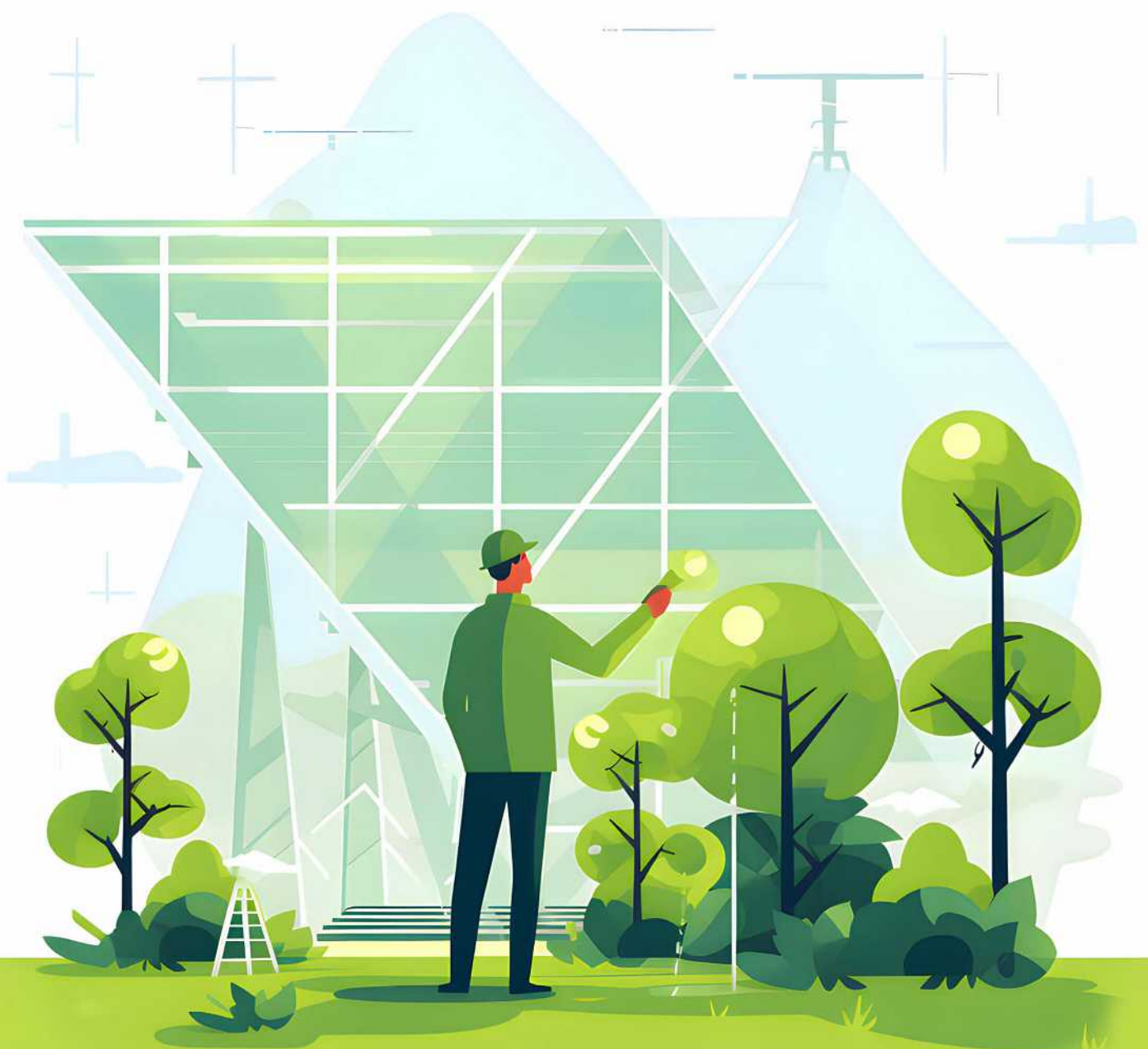# SKILLSFUTURE JOBS-SKILLS INSIGHTS

SKILLS FOR ENGINEERS AND TECHNICIANS IN THE GREEN ECONOMY

"Engineering is one of the main enablers for the Singapore Green Plan 2030. Since the appointment by SSG as the Skills Development Partner for the engineering sector, the Institution of Engineers, Singapore (IES) has been working with industry partners on the engineering skillsets for different job roles in each of the sub-sectors.

"This partnership will create multiple, skills-based pathways for the engineering community to capitalise on opportunities in sustainability-related roles and upskilling the engineering community in the skills required."

Dalson Chung, President, The Institution of Engineers, Singapore

GREEN AND DIGITAL SKILLS ARE IN HIGH DEMAND
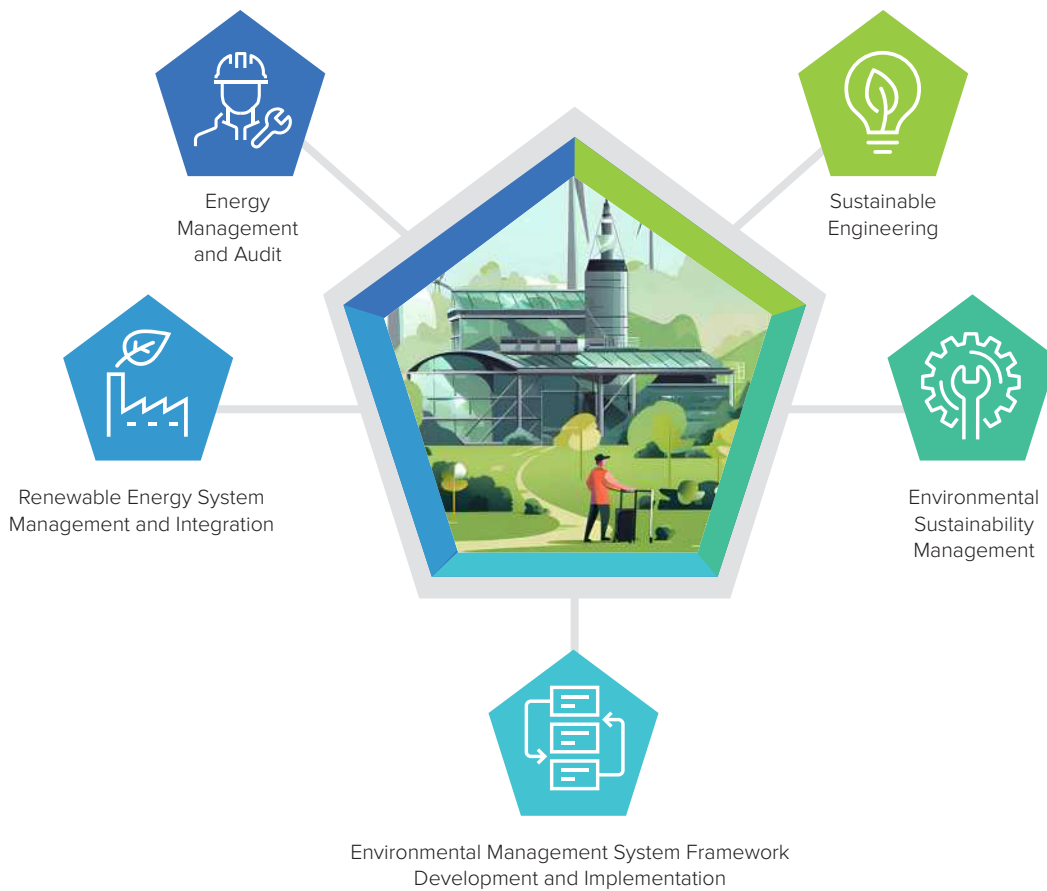
There are 2 key trends:

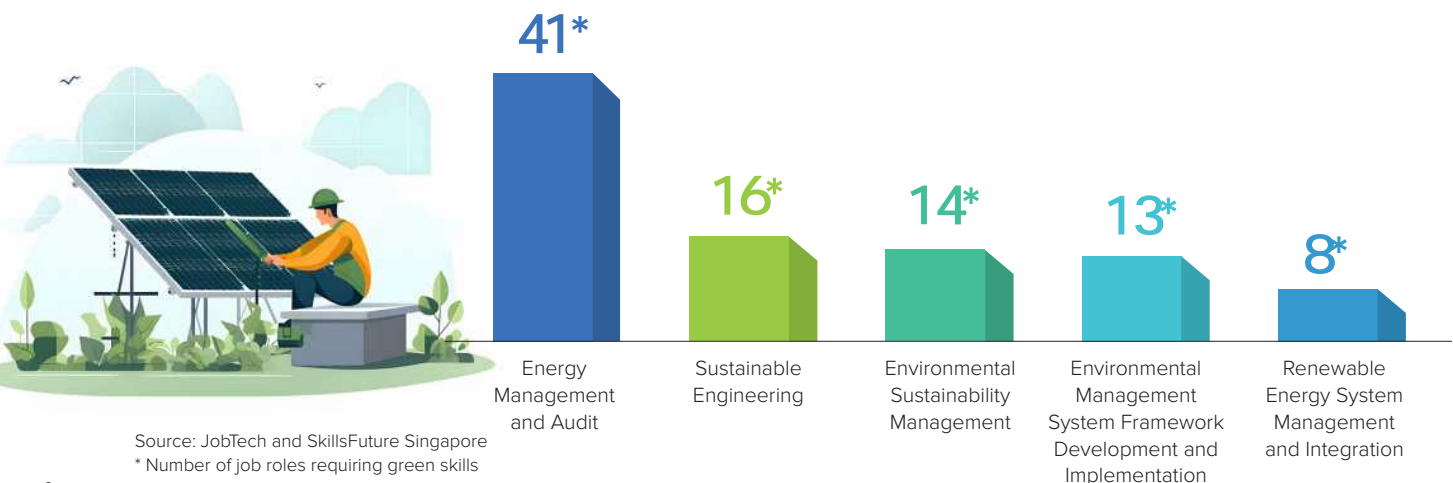Cross-sector and cross-functional green skills are on the rise

Both existing and new engineering and technical roles require green and digital skills

Cross-Sector and Cross-Functional Green Skills

Employers highly value and seek cross-sector and cross-functional green skills. Specifically:

Energy Management and Audit

Sustainable Engineering

Renewable Energy System Management and Integration

Environmental Sustainability Management

Environmental Management System Framework Development and Implementation

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The Top In-Demand Green Skills

41*	16*	14*	13*	8*
Energy Management and Audit	Sustainable Engineering	Environmental Sustainability Management	Environmental Management System Framework Development and Implementation	Renewable Energy System Management and Integration

Source: JobTech and SkillsFuture Singapore
* Number of job roles requiring green skills

Increased Demand for Green and Digital Skills in Existing and New Job Roles

Engineers and technicians must be knowledgeable and continue to improve their skills in emerging clean technologies, environmental sustainability, as well as possess digital skills such as Internet of Things (IoT) Applications, Programming and Coding, and Big Data Analytics.

Both existing roles, exemplified by Environmental, Health and Safety (EHS) Manager and Facilities Engineer, as well as new roles such as BESS (Battery Energy Storage Systems) Solar Engineer and Energy Sustainability Engineer, now require green and digital skills.

New green tasks for existing roles

EHS Manager:

Examples of Greening Tasks

- Lead and facilitate compliance, EHS and sustainability internal/external audits/surveys
- Review any statutory updates, identify relevant EHS requirements, prepare procedures towards achieving compliance to the new statutory requirements(s)
- Well versed with ISO 14001 compliance process and requirement

Green Skills Needed*

- Environmental Sustainability Management
- Environmental Management System Framework Development and Implementation
- Impact Indicators Measurement and Reporting
- Sustainability Risk Management

Facilities Engineer:

Examples of Greening Tasks

- Promote to clients/tenants related sustainability initiatives by proposing and participating in recycling, energy, waste reduction, sustainability program
- Ensure compliance with client policies and procedures, government regulations and internal SOP pertaining to environment, health and safety, procurement, financial policies
- Knowledge of Energy Reduction and Sustainability Programs

Green Skills Needed*

- Environmental Sustainability Management
- Environmental Management System Framework Development and Implementation
- Green Facilities Management
- Sustainability Risk Management

New green and digital tasks for new roles

BESS Solar Engineer:

Examples of Greening Job Responsibilities

- Provide engineering review and support for engineering design, energy modelling and data performance for renewable energy projects such as BESS and solar projects
- Implement engineering and design using software of grid-connected BESS power generation and distribution systems, including standalone or integrated renewable technologies

Green and Digital Skills Needed*

- Battery Systems Design Management
- Big Data Analytics
- Carbon Footprint Management
- Energy Management and Audit
- Internet of Things (IoT) Applications
- Smart Grid Implementation and Integration
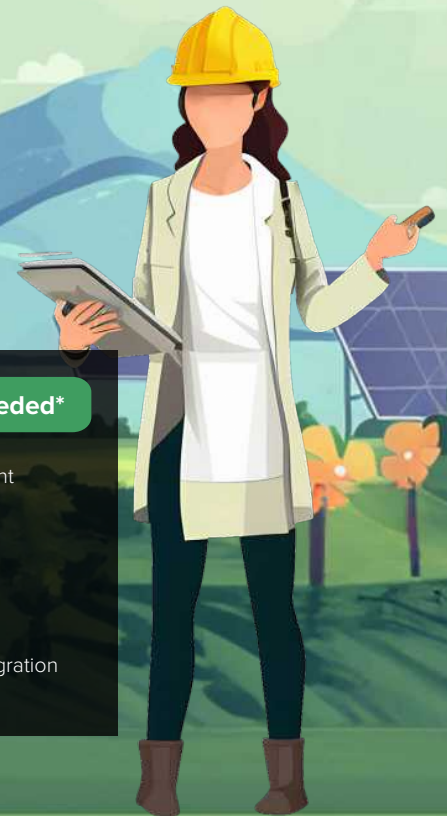
Energy Sustainability Engineer:

Examples of Greening Job Responsibilities

- Monitor the energy usage and performance of facilities, productions, including planning for necessary improvement toward carbon footprint reduction
- Lead in the reporting towards various statutory requirement and equivalent. Examples are Energy Use Report, Carbon Pricing Act, Energy Efficient Opportunities Assessment and Energy Management System.
- Report carbon footprint, sustainability goals & targets
- Lead in the reporting towards various statutory requirement and equivalent. Examples are Energy Use Report, Carbon Pricing Act, Energy Efficient Opportunities Assessment and Energy Management System.

Green and Digital Skills Needed*

- Big Data Analytics
- Carbon Footprint Management
- Energy Management and Audit
- Environmental Sustainability Management
- Programming and Coding
- Green Building Strategy Implementation
- Green Facilities Management
- Sustainability Reporting

Please refer to the Annex for skill descriptions

"As Singapore positions herself to be a premier in the green, digital and financial hubs, engineers have an enabling role in nurturing the growth of these symbiotic hubs. To participate, contribute and benefit from the ongoing transformation of Singapore, both young as well as senior engineers need to acquire relevant knowledge and skills."

Dr Seeram Ramakrishna, Professor of Materials Engineering;
Chairman of Circular Economy Taskforce,
NUS; Advisor to the IES Green Plan 2030

Start Your Re-skilling Journey Today

Sign up for professional certification courses and programmes today

1. Green Economy Courses (**https://go.gov.sg/green-econ-courses**)
2. Digital Economy Courses (**https://go.gov.sg/digital-econ-courses**)
3. IES Chartered Engineering Certification Scheme (**https://www.ies.org.sg/Registries/Chartered-Engineering-Scheme**)

Additional Resources

Download report on critical skills for the Green Economy, Digital Economy and Industry 4.0, as well as obtain a description of skills at this link: **https://go.gov.sg/sdfe**

If you would like to know more, please contact SkillsFuture Singapore at:
https://go.gov.sg/jan2023jsi-greeneconomy-feedback

Skills Title	Skills Description
Carbon Footprint Management	Quantify and reduce the organisational carbon footprint
Big Data Analytics	Apply data analytics techniques and tools to analyse significant volumes of data and draw patterns and trends for investigating business problems
Battery Systems Design Management	Design and review battery systems according to capacity requirements and site constraints
Energy Management and Audit	Perform energy audits to optimise the energy performance of energy consuming systems and manage energy consumption
Environmental Management System Framework Development and Implementation	Develop Environmental Management System (EMS) frameworks and implement procedures and practices to ensure compliance with legal and organisational requirements as well as commitment to environment protection
Environmental Sustainability Management	Develop environmental sustainability plans throughout the building lifecycle through the development, implementation and review of sustainability strategies to enhance environmental performance
Green Building Strategy Implementation	Manage facility operations and maintenance to minimise environmental impact and operational costs efficiently
Green Facilities Management	Analyse, monitor and report impact of sustainability actions and lead the organisation in setting impact mission and targets for the organisation or customers
Impact Indicators Measurement and Reporting	Implement Internet of Things (IoT) technologies to drive efficiency and effectiveness of operations
Internet of Things (Io) Applications	Develop technical capabilities to understand, design and write instructions to be processed by computers as software programmes to achieve desired outcomes
Programming and Coding	Analyse impact of renewable energy system integration on energy grid in steady state and during dynamic operation.
Renewable Energy System Management and Integration	Develop and implement an integrated smart grid system using various distributed energy sources and energy management systems.
Smart Grid Implementation and Integration Sustainable Engineering	Design, construct and operate engineering systems and assets to optimise energy management and enhance environmental performance
Sustainable Manufacturing	Manage efficient use of energy and other utility resources to promote sustainable manufacturing operations
Sustainable Reporting	Lead development of organisation's sustainability reporting and accounting policies and processes in line with regulatory requirements and international best practices
Sustainability Risk Management	Develop frameworks, strategies and policies for managing sustainability risks for the organisation to minimise and mitigate risks and impact to the organisation