

Functions and Capabilities of Institut Perhutanan Sabah (IPS) in Providing Adequately Trained Workforces for Sustainable Forest Management (SFM) in Sabah.

Author: Jambery Siong, Muhd. Razali Bin Mohammad, Fedelis Tangkim, Jaimah Hassim, Magret Saradin, NurAin Fatimah Binti Unus, Saidatul Syaifah Binti Salleh, Sarail Majamin, Teckonia D. Mudi

Abstract

The Sabah Forestry Institute (IPS) plays a vital role in supporting Sustainable Forest Management (SFM) in Sabah by providing a trained workforce equipped with forestry expertise. IPS's primary objectives include disseminating forestry knowledge, enhancing skills in various forestry disciplines, and cultivating technical experts with strong forest preservation awareness. Through its recognized programs—such as the Forest Ranger and Forest Guard courses—IPS has contributed significantly to the state's forestry sector, producing over 1,646 graduates, including 322 Forest Rangers and 1,324 Forest Guards. The institute's initiatives support Sabah's forest policy by promoting sustainable forest management through a skilled workforce, thereby enhancing environmental, social, and economic sustainability in line with the Sabah Forest Policy 2018 and the Sabah Maju Jaya Vision. The institute's certification, endorsed by national authorities and ISO 9001:2015, attests to its high standards in vocational and technical training. An analysis of IPS graduates highlights a high employment rate within forestry and related sectors, with 85.9% working in forestry, and strong feedback on the relevance of IPS training programs.

Abstrak

Institut Perhutanan Sabah (IPS) memainkan peranan penting dalam menyokong Pengurusan Hutan Lestari (SFM) di Sabah dengan menyediakan tenaga kerja yang terlatih serta dilengkapi kepakaran dalam bidang perhutanan. Objektif utama IPS adalah untuk menyebarkan pengetahuan perhutanan, meningkatkan kemahiran dalam pelbagai disiplin perhutanan, dan melahirkan pakar teknikal yang mempunyai kesedaran tinggi terhadap pemeliharaan hutan. Melalui program-program yang diiktiraf seperti kursus Renjer Hutan dan Pengawas Hutan, IPS telah menyumbang secara signifikan kepada sektor perhutanan negeri, dengan menghasilkan lebih 1,646 graduan, termasuk 322 Renjer Hutan dan 1,324 Pengawas Hutan. Inisiatif institut menyokong dasar hutan Sabah dengan mempromosikan pengurusan hutan yang mampan melalui tenaga kerja yang berkemahiran, sekali gus meningkatkan kelestarian alam sekitar, sosial, dan ekonomi selaras dengan Dasar Hutan Sabah 2018 dan Visi Sabah Maju Jaya. Pensijilan institut ini, yang disahkan oleh pihak berkuasa negara dan ISO 9001:2015, membuktikan standard yang tinggi dalam latihan vokasional dan teknikal. Analisis terhadap graduan IPS menunjukkan kadar pekerjaan yang tinggi dalam sektor perhutanan dan sektor berkaitan, dengan 85.9% bekerja dalam bidang perhutanan, serta maklum balas yang kukuh mengenai keberkesanan program latihan IPS.

Introduction

The Sustainable Forest Management (SFM) is critical to ensuring the long-term viability of forest ecosystems, which play an essential role in biodiversity conservation, climate regulation, and the socio-economic well-being of communities. In Sabah, where forests cover a substantial portion of the state's land area, the implementation of SFM practices is particularly crucial. The Sabah Forestry Department (SFD) has outlined its commitment to sustainable forestry in its vision and mission statements, emphasizing the importance of protecting at least 50% of the state's land mass for sustainable forest use. To accomplish these

goals, a highly skilled workforce is essential for managing forest resources, a role in which the Institut Perhutanan Sabah (IPS) plays a key part.

Established with the primary objective of developing a trained workforce in the forestry sector, the IPS has become a key player in supporting SFM in Sabah. The institute's mission is diverse, aiming to spread forestry knowledge to the public, offer training in key forestry disciplines, and develop technical-level forestry professionals with a strong grasp of forest conservation and its economic importance. These goals align with broader state policies, including the Sabah Forest Policy 2018 and the Sabah Maju Jaya (SMJ) Vision, which enhance the importance of sustainable development and human resource capacity building.

The functions of IPS are strategically designed to meet both current and future forestry demands. This involves developing and updating forestry training syllabi to align with evolving management practices, designing training programs that address current challenges, and continually assessing their effectiveness to ensure they meet Sustainable Forest Management (SFM) goals. Additionally, the institute offers both long-term certificate programs, such as the Forest Ranger and Forest Guard courses, and a variety of short courses that target specific skills required in forest operations.

In the context of SFM, where technical knowledge, sustainable harvesting methods, and environmental protection are essential, the IPS stands out for its ability to equip individuals with the necessary competencies. Over the years, the institute has not only trained countless forestry professionals but has also updated its curriculum to incorporate cutting-edge practices like Reduced Impact Logging (RIL) alongside advanced technologies such as Geographic Information Systems (GIS) and remote sensing. These advancements position IPS as a key pillar in the sustainable management of Sabah's forests.

This paper aims to examine the functions and capabilities of the IPS in providing an adequately trained workforce for SFM, evaluating the effectiveness of its training programs, and analyzing how the institute's role aligns with the overarching goals of SFD and state policies. It also explores the impact of IPS graduates in the forestry sector, contributing to Sabah's broader efforts to balance environmental preservation with economic development.

IPS Objectives and Functions

The IPS's functions are designed to meet the needs of sustainable forest management by:

- i. Drafting and reviewing the forestry training syllabus to align with current forest management needs.
- ii. Planning and delivering targeted forestry training programs for department staff, other forestry agencies, and the public.
- iii. Evaluating the effectiveness of training programs to ensure continuous improvement and alignment with the SFD's objectives.

These activities support the broader objectives of the Sabah Forest Policy 2018, which includes sustainability of forest products, research and innovation, and human resource development.

Process and Implementation

Sabah Forestry Institute (IPS) Historical Overview

The IPS has a long history of forestry training, beginning with its first forest guard course in 1954, attended by 4 students. Since then, it has evolved into an institution with a total of 27 training officers over the years, holding qualifications in forestry and teaching competencies includes Vocational Training Officer (VTO and Train The Trainer (TTT). To date, IPS has had 19 (nineteenth) principals, with the current leadership comprising Principal Muhd Razali Bin Mohammad, who has 27 years of experience in the forestry sector, and Deputy Principal Fedelis Tangkim, a Reduced Impact Logging (RIL) instructor with 31 years of experience.

Qualification and Competencies

IPS currently employs seven training officers, all certified under the VTO or TTT programs. The institute has received recognition from the Jawatankuasa Tetap Penilaian dan Pengiktirafan Kelayakan (JTPPK) Malaysia and holds ISO 9001:2015 certification. It is also in the process of applying for accreditation from the Malaysia Qualification Agency (MQA).

Based on **Table 1**, a total of 27 training officers have served at IPS since its inception. Their varied qualifications highlight a blend of academic achievement and instructional expertise, enabling the Sabah Forestry Institute (IPS) to deliver both practical and theoretical training programs that cater to the needs of forestry professionals and contribute to the sustainable management of Sabah's forests.

Table 1. Training Officers' Highest Education and Teaching Qualifications

Qualification	No. of Officers
Diploma in Forestry with VTO or TTT	6
Diploma in Forestry without VTO or TTT	5
Bachelor in Forestry Science (BSc) with VTO or TTT	3
Bachelor in Forestry Science (BSc) without VTO or TTT	6
Master's Degree with TTT	2
Experienced Forester with TTT	1
Experienced Forester	4

The main courses offered at IPS include:

1. **Forest Ranger (2-year program):** Covers 18 subjects such as Dendrology, Silviculture, Forest Mensuration, Forest Harvesting, Forest Management, Environmental Tourism, Office Administration, Communication Education, Forest Ecology, Forest Fire Prevention & Control, Introduction to Wood Science, Forest Law, Wood Industry, Forest Protection, Survival Skills, Wildlife Management, Timber Industry, Occupational Safety & Health and Forest Survey.
2. **Forest Guard (1-year program):** Covers 12 subjects, including Dendrology, Silviculture, Forest Mensuration, Forest Harvesting, Forest survey, Communication Education, Tourism and Wildlife, Forest Fire Prevention & Control, Introduction to Wood Science, Wood Industry, and Forest Laws.

IPS also offers a range of short courses, including Reduced Impact Logging (RIL) Supervisor, machine operator, directional felling, GIS (application in forestry), drone operation, GPS handling, Sabah Log Grading Rules (SLGR), tree identification and forest fire prevention and control.

Analysis and Interpretation of IPS Courses

The analysis of IPS courses provides insights into the impact of its Forest Ranger and Forest Guard programs, short courses, and the overall satisfaction of graduates. The data reflects the success of IPS in creating a skilled workforce and highlights areas for further improvement.

Current Graduates

The total number of graduates from IPS stands at 1,646, with:

- 322 graduates from the Forest Ranger program, representing a more specialized and advanced level of training in forest management.
- 1,324 graduates from the Forest Guard program, which is designed to equip participants with essential field-level operational skills.

The significant number of Forest Guard graduates indicates a high demand for practical forestry management skills, contributing to the overall goal of sustainable forest management (SFM) in Sabah.

Short Course Certificates Awarded

The issuance of 5,722 certificates by the Sabah Forestry Institute (IPS) underscores its vital role in building capacity across various sectors. These certifications reflect individuals equipped with specialized skills crucial for implementing sustainable forest management (SFM) practices. IPS's emphasis on areas such as Reduced Impact Logging (RIL), Machine Operation, and SPKP highlights the relevance of its training programs in tackling modern forestry challenges.

Emphasis on RIL-Related Training

Of the total certificates awarded, an overwhelming majority (5,383 or 94%) are related to RIL. This demonstrates the prioritization of RIL as a key practice in sustainable forestry, aligning with the global shift towards reducing environmental impacts in logging operations. The breakdown of certificates for RIL Supervisor, Machine Operator, and RIL SPKP (Supervision and Control of Harvesting and Transport) highlights the different levels of expertise needed to manage RIL effectively.

- **RIL Supervisor Certificates (1,830 total):** These are spread across various organizations, with the Sabah Forestry Department (SFD) issuing 510, private entities 107, companies 599, and IPS 614. The significant representation of company-issued certificates indicates active participation from the private sector in adopting sustainable logging practices.

- **Machine Operator Certificates (3,303 total):** This high number reflects the demand for skilled machine operators in the implementation of RIL. The fact that private companies account for the majority (3,207 certificates) suggests that these skills are particularly crucial in the commercial forestry sector.
- **RIL SPKP Certificates (250 total):** These were awarded exclusively within the SFD, underscoring the department’s focus on ensuring proper supervision and control in forest harvesting activities.

Table 2. Record of certificates awarded for RIL supervisor, machine operator and RIL SPKP

Organization	RIL Supervisor	Machine Operator	RIL SPKP	Total
SFD	510	12	250	772
Private	107	84	nil	191
Company	599	3207	nil	3806
IPS	614	nil	nil	614
Total	1830	3303	250	5383

Market Analysis

A significant majority (86.7%) of IPS graduates are employed in the government sector. This reflects the strong demand for forestry professionals in public service roles, which are likely tied to forest management, conservation efforts, and the enforcement of forestry laws and regulations. It suggests that government institutions continue to be the primary employer for IPS graduates, possibly due to the critical role of government bodies in managing state forests and natural resources.

A smaller percentage (6.0%) of graduates are employed in the private sector. This is likely indicative of fewer opportunities or a lower demand for forestry professionals within private

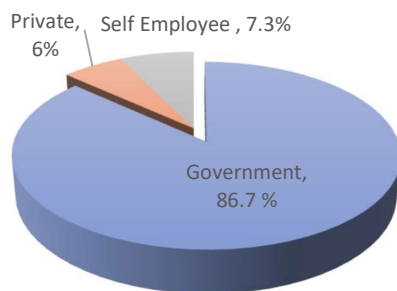


Figure 1. Analysis on graduates market (248 respondents)

companies, such as logging firms, environmental consultancies, or plantation management. The relatively low private sector employment suggests that this market is either highly specialized or has fewer openings compared to government roles.

This distribution indicates that IPS graduates primarily serve in public service roles, which are key for implementing Sabah’s forest policy objectives.

Graduate Employment by Sector

The majority of respondents (85.9%) are employed in the forestry sector, followed by other fields (8.5%), agriculture (2.0%), services (1.6%), and education and transportation (0.8% each). The high percentage in forestry indicates a strong alignment between IPS’s curriculum and the core competencies needed for positions in forestry departments, conservation agencies, and related industries. Graduates are likely to take on roles such as forest rangers, forest guards, and other positions that directly support sustainable forest management and resource conservation.

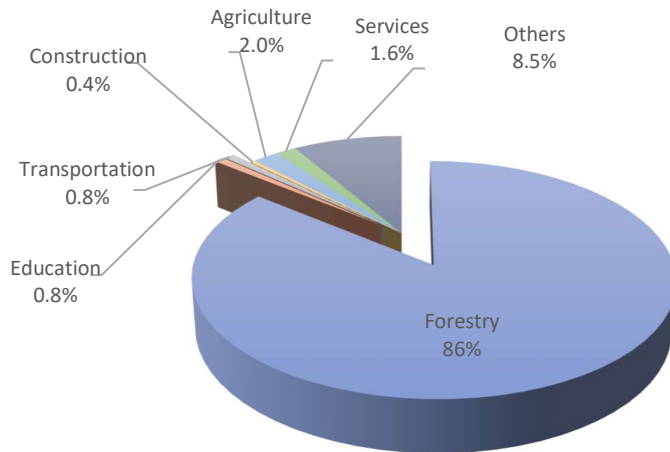


Figure 2. Analysis of Employment Rates of IPS Graduates by Sector

While the distribution across other sectors is limited, it demonstrates that IPS training equips graduates with transferable skills applicable to various industries, although the primary focus remains on forestry.

Graduate Feedback on Course Relevance to Employment

An overwhelming 96.4% of respondents found the subjects taught at IPS to be highly relevant for their job roles, indicating strong alignment between the institute’s curriculum and the actual job market demands.

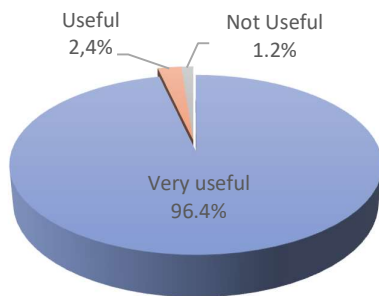


Figure 3. Assessment of Graduate Feedback on IPS Course Content Relevance to Employment

A small percentage felt that the subjects were useful, but not entirely essential. This could suggest that while foundational knowledge is provided, some areas might require further specialization depending on specific job roles.

A marginal 1.2% found the subjects to be not useful, suggesting that their jobs might differ from the core competencies provided by the IPS courses.

Graduate Feedback on IPS Certification for Employment Opportunities

Most graduates (95.2%) found the IPS certification to be highly beneficial in securing employment, suggesting that the certificate carries significant recognition and value in the job market, particularly in the forestry sector. The high level of satisfaction reinforces the notion that IPS is a trusted and credible institution for producing qualified forestry professionals.

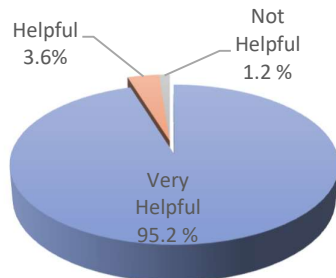


Figure 4. Assessment of Graduate Feedback on IPS Certification for Securing Employment

A small percentage of respondents (3.6%) found the IPS certification somewhat helpful but felt that certification alone might not be sufficient for all job roles. A very limited number (1.2%) of graduates indicated that the IPS certificate was not beneficial in their job search, potentially reflecting industries or employers that place less emphasis on forestry certifications, or perhaps these graduates pursued careers outside of forestry sectors.

Respondent Feedback on IPS Courses

A small group of respondents suggested that the course syllabus could be enhanced. This feedback likely reflects a desire for more up-to-date content or increased relevance to emerging industry practices. Addressing this would ensure that IPS stays at the forefront of forestry education, catering to both traditional and modern practices.

A notable 10.5% of respondents recommended adding new subjects to the curriculum. This may highlight gaps in the current course offerings, possibly around advanced technologies (e.g., GIS, forest carbon evaluation) or other aspects of sustainable forest management not fully covered by the current syllabus.

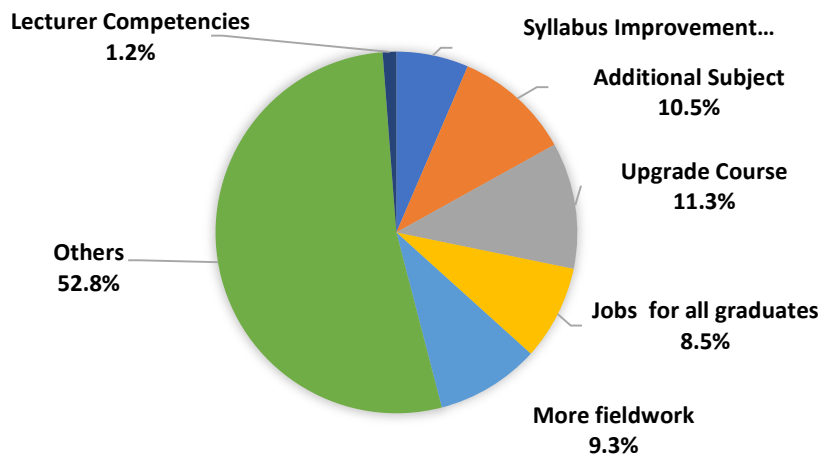


Figure 5. Feedback from Respondents on IPS Course Effectiveness

The request for course upgrades from 11.3% of respondents suggests that some graduates feel the need for more advanced or specialized training. This aligns with the growing demand for higher qualifications in forestry and environmental management, driven by complex job requirements and evolving industry standards.

A concern among 8.5% of respondents relates to job availability post-graduation, suggesting that while IPS provides effective training, ensuring sufficient job opportunities for graduates remains a challenge. This may warrant stronger partnerships between IPS and industry stakeholders to ensure more consistent job placements.

The call for more fieldwork by 9.3% of respondents underlines the importance of hands-on experience in forestry education. Given the practical nature of forestry roles, increasing fieldwork opportunities could enhance the competence and confidence of graduates when transitioning to the workforce.

A small fraction (1.2%) of respondents mentioned lecturer competencies. While this figure is low, it still highlights the importance of maintaining high teaching standards and ensuring that institutes have both academic knowledge and field expertise to effectively prepare students for the workforce.

More than half (52.8%) of the respondents did not provide any feedback or response regarding the effectiveness of the IPS courses. However, there are opportunities for enhancement, particularly in expanding the curriculum, upgrading courses, and incorporating more fieldwork to ensure graduates are fully prepared for evolving industry challenges. The broad positive reception of IPS's certification highlights its crucial role in supporting Sabah's forest management goals, while the constructive feedback from graduates offers a roadmap for continuous improvement in IPS's training programs.

Discussion

The IPS plays a vital role in fulfilling the SFD's mission of sustainable forest management. Under the leadership of the Chief Conservator of Forests, Datuk Frederic Kugan, the SFD is committed to ensuring that at least 50% of Sabah's landmass is protected for sustainable forest use. The IPS supports this vision by equipping its graduates with the necessary skills to manage forest resources in accordance with environmental, social, and economic sustainability principles.

The IPS's alignment with the Sabah Forest Policy 2018 further underscores its importance. The policy highlights the need for sustainable forest products, innovative research, and the development of human resources, all of which are integrated into the IPS training programs. Additionally, the institute's role in realizing the Sabah Maju Jaya (SMJ) Vision emphasizes its contributions to the state's economic development, social well-being, and environmental conservation.

Conclusion

The Sabah Forestry Institute (IPS) has proven itself as an essential institution in advancing the goals of sustainable forest management (SFM) in Sabah. Its core functions—developing and refining forestry training syllabi, delivering tailored forestry programs, and evaluating their

impact—align directly with the strategic priorities of the Sabah Forestry Department (SFD) and the Sabah Forest Policy 2018. IPS has played a pivotal role in cultivating a highly skilled workforce, with 322 Forest Rangers and 1324 Forest Guards graduating since its inception, alongside 5722 participants from various sectors receiving certifications in short courses.

IPS's comprehensive training programs, which cover essential subjects to ensure that graduates are well-equipped to contribute to SFM. Furthermore, the market analysis shows that a significant portion of graduates (85.9%) find employment in the forestry sector, demonstrating the institute's success in fulfilling its mission to provide adequately trained professionals to the field.

Graduates' high satisfaction levels regarding the relevance of their training to their jobs and the effectiveness of the IPS certificate in job applications further affirm the institute's effectiveness in workforce preparation. As Sabah strives to maintain at least 50% of its land under sustainable forest use, the IPS remains a key player in the realization of the state's vision for long-term environmental protection, biodiversity conservation, and socio-economic prosperity.

In conclusion, the Sabah Forestry Institute's capabilities in providing well-trained professionals are indispensable to the ongoing success of SFM initiatives, ensuring that the state's forests remain productive, resilient, and sustainable for future generations

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