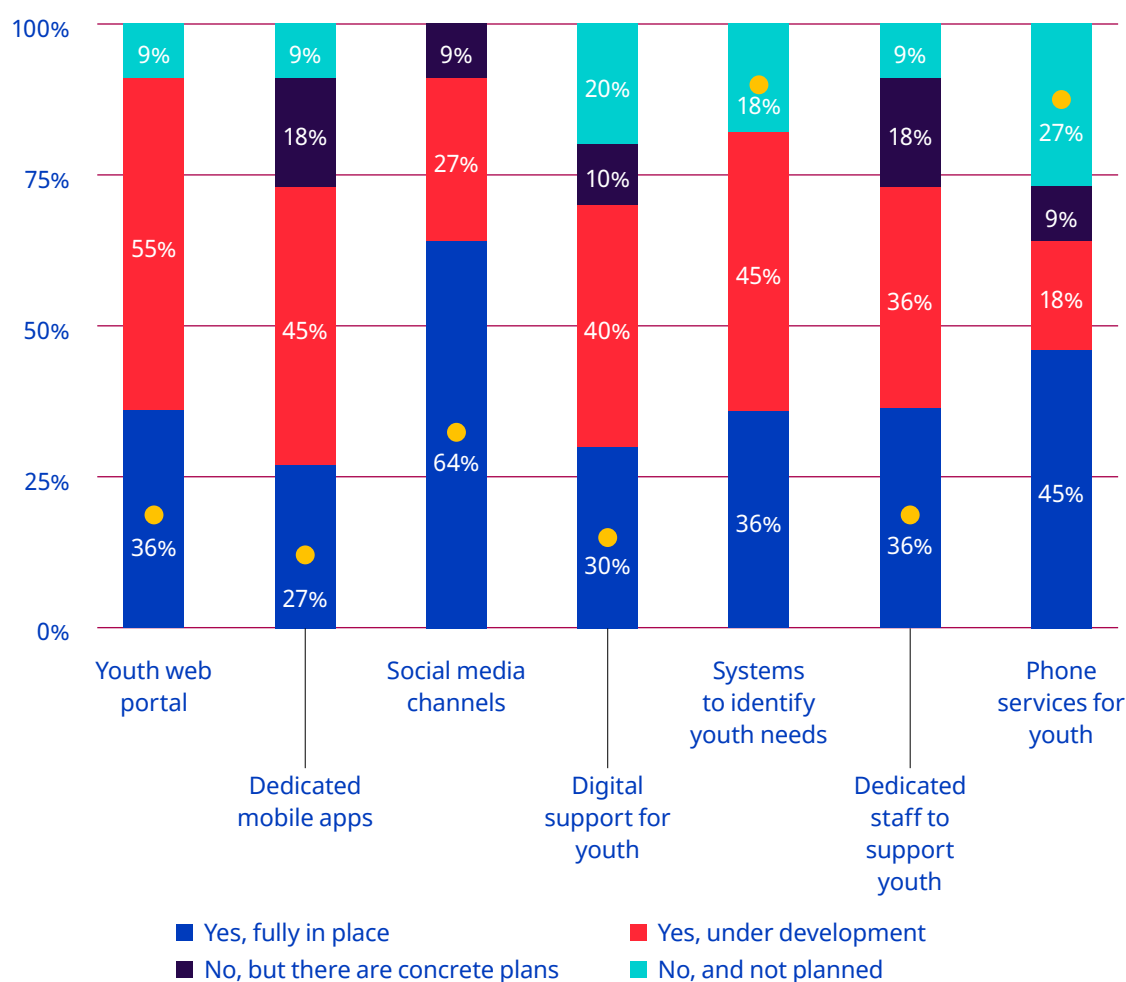
The following figure highlights key elements of youth services, programmes, and approaches, as well as Singapore's position in it. It illustrates the degree to which a wide range of youth services are in place.



This is clearly an area where the PES is advanced. All key youth policies, programmes and services are in place and these are guided by the comprehensive National Strategy for Youth Employment which outlines specific strategies to be implemented by different public sector agencies, including Workforce Singapore. This ensures that youth needs are being met and that involved organizations have targets to facilitate young people's transition from school to work.

## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and Singapore's standing in these areas.



The PES has most elements in place. For example, there is a national youth-focused web portal called On My Way (OMW) which helps young people to learn about different jobs and industries, and there are dedicated social media channels through Instagram, Facebook and LinkedIn. The only area where Workforce Singapore could improve is to have systems in place that help identify youth needs in order to better target the youth population.

## Good practices and learning points

The following points are areas where other countries could learn from Singapore, followed by areas where Singapore could improve and/or learn from other PES.

- The business and process transformation efforts in Singapore are advanced and many PES could benefit from their experiences.
- The data strategy in Singapore is world class and could be an example for PES around the world, and could also help in segmenting and targeting the youth.

Learning points:

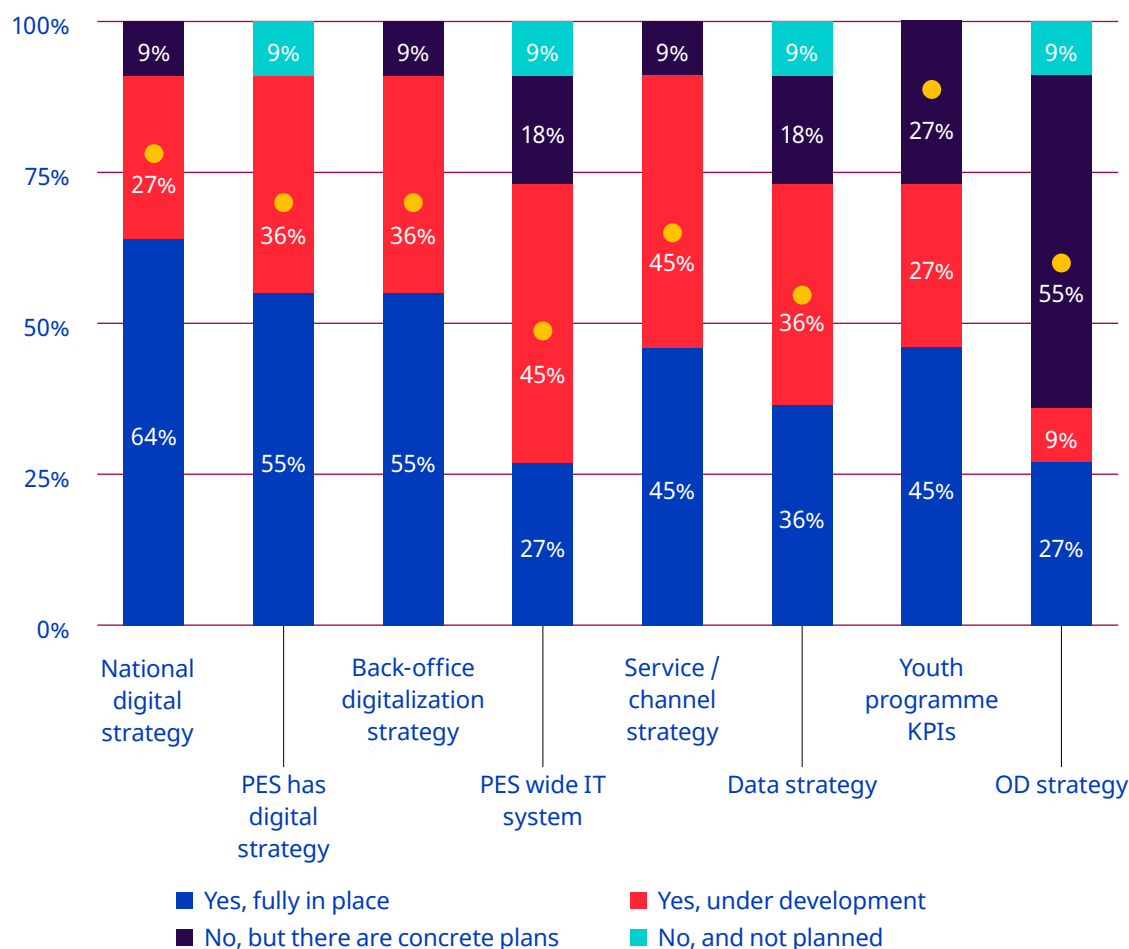
- The PES faces several challenges and many are IT/process-related (such as legacy systems and IT interoperability). This suggests that a new IT strategy might be developed focusing specifically on these issues.

## Viet Nam

Income category	Middle-Income Countries
Egovernment Development Index (2022)	86
PES digital orientation	Digitalization

### Digital maturity

The figure below provides an overview of PES digital strategies across five areas (overall strategy, back office, front office, data and organization) for all participants. It shows Viet Nam highlighted.



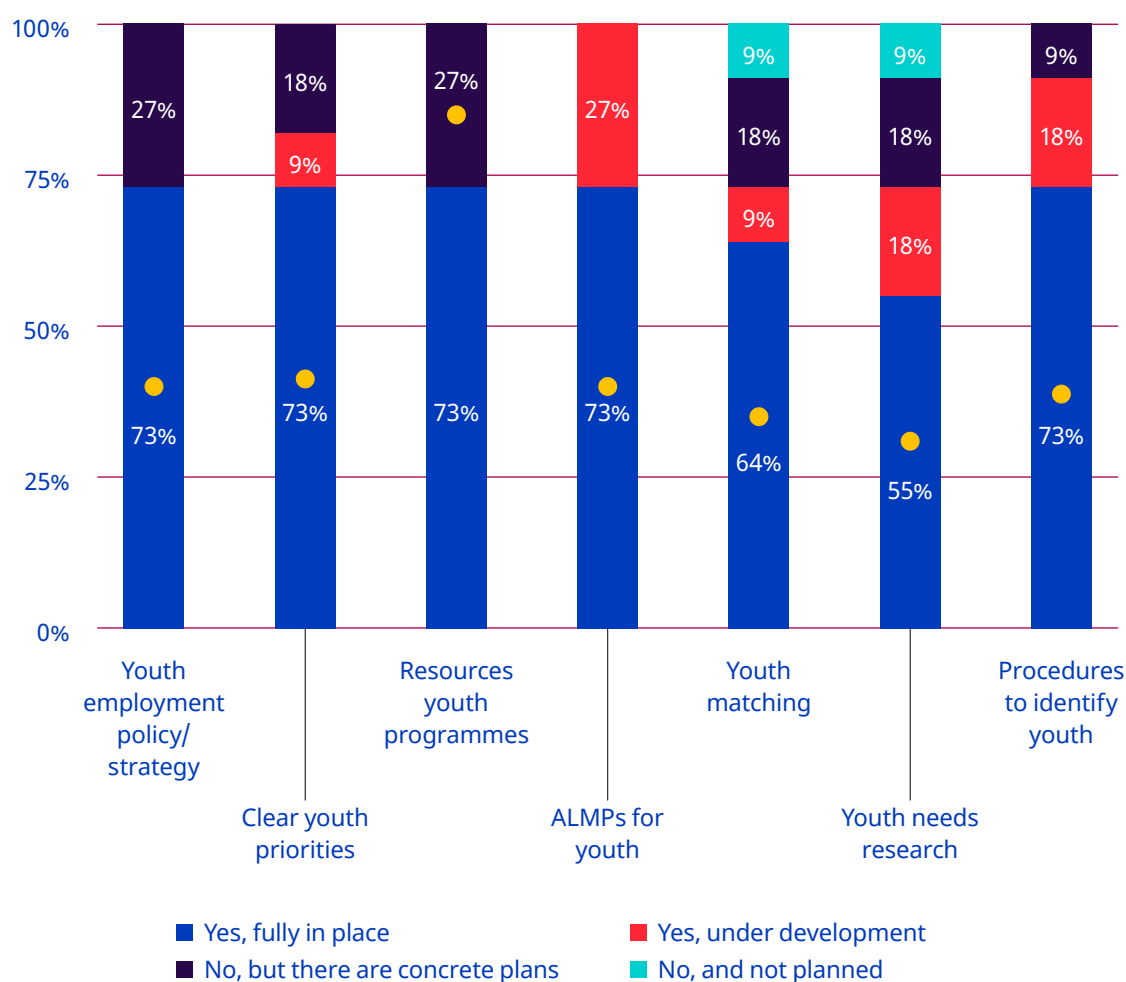
Viet Nam has all elements under development or planned. Indeed, the country plans to launch many elements in the near future (for example the national portal). However, many other elements need to be addressed in this area, especially the implementation of youth KPIs and an organizational development (OD) strategy Viet Nam could also benefit from efforts to mitigate the main issues it faces:

- Siloing
- Resistance in the organization
- Lack of channel strategy
- Lack of subgroup insights

- Insufficient leadership
- Lack of customer insights
- Cybersecurity
- Lack of vision/strategy
- Customer resistance
- Lack of channel strategy
- Privacy protection
- Lack of data
- Lack of integrated processes
- Insufficient digital skills
- IT operability
- Adapting post COVID-19

## Youth services and programmes

The following figure highlights key elements of youth services, programmes and approaches, as well as the Viet Nam's position in it. It illustrates the degree to which a wide range of youth services are in place.

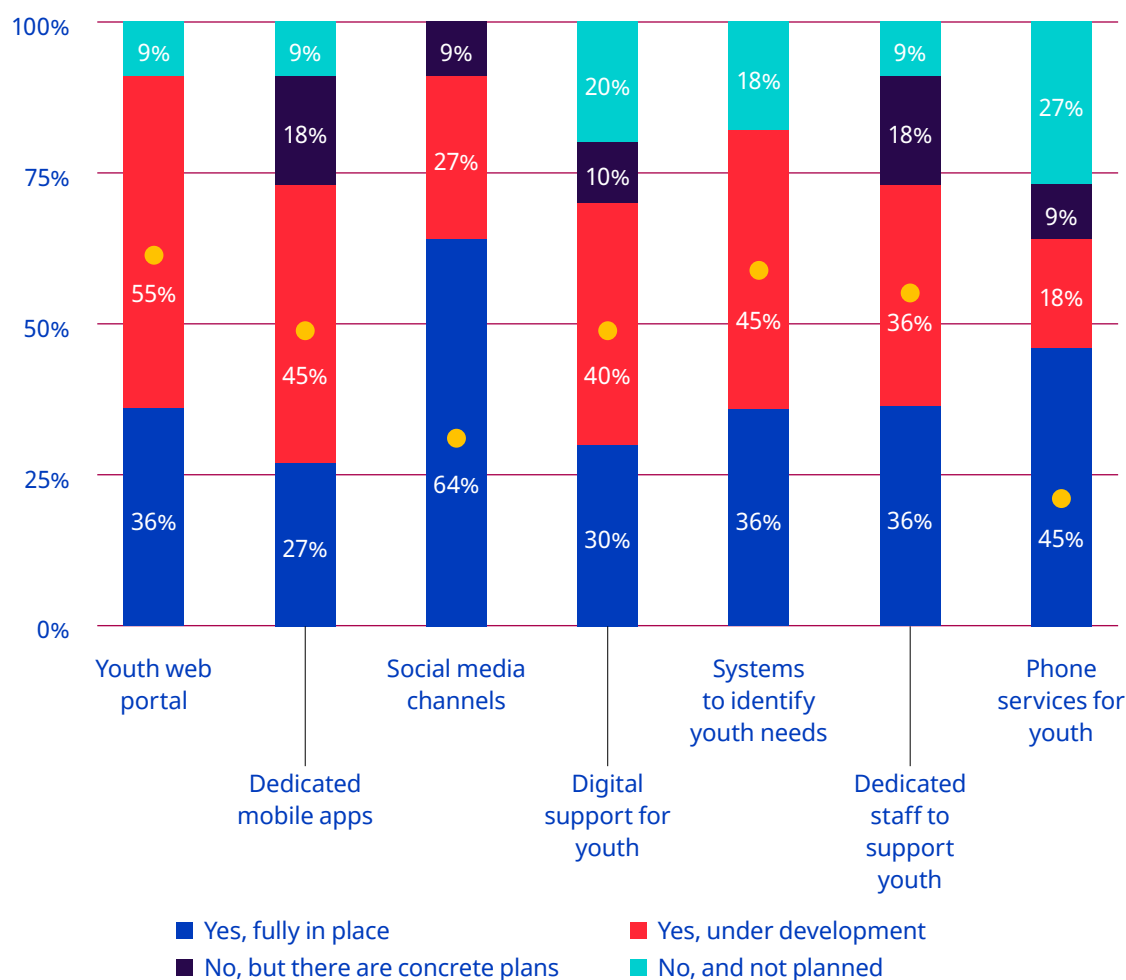


This is an area where Viet Nam is relatively well developed. Underpinning this is the strong legal framework that guides the PES as a whole, as well as youth as an important subgroup. This translates in youth focused programmes such as the startup promotion programme and the National Job Creation Fund of that promotes youth entrepreneurship and job creation. One area of concern is that the PES currently does not have the resources in place to execute all youth programmes.



## Youth technologies

The final area concerns technologies used by PES in their front and back offices. The following provides an overview of key technology areas and Viet Nam's standing in these areas.



This is an area where the PES still has progress to make. While social media channels are in place, all other elements are under development, with the national portal having the highest priority. However, given the lack of resources, the PES should consider whether all technologies should necessarily be implemented at this point in time and set priorities.

## Good practices and learning points

The following points are areas where other countries could learn from Viet Nam, followed by areas where the country could improve and/or learn from other PES.

- The PES has relevant youth programmes in place that could provide an inspiration to other PES, such as the startup promotion programme.

Learning points:

- The PES is facing many obstacles and this requires it to be selective in the challenges it can solve at any one time. It could benefit from clear prioritization guided by strong overall strategies.
- With the PES not having the financial resources to execute all youth programmes, this is also an area where a selective approach and strong business cases could be of benefit.

## Annex 2. Survey Instrument

### Multi-country analysis on technology in public employment services to promote youth employment in Asia and the Pacific

#### Questionnaire

##### Introduction

This survey is conducted by the International Labour Organization (ILO) in collaboration with the World Association of Public Employment Services (WAPES). It contains several questions about the role of digital technologies and youth employment in your public employment services (PES). The survey is divided in three different sections:

► **Part 1. Role of technology & digital strategy**

These are more general questions about digitalization in your PES, for example in back offices and front offices.

► **Part 2. Youth services & approaches**

These are questions about specific services and programmes available to youth in your PES.

► **Part 3. Youth services & technology**

These are questions about the role of technology in delivering youth services.

## Part 1 | Role of technology and digital strategy

### 1. National and PES Digital Strategy

To what extent do the following apply regarding digital strategies and digitalization in your country and PES? (By Digital Strategy we mean the strategy used by the PES that focuses on (digital) technologies across the entire organization.)

*Please select one answer in accordance with the following categories:*

Yes, fully in place:	This is completely ready and being used.
Yes, under development:	This is under development and is expected to be ready in the nearby future (e.g., we are doing pilots, experiments or running tests).
No, but there are concrete plans:	This is not in place or under development, but there are tangible plans to start work on this in the near future.
No, and not planned:	This is not in place and there are currently no plans to do this.

*Select one answer:*

- There is a national digital strategy or other type of strategy focused on digitalization within the country and its public sector.
- Our PES has a digital strategy focused on digitalization and/or IT implementation within the PES.
- Our entity has clearly defined goals regarding the short-term digital future, (e.g., In terms of the user experience, efficiency and/or effectiveness of our processes).

If there is a national and/or PES digital strategy in place or under development, please attach or link any relevant documents. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.

## 2. Digitalization status

Which of the following best describes the status of digital technology use in your PES?

*Select the most appropriate answer for each of the following*

- We are mostly focused on making information digital and creating an infrastructure (e.g., scanning documents and rolling out (broadband) internet access). Focus on digitalization
- We are mostly focused on making our processes and services digital so they can be used online and connecting different offices. Focus on digitalization
- We are focused on re-designing our organization and public sector to optimally benefit from digital technologies. Focus on digital transformation

## 3. Drivers of digital technology adoption

*Rank the following factors motivating your PES to adopt technology by order of importance, where 3 is the most important and 1 is the least important:*

- Lower operational costs due to fiscal constraints
- Improve PES overall performance
- Expand service provision to more users (jobseekers and employers)
- Follow an explicit government policy directive (eGovernment)
- Keep up to date with citizens' needs and improving users' experience
- Keeping up with peers and technology trends.

## 4. Impact of COVID-19

What has been the effect of the COVID-19 pandemic on the following aspects of your PES? Select the most appropriate answer for each of the following:

*Decreased significantly;*

*Decreased somewhat;*

*Stayed the same;*

*Increased somewhat;*

*Increased significantly;*

*Don't know / Not applicable.*

- Because of COVID-19 our general budget has...
- Because of COVID-19 our budget for digitalization has...
- Because of COVID-19 our budget to deliver youth programmes/services has...

## 5. Back-Office and IT developments

To what extent do the following apply regarding IT, systems, and processes in your PES?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following*

- We have a clear and comprehensive strategy regarding the digitalization of our back-office processes.
- There is one PES-wide IT system that links systems across the entire PES (e.g., different regions, states and/or offices).
- There is a clear roadmap for the near future regarding systems development and/or integration.
- There are national or organizational standards in place regarding architecture of processes and systems.

*If there is a national and/or PES digital strategy in place or under development, please attach or link any relevant documents. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

## **6. Back-Office and IT developments**

*Below we outline the most important parts of the processes deployed by most PE. Please indicate the current role of technology and/or automation in each step of the process in the back office.*

*Please select the most appropriate answer for the following:*

Completely traditional (e.g., Paper based and/or manual processing);

Mostly traditional (e.g., Stored in a database, but processed/entered manually);

Mix between traditional and digital;

Mostly digital (e.g., online or via mobile App);

Completely digital;

Not provided or available.

- Jobseeker registration for employment and/or benefits.
- Vacancy registration by employers
- Creation of a job-seeker profile for vacancy matching or counselling services\*.
- Matching of jobseekers to vacancies
- Help with CV and/or interview preparation
- Employment counselling (e.g., help or guidance with finding a job)
- Career guidance/counselling/coaching (helping people with their career)
- Preparation or update of an individual action plan
- Collection of metrics about success (e.g., number of people matched, vacancies filled)

*\* Profiling is the creation of a profile of jobseekers based on relevant variables (e.g., their education and work experience) that can be used to either match the jobseeker to certain vacancies or provide counselling services.*

## 7. Front-Office, services, and channels

To what extent do the following apply regarding service delivery, channels, and client contacts? (*Note: by channel we mean the medium used to deliver services or interact with clients (e.g., face-to face, telephone, email, website).*)

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following*

- We have a service strategy that covers all channels and services.
- Our organization updates the services strategy yearly (or regularly) based on the changing landscape.
- All service channels are managed and operated by a single unit of our organization.
- Analyses of channel usage by user (sub)groups are done to assess how our channel offerings sufficiently cover all users.

*If there is a service and/or channel strategy in place or under production, please attach or link any relevant documents. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

## 8. Target Groups for services

Has technology contributed to improving service delivery for jobseekers likely to face disadvantages in the labour market?

*Please select ALL that apply*

- Young people (aged 15-24)
- Persons with disabilities
- Workers older than 50
- Women as single parents
- Migrant workers, refugees, and displaced populations
- Minorities and Indigenous people

## 9. Data and measurement

To what extent do the following apply regarding the use of data and measurement on the strategic level?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following*

- We have a clear and comprehensive strategy regarding the use of data in the organization.

- There is a national or PES-wide strategy on ethical use of data.
- There is a measurement strategy in place to measure progress towards KPIs and goals.
- There are specific KPIs defined to measure the success of youth programmes and/or services.
- We collect relevant disaggregated data (e.g., age and gender) to measure progress towards KPIs and goals at group level (e.g., youth).
- Data from services and processes is used for performance management or other purposes.

*If there is a data strategy in place or in production, please attach or link any documents pertaining to this strategy. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

#### **10. Advanced analytics and (big) data**

To what extent does the PES have any experience with the following types of advanced analytics?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following*

- Artificial Intelligence [in general]. (The use of algorithms to create intelligence exhibited by machines)
- Machine learning [in general]. (The subset of Artificial Intelligence (AI) that uses algorithms to learn from data processed to make predictions and improve outcomes).
- Deep learning [in general]. (The subset of machine learning that uses algorithms to learn from highly unstructured and abstracted data).

*If there are concrete examples of advanced analytics being used, please briefly describe these or attach any documentation with relevant information.*

#### **11. Organizational and innovation strategy**

To what extent do the following apply to the organization, its people and innovation.

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following*

- There is an HR strategy to train PES employees' digital skills.
- There is an organization development (OD) strategy in place to align the organization with digitalization goals.
- There is a strategy or programme in place to develop or change the organizational culture.
- There is a strategy or programme in place to support jobseekers with digital skill development.

- There are programmes to raise awareness around and/or stimulate inclusion on the labour market.

*If there are any relevant (strategic) documents, , please attach them or provide a link. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

## 12. Digital skills for clients

Which of the following does the PES use to build capacity of digitally illiterate users (e.g., develop digital skills for jobseekers)?

*Please select ALL that apply–*

- Regular group training programmes at the PES premises
- One on one coaching and assistance at different service points
- Collaboration with municipal governments and other stakeholders to offer digital skills
- Online outreach, for instance through MOOCs, webinars, YouTube
- None of the above

## 13. Obstacles and challenges

To what extent do you perceive the following as obstacles towards future digitalization and improvements of service delivery within your PES?

*Please select the most appropriate answer from:*

Yes,

No,

Don't know/Not applicable

- Organizational siloing (fragmentation in the organizational structure)
- Lack of knowledge about current technology and IT implementation
- Lack of financial resources for digitalization
- Lack of knowledge about new and future technologies and their potential for processes and/or service delivery
- Resistance within the organization towards digitalization and/or change
- No clear organization vision/strategy towards digitalization
- Lack of data to make informed decisions about plans and strategies
- Reluctance of clients to adopt technologies
- Lack of integrated processes
- Legacy systems, making the implementation of new systems difficult
- Insufficient leadership and/or lack of management
- Lack of a future-ready channel strategy
- Insufficient digital skills within the organization and/or clients
- Lack of insights on client needs, behaviours, and desires

- Lack of insights in subgroups (e.g., youth) to inform design
- Interoperability of IT systems
- Lack of inclusive labour market approaches
- Cybersecurity of our systems
- Privacy protection and confidentiality of client data
- Adapting to new ways of working post COVID-19

*Are there any other important obstacles, not mentioned above? Please list all.*

## Part 2 | Youth services and approaches

### 14. Youth mandates and policies

To what extent do the following apply regarding approaches towards youth at the strategic level?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following*

- The PES statute, code or legal framework governing it stipulates youth as a target population for its services and programmes.
- The PES abides by a national labour law or statute, or other legally binding mandate stipulating youth as targeted recipients/beneficiaries of its services.
- The PES has an outlined and developed policy or strategy for youth employment.
- The PES has clear priorities and goals regarding its youth strategy/policy.

*If there are any relevant (strategic) documents pertaining to youth strategies/policies, please attach or link any relevant documents. Please briefly describe recent developments, key points or examples in support of your answer.*

### 15. Youth policies, resources and staff

To what extent do the following apply regarding approaches towards youth policies and staff resources?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following:*

- Our PES has sufficient financial resources to implement youth policies and programmes.
- Our PES has sufficient financial resources to support region and/or local PES offices with the implementation of youth policies and programmes.



- The required resources are secured at the ministerial level and/or are part of (funded) government programmes.
- Our PES has a separate unit/directorate/division or comparable to implement and/or execute youth programmes.
- Our PES has clearly defined procedures to identify youth, and/or sub-groups within the youth population to target these segments.
- PES front line and managerial staff receive training and guidance on a regular basis to address youth employment needs within PES general strategies/ programmes.

*If there are any relevant (strategic) documents pertaining to youth policies, please attach or link any documents pertaining to this strategy. Please briefly describe recent developments, key points or examples in support of your answer.*

## 16. Youth services and segmentation

To what extent do the following apply regarding specific youth services?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following:*

- The PES has developed a method to register, and profile young users/clients in general (e.g., based on age).
- The PES can specifically identify young NEETs (Not in Employment, Education or Training).
- Our PES can identify subgroups of youth, based on gender or other relevant variables.
- Our PES has specific Active Labour Market Policies (ALMPs) to support young unemployed people / jobseekers.
- Our PES has specific ALMPs to support subgroups of young unemployed people / jobseekers (e.g., based on gender, educational level, or NEET status).
- The PES targets youth specifically when matching jobseekers to available vacancies (e.g., by matching jobseekers to entry level jobs or age requirements in vacancies).
- The PES offers specific training programmes for the youth to support skill development and/or labour market readiness (e.g., CV and/or interview training)
- The PES periodically researches the needs, wants and behaviours of youth groups regarding PES services.

*If there are any relevant (strategic) documents pertaining to youth services and segmentation, please attach or link any relevant documents. Please briefly describe recent developments, key points or examples or youth services in support of your answer.*

## 17. Youth programmes

*These questions focus on specific programmes within the PES aimed at youth or subgroups within this population.*

To what extent do the following apply regarding specific programmes aimed at youth?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following:*

- The PES has digital skill development programmes aimed at youth groups.
- Our PES has programmes to activate NEETs (e.g., through apprenticeships or internship interventions).
- Our PES has programmes aimed at staff to specifically support youth groups (e.g., through counselling or career guidance).
- The PES has outreach programmes to reach youth in general or NEETs to inform them about PES services.
- The PES has programmes to raise (youth) awareness about inclusion, equality and/or fairness on labour markets.

*If there are any relevant (strategic) documents pertaining to youth programmes, please attach or link any relevant documents. Please briefly describe recent developments, key points or examples in support of your answer.*

## **18. Youth importance and targeting**

*These questions focus on the ways in which programmes are delivered and the ways in which the PES can target youth groups.*

*Select the most appropriate answer for each of the following*

Totally disagree

Disagree

Neutral

Agree

Totally Agree

Don't know/not applicable

- To what extent do the following apply regarding youth approaches in your PES?
- The PES is focused on delivering specific youth employment programmes.
- Strategic leadership recognises the importance of youth programmes.
- Our PES sees the importance of skill development for specific groups, such as youth.
- The PES has enough understanding of ways to reach and/or interact with the youth (e.g., through social media channels).
- The PES has enough understanding of specific needs of the youth regarding PES services.
- Our PES sufficiently targets (sub)groups to stimulate an inclusive labour market (e.g., NEETs, young women, or young people with disabilities).

*If there are any relevant (strategic) documents pertaining to youth targeting, please attach or link any relevant documents. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

### 19. Youth partnerships and networks

*These questions focus on the degree to which the PES has partnerships with relevant stakeholders to deliver youth services.*

To what extent do the following apply regarding the development and implementation of specific youth networks and approaches in your PES? (By influencers we mean people who can influence the opinions or behaviours of others, typically using social media (e.g. having many followers on Instagram or TikTok))

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following:*

- The PES has partnerships with relevant influencers to target young people.
- The PES has dedicated programmes or partnerships with schools, libraries or other public spaces visited by youth.
- Our PES collaborates with private sector companies to target (specific) youth audiences.
- Our PES partners with public or private organisations to provide training, skill development and/or career guidance services to youth groups.
- Our PES has partnerships with NGOs, international agencies, and professional associations to design and implement youth employment programmes for youth segments.

*If there are any relevant (strategic) documents pertaining to youth networks, please attach or link any relevant documents. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

## Part 3 | Youth services and technology

### 20. Youth front-office technologies

To what extent do the following apply regarding the development and implementation of specific youth-oriented technologies in your PES? (Blended approaches or blending refers to the integration of service channels where different channels are being used at the same time. For example, having a chat window while being on a website, using co-browsing where an agent can look at the user's screen.)

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following:*

- The PES has developed and implemented a youth-focused web portal whereby young individuals can access PES information and services.

- The PES has dedicated mobile apps or progressive web apps (PWAs) have been developed with a focus on youth.
- There are dedicated social media channels to reach out to or interact with young people (e.g., Facebook, twitter, Instagram, etc.)
- The PES is using Augmented Reality / Virtual Reality applications to engage with the youth.
- Our PES is targeting subgroups within the younger population (e.g., based on gender) via social media.
- The services provided through digital platforms, web pages or multimedia applications have specific support (e.g., tutorials) aimed at younger users.
- The PES provides specific (traditional) telephone services to young people to support their client journey (e.g., through fixed line, mobile, SMS, toll-free numbers, help desk and/or a call centre).
- The PES deploys social robots (chat bots, conversational bots, or intelligent assistants) to interact with youth groups specifically.
- The PES uses blended approaches (e.g., through co-browsing or online chat) to support online experiences for young people.

*If there are any relevant (strategic) documents pertaining to youth-oriented technologies, please attach or link any relevant documents. Please briefly describe recent developments or key points of the Digital Strategy in support of your answer.*

## **21. Youth back-office or staff technologies**

To what extent do the following apply regarding the development and implementation of specific youth-oriented technologies for staff or in the back-offices of your PES?

Yes, fully in place:

Yes, under development:

No, but there are concrete plans:

No, and not planned:

*Select the most appropriate answer for each of the following:*

- The employment service uses information systems and technologies to identify and record needs and/or preferences of youth users.
- The PES provides and publishes through its platforms, webpages, and digital media specific information for youth job seekers and/or NEETs such as vacancies and training opportunities.
- Key performance indicators have been established for each of the digitized processes and services aimed at youth.
- The PES has specific support tools/applications for staff to support youth (e.g., to help youth find job vacancies, apprenticeships, internships, etc.)
- There is dedicated and trained staff to provide guidance and answer questions of the youth users of PES digital services, website, or digital applications.
- The PES uses Artificial Intelligence to tailor or create services for youth (e.g., through recommender systems, classifiers, self-learning algorithms).

*If there are any relevant (strategic) documents pertaining to, please attach or link any relevant documents. Please briefly describe recent developments, key points or examples of youth-oriented technologies.*

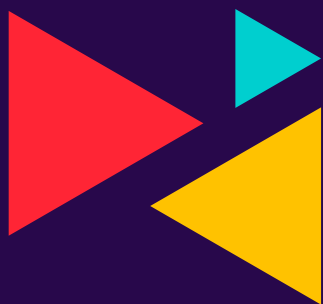
## **22. Target groups for technology enabled youth programmes**

Our PES delivers technology-based programmes to (sub)groups of youth based on the following variables:

*Please select ALL that apply:*

- Education level
- Persons with disabilities
- Geographical location (e.g. urban vs. rural)
- Gender
- Migrant workers, refugees, and displaced populations
- Minorities and Indigenous people
- Income

*If there are any variables being used, please briefly describe these or give examples of technology-enabled youth services that are relevant to your answer.*



**ilo.org**

ILO Regional Office for Asia and the Pacific  
United Nations Building  
Rajdamnern Nok Avenue  
Bangkok 10200, Thailand

T: +662 288 1234  
F: +662 280 1735  
E: BANGKOK@ilo.org  
W: ilo.org/asiapacific

