



LABOUR PRODUCTIVITY IN SINGAPORE

PS 1: Develop strategies to bridge the skills gap in Singapore's workforce, aligning competencies with high-growth sectors like digital services and green industries



SG CONTEXT



Increasing Job Vacancies



Source: Ministry of Manpower Statistics



WHY IS OUR WORKFORCE NOT TRANSITIONING FAST ENOUGH? ROOT CAUSES + STAKEHOLDERS:

1 Lack of industry skills, work experience and industry-specific knowledge (undergrads)

- Proportion of job vacancies increased by **8% in a year** due to a lack of candidates with relevant industry skills and work experience, not academic qualifications -> indicates that there is a gap between the concepts, lessons and skills learned in institutes of higher learning (IHLs) and the skills in demand at the workplace (*Ernst & Young, 2023*)
 - => Outdated undergrad coursework - too theory-focused with little opportunities for practical application
 - => Insufficient internship opportunities
- Lack of industry mentors
- For green industries, there is regulatory complexity as sustainability policies frequently change -> undergrads will not be able to keep up with what they do not know about

2 Lack of motivation (undergrads, mid-career switchers, firms)

- Only **56% of employees** say their organisation is proactively investing in reskilling and upskilling (*KPMG, 2025*)
- Firms may see training workers as an additional cost to bear, losing sight of greater benefits like improved productivity (firms do not understand **why** they should do so) => results in inadequate employer support in upskilling their workers
- Motivating employees was one of the main challenges CEOs faced when starting an employee development programme (*PwC, 2020*)

3 Ineffective job-matching platforms and outreach by upskilling initiatives (government, firms)

- Too many decentralised resources by the government -> current workers & those seeking employment do not know **how** to upskill
- Upskilling opportunities are advertised in a very generic way (not personalised) and are not actively promoting skills required in high-growth sectors in particular

4 Lack of knowledge about firms' technological advancements (employees, firms)

KPMG's Future of Work research shows workers lack awareness of, and confidence in, their firms' technology strategies

Key Issues: under-skilling, skill obsolescence, skills mismatch

Changes in our landscape: The integration of cutting-edge technologies, such as artificial intelligence, robotics, and automation systems, has sparked a paradigm shift in skills demanded of the labour force.

Examples of key skills in increasing demand:

[in digital services] Proficiency in digital tools, programming languages, data analysis, and other technical competencies

[in green industries] Sustainable energy management, ESG and Green Finance, familiarity with policies and compliances

Is our workforce transitioning well enough?

- To adapt to a changing workplace that is slowly being encroached upon by automation, workers need to spend **at least nine hours a week** on new, future-proof skills. However, workers currently devote **only an average of 24 minutes to upskill** themselves every week. (*GoBusiness, 2023*)
- **70% of the workforce** here are projected to **require upskilling or reskilling** by 2030, compared to 59% globally. (*The Straits Times, 2025*)

EXISTING SOLUTIONS + WHAT'S LACKING?

Career Transition Programs



Existing Solutions:

- Mid-Career Pathway Programme
 - Offers full-time attachments for career switches, providing industry-relevant skills over **4-6 months** (*Workforce Singapore, 2024*)
- Career Conversion Programmes (CCP)
 - => Helps mid-career individuals transition to new sectors by reskilling them for in-demand jobs (*Workforce Singapore, 2024*)

What's Lacking:

- Mid-Career Pathway Programme: Attachments last only **4 to 6 months**, which may not be sufficient for individuals to gain a deep expertise or fully transition into a new career
- Career Conversion Programmes: There is often a lack of follow-up support, such as mentorship or career counseling

Skills Development & Training



Existing Solutions:

- SkillsFuture
 - Provides financial support and resources to help individuals pursue skills development (*SkillsFuture Singapore, 2025*)
- Industry Transformation Maps (ITMs) & Job Transformation Maps (JTM)s
 - Frameworks that guide industry transformation and help workers stay relevant (*Bedi, Gajendra, 2023*)
- GoBusiness e-Adviser for Skills Training
 - Helps businesses identify applicable grants and government-funded courses to support skills training (*GoBusiness Singapore, 2025*)

What's Lacking:

- SkillsFuture: Despite existing efforts, there is still room to **enhance public awareness** and understanding of SkillsFuture offerings (*Lee, 2024*) -> under-utilisation of government resources
- ITMs & JTM:s: Lack of strict government enforcement for upskilling -> **lack of incentive** for companies to invest in upskilling employees
- GoBusiness e-Adviser for Skills Training: Businesses might not prioritise skills training, especially in sectors with lower margins or higher cost concerns

Educational & Work-Integrated Learning



Existing Solutions:

- Polytechnic AI Tracks
- IHLs Work-Study Programmes
- Compulsory Credit-Bearing Internships
 - These initiatives integrate education with practical work experience, enabling students to gain hand-on experience while completing their academic courses

What's Lacking:

- Polytechnic AI Tracks: Limited capacity, only available for a select group of students
- IHLs: The supply of internship and work-study opportunities often does not meet the **high demand** from tertiary students, especially since companies are mostly hiring penultimate students for internships
- Work-study programmes: Only available for some courses -> **limits inclusivity**, leaving students in non-participating courses from gaining valuable work experience

Innovation & Networking Opportunities



Existing Solutions:

- NEA YES Programme
 - Develops youth leaders in the environmental sector through networking and exposure to international organisations (*National Environment Agency, 2023*)
- Hackathons
 - Promotes innovation and collaboration through solving challenges

What's Lacking:

- NEA YES Programme: The programme tends to focus on youth leaders **already interested** in environmental issues,
- Hackathons: One-off nature; **Insufficient post-event support** for participants

OVERVIEW OF STRATEGIES: BRIDGING THE GAP FROM SEGMENTED EFFORTS TO A STRUCTURED AND STREAMLINED UPSKILLING ECOSYSTEM

What we aim to achieve:

Early awareness & industry alignment

- Improve awareness of career pathways aligned with personal competencies
- Undergraduates can identify exact skills needed for growth sectors, which are constantly evolving
- Connecting job-ready graduates to workforce demands

Incentivise Upskilling

- Raise awareness for the benefits of upskilling to motivate workers and firms
- Increase priorit placed on targetted upskilling to align workforce with global trends in high-growth industries
- Create tangible benefits for firms who commit to training their workers

Centralised and Accessible resources

- Centralize and integrate government-supported learning resources that are currently underutilised
- Make upskilling more seamless and accessible for all
- Provide a clear roadmap for students and workers to follow

Sustained Efforts

- Ensuring programmes and initiatives are not one-off but rather, applicable for most people throughout various stages of their lives
- Utilise AI and Data Analytics to implement feedback loops and scale successful models, continuously improving programmes in accordance to evolving landscapes

Long lasting

Scalable

Effective

Impactful

Strategic Approach of targeting Different Life Phases: LIFT

LEARN



Identifying and Mapping Skills Gap



INTEGRATE



Effective skill-building through structured, comprehensive learning



FUTURE-PROOF



Embed continuous learning within workplaces and increase matching efficiency



TRANSFORM



Encourage shared responsibility for workplace readiness through policy changes

TARGET AUDIENCE:
Undergraduates and Pre-University students

STRATEGY: Global Talent Mentorship Programme

University-Industry cross-border collaboration to strengthen networks as compared to short networking sessions and competitive mentorship programmes.



Global Network

Real - Time



Awareness

TARGET AUDIENCE:
Motivated undergraduates willing to upskill

STRATEGY: Full Package Hackathon Experiences

Instead of the current finish-and-go hackathons scattered across schools, we propose a modified version that provides a structured and immersive environment. Students will definitely gain from the hackathons, preparing them as talent ready to solve company challenges.



Real-world Problem Solving

STRATEGY: Unified Platform (MySkillsFuture 2.0)

The centralised AI-driven platform helps to tailor sector specific roadmaps and recommend robust training programmes for workers. Workers in sunset industries could get targetted recommendations pto take up skills required in sunrise industries. By making upskilling convenient, customised and in line with industry trends, it might then be widely utilised to drive workforce transformation. AI-driven job matching also reduces job-skill mismatch, making recruiting processes more streamlined for recruiters.



STRATEGY: Standardised requirement for biannual review by HR departments to track company's upskilling efforts

With a goal to work towards, transformative changes can more likely be seen. We aim to enhance intrinsic motivation by recognising continuous upskilling efforts as a key component in calculating ESG Scores of the company. Regular reviews ensures employees and employers are up-to-date and on the same page about shared training goals, with knowledge of the benefits of retraining.



Collaboration

Shared Vision

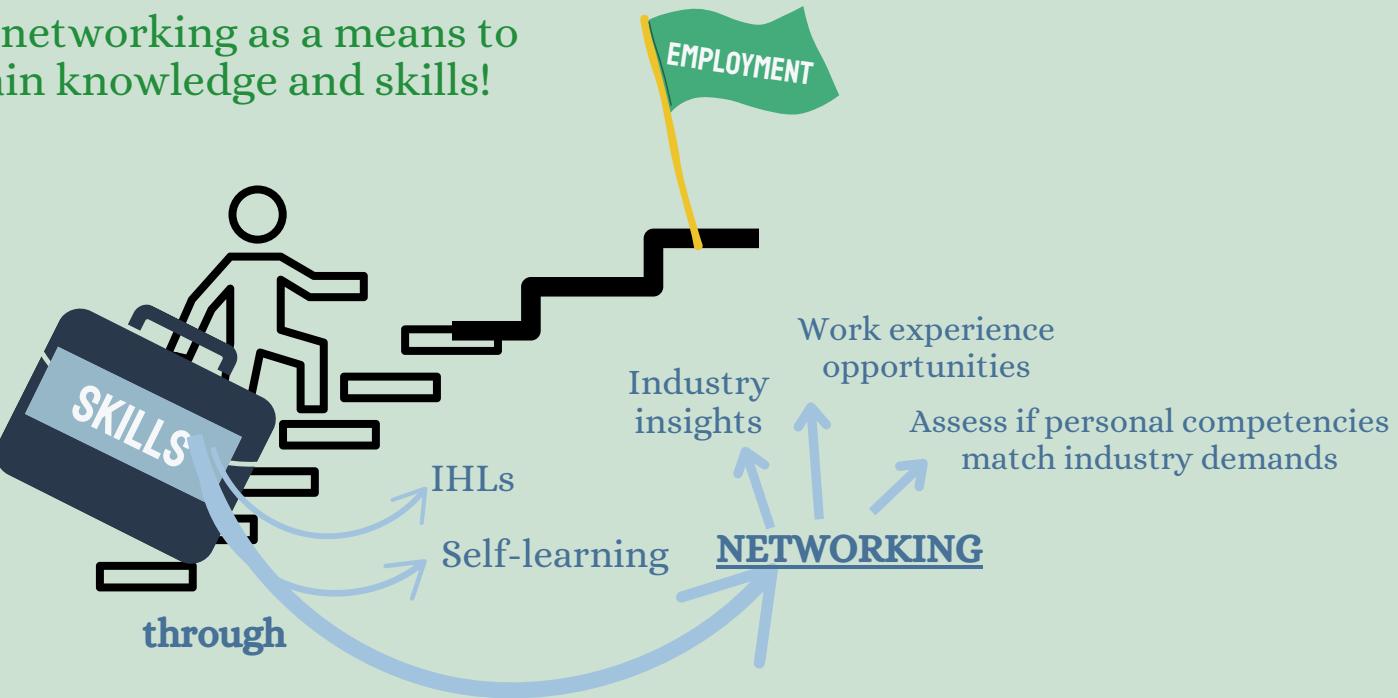
STRATEGY I: GLOBAL TALENT MENTORSHIP PROGRAMME (GTMP)

Reframe your thinking!

Instead of treating skills and network as separate factors to achieve employment...



Use networking as a means to obtain knowledge and skills!



Objectives:

- Personalised upskilling to reduce possibility of skill mismatch
- Facilitate knowledge flow from foreign talent to locals, positioning our local pool of workers more competitively in the labour market

How it works:

- Spearheaded by the government, collaborating with local and foreign companies and educational institutions to facilitate win-win partnerships and tap on one another's expert pools
- Tap on Singapore's large local and foreign talent pool to serve as mentors to undergraduates / people seeking employment
 - Singapore places 1st in Asia and 2nd worldwide for talent competitiveness (EDB, 2024)
- Incentives such as work permit / PR privileges could be used to encourage foreign talents to take up mentoring roles
- Implemented nationwide, especially promoted in IHLs to undergraduates
- Undergraduates / People seeking employment / Mid-career switchers could be partnered with a mentor (could be in pairs or small groups), with assignment of groups done according to alignment in interests and competencies according to industry or job function

How it tackles root causes identified earlier:

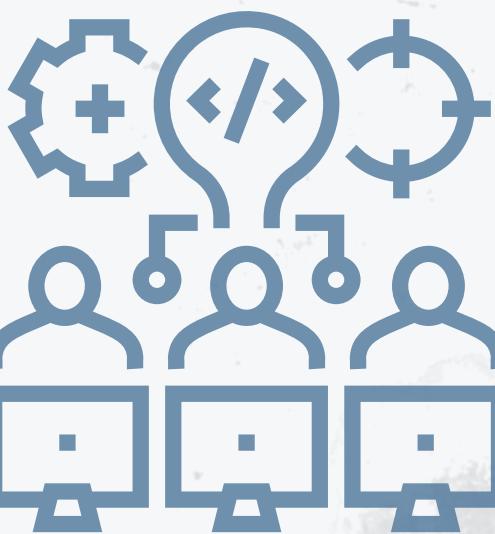
- Helps people who lack industry skills, work experience and industry-specific knowledge have a starting point to gain exposure in these areas
- Addresses insufficient work experience opportunities for large pool of undergraduates
- Allows mentees to align themselves better with labour demands and their target industry, possibly readjusting plans if a mismatch is detected, reducing skill mismatch in the workforce

How it works (continued):

- Throughout this mentorship that spans more than 6 months, these mentors who have industry expertise will position mentees to be more career-ready by sharing guidance and insights, advice on how to upskill for the specific industry, or even providing them with case studies of actual work problems to practise their practical application of knowledge
- If mentees demonstrate good potential, mentors could even consider offering work experience opportunities to them (eg. internships/job shadowing)
 - mutually beneficial as mentees could prove to be valuable assets to the mentors' organisations
- Acknowledge mentorship programme as a form of micro-credential, such that it is an internship-equivalent

STRATEGY 2: FULL PACKAGE HACKATHON EXPERIENCE

- While hackathons have been significant in equipping participants with skills and competencies in solving real-world problems in the digital services industry, there are many gaps in the existing hackathon landscape which limits the participants' learnings.
- Instead of the current finish-and-go hackathons scattered across schools, we propose a modified version that provides a structured and immersive environment



Pre-Hackathon

Current Limitations

Insufficient Representation of SMEs' Problems



Unlike MNCs, SMEs of high-growth industries often lack the resources to host hackathons, leading to a narrower set of problem statements. Consequently, participants are exposed to a limited range of industry challenges, reducing opportunities to explore innovative solutions for emerging sectors or niche markets where SMEs are more active.



Proposed Solutions

Sourcing Problem Statements from SME



Government-run hackathons can partner with industry associations (e.g., Singapore Business Federation, Sustainable Energy Association of Singapore) to curate problem statements directly from SMEs.

Focus on Emerging Skills



Rotate focus industries per hackathon cycle to expose participants to a broader set of problem statements and industry requirements. Prioritize skills in demand, such as data analytics, AI, IoT, green technologies, and circular economy practices.

Gaps and Inexperience Skillsets



Even though some hackathons provide trainings, these trainings are often insufficiently to properly equip participants with relevant industry skillsets.



Provide More Comprehensive Pre-Hackathon Training



Offer workshops, online courses, or bootcamps to equip participants with foundational skills in areas like coding, sustainability, or data science.

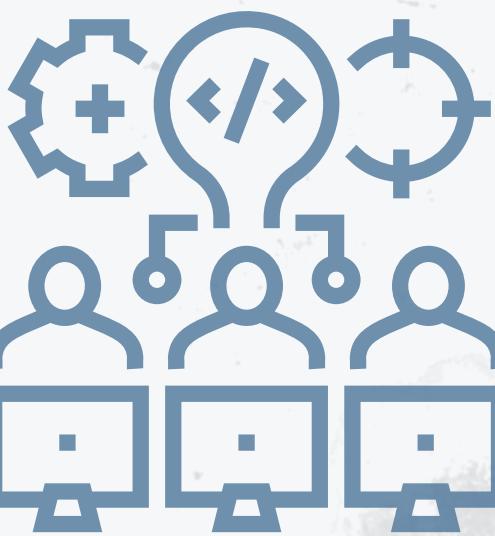
Collaborate with Industry Leaders:



Partner with companies in digital services (e.g., AI, cybersecurity, fintech) and green industries (e.g., renewable energy, sustainable manufacturing) to design hackathon challenges that reflect real-world problems.

STRATEGY 2: FULL PACKAGE HACKATHON EXPERIENCE (CONT.)

- By enhancing the post-hackathon experience, participants can walk away with more valuable skillsets and experiences



Post-Hackathon

Current Limitations

Short-Term Focus



Limited Long-Term Impact Tracking: Many hackathons focus on the immediate outcomes, such as the projects developed during the event, but fail to track the long-term impact on participants' careers or the adoption of solutions by industries.

Lack of Continuous Improvement: Hackathons can sometimes become repetitive or stagnant if there is no mechanism for continuous improvement based on feedback.



Lack of Follow-Through & Follow-Up

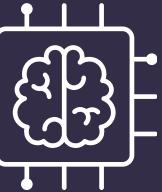
Many winning ideas fail to progress beyond the event, as participants return to their regular commitments, and there is often a lack of continued support or funding.

Many participants end up attempting problem statements with their existing level of knowledge and ending off without significant takeaways (especially due to a lack of follow-up comments and lack of access to finalists' solutions even after elimination) => there is little learning involved without sample solutions or constructive feedback



Proposed Solutions

Scale and measure impact to improve on each hackathon experience for subsequent batches/competitions:



- Use AI and Data Analytics: Analyze participant performance and skills gaps to tailor future hackathons and training programs.
- Track Outcomes: Monitor the career progression of participants, the adoption of solutions by industries, and the overall impact on skills development.
- Scale Successful Models: Identify best practices from successful hackathons and replicate them across other sectors or regions.
- Feedback Loops: Collect feedback from participants, mentors, and industry partners to continuously improve future events.

Post-Hackathon Support



Provide pathways for participants to further develop their ideas through incubators, accelerators, or funding opportunities. Provide tangible outcomes and incentives (ie. internships, job placements, scholarships in high-growth sectors, recognition and certification) for prize winners

STRATEGY 3: CENTRALISED AI DRIVEN PLATFORM (MYSKILLSFUTURE 2.0)

OVERVIEW OF FLOW

Integration of **National Economic Strategies** in skills extraction

- Data analytics to identify and reach out to better target workers in sunset industries
- Align with Industry Transformation Maps (ITMs) to ensure training meets future demands
- Incorporates Green Economy Goals to push for Singapore's Green Plan 2030
- Aligning it with Singapore's Smart Nation initiative to ensure adequate skillsets for digital transformation

Recommendation of programmes intelligently bundled to ensure **optimal** skills building

- AI tailored learning plans for various sectors according to company requirements
- Encourages flexible learning options from 'online degrees' that combines credible courses online to webinars by industry experts
- Directly links government initiatives effective for companies, like e-Advisors
- Easy to follow and keep track of with database on one singular platform

Centralised database potentially streamlines **hiring processes** to better **match talents**

- With trackable skills development on the centralised platform, employers can proactively source for talents
- Behavioural and skill-based assessments can be integrated into hiring platforms
- Clear career progression and upskilling plans improves transition for mid-career switchers

Active feedback and reviews will help continuously improve the system

- With higher usage of the app, more data collected can train the model to become more accurate and efficient
- Higher reviews enhances the credibility and recognition of the platform
- Companies can co-fund and even co-design SkillsFuture Programs, ensuring that these programs do not go outdated

Analyse areas
to upskill

Personalised
roadmaps

Better HR Job
matching

Iteratively improve
courses and programs

HIGHLIGHTS

Proven Models of success

Coursera's online
degrees & Open
University courses

Recognised by
employers (Coursera
Global Skills Report
2022)

30-50% Salary
increase within 12
months

Increasing
enrollment rates

ADAPTED TO:
A Structured online
degree model on
SkillsFuture

1. Making it less segmented and structured to follow
2. Easily adaptable to emerging skillsets, helping courses stay relevant

AI-driven hiring
assessments &
matching systems

Increases efficiency
by **67%** (PwC's
Workforce
Transformation
Study)

Reduces skills
mismatch by **30%**
(McKinsey's Future
Work Report)

Improves hiring
success by **50%**

Proactive Talent Sourcing achieved

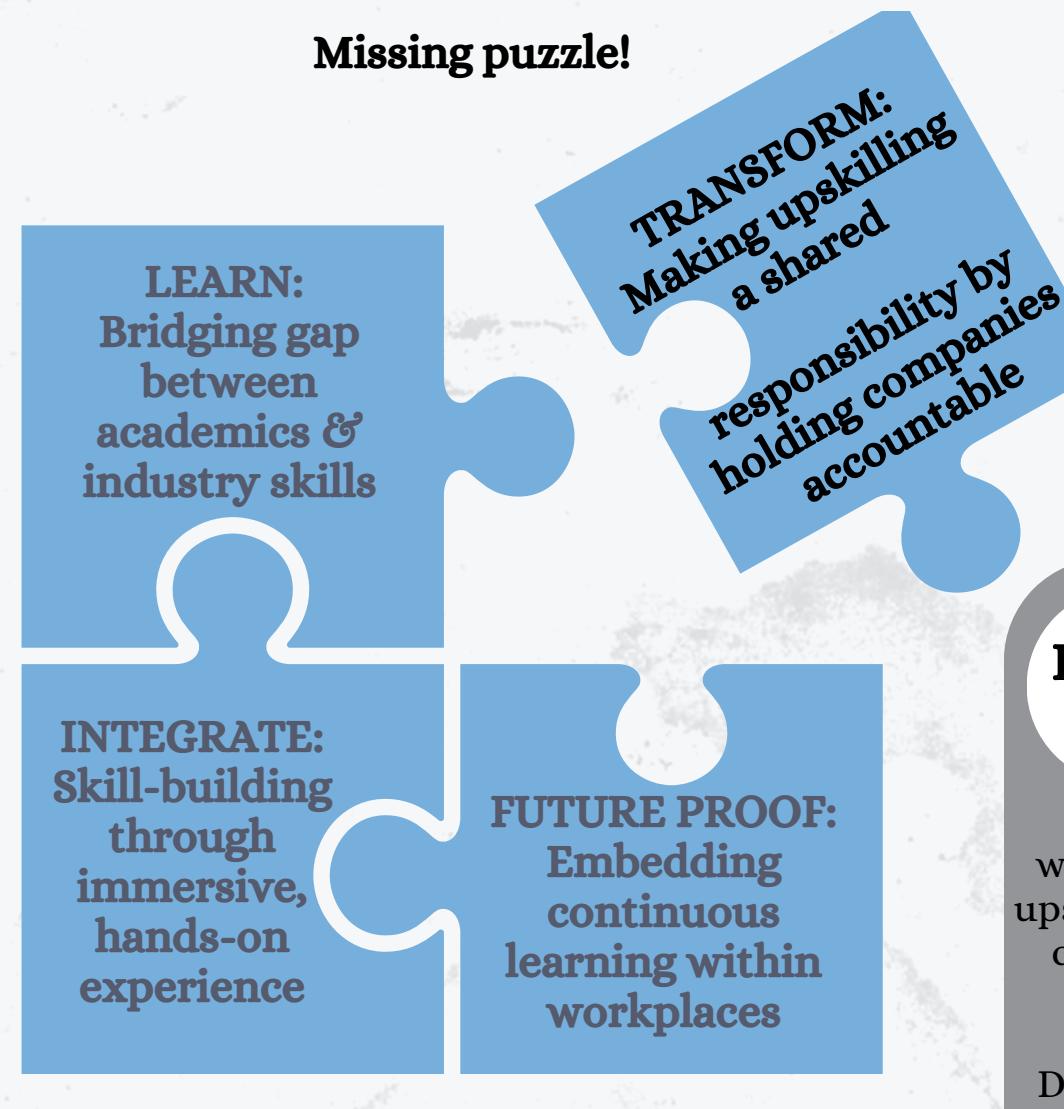
ADAPTED TO:
AI Powered Skills
& Assessments
Database

1. Tracks employee
skill progression
and allows sourcing
of evolving
industry skills
2. Ensures data-
driven hiring
decisions on actual
skill readiness
beyond traditional
resumes

Tackling of root causes

- ✓ Addresses the unawareness of available resources provided. This centralised platform now feeds resources straight to workers and companies, reducing information asymmetry
- ✓ Unlike physical training workshops, this enables anyone, anytime, anywhere can access upskilling opportunities, making upskilling easily accessible
- ✓ Improves real time skills assessing to reduce hiring mismatches, especially with the potential huge database available for the government to analyse and predict workforce demands

STRATEGY 4: STRENGTHENING PUBLIC-PRIVATE SECTOR COLLABORATION THROUGH ESG POLICIES



IKEA's ESG Upskilling Model - Integrated workforce training as part of sustainability commitments, increasing employee retention & innovation

2.5x Increase in workplace productivity for companies integrating ESG-linked upskilling
(McKinsey Future of Work Report 2023)



Enforcement through regulatory changes

Biannual HR-Led Skills Review & Reporting

Companies have to submit workforce skill audits and track upskilling efforts. HR Department can focus on helming workers training programmes and optimize hiring using the AI Driven platform (leverage skills database, and implement company-specific hiring assessments into platform in Strategy 3)

Mandatory protected training hours

Modelling after companies like GovTech, this initiative will encourage employees to upskill during protected and allocated working hours without sacrificing productivity. This would contribute to companies' long-term productivity in the bigger picture.

ESG Scoring Update

Mandatory HR workforce review reports will contribute to ESG Scoring, increasing corporate incentive to improve upskilling among their workplace.

Funding and incentivising

Offer more SkillsFuture credits for workers and grants for firms which uptake skills relevant to and supporting high-growth industries.

Regular clear communication between employers and employees about benefits of upskilling and retraining to inspire a shared goal and establish common understandings => building intrinsic motivation

Tackling root causes

- ✓ Address the lack of priority placed on upskilling – Return on investment for upskilling is not higher with its enhancement on a company's ESG scoring. Upskilling becomes a measurable KPI, making it a worthy long term investment.
- ✓ Address the lack of standardized enforcement of corporate upskilling – Governmental regulations ensures higher compliance and greater employer participation
- ✓ Address poor utilization of government-supported training infrastructure – Higher utilization of SkillsFuture, e-Advisors & national funding schemes



ESG goals



Grants & Support

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