



# Mainstreaming Outcome-Based Education in Indonesian Engineering Programs: the IABEE Experience

**The Institution of Engineers Indonesia / Indonesian Accreditation Board for Engineering Education (PII / IABEE)**

**TABEE Kicking Off Event (Thailand, online)**  
29 December 2021

**Prof. Muhammad Romli**  
*Chair of IABEE International Committee*

# National Education System

Edu. Expenditure

USD **30.845B**

HEIs [public]

**3267** [3.73%]

Eng. Programs

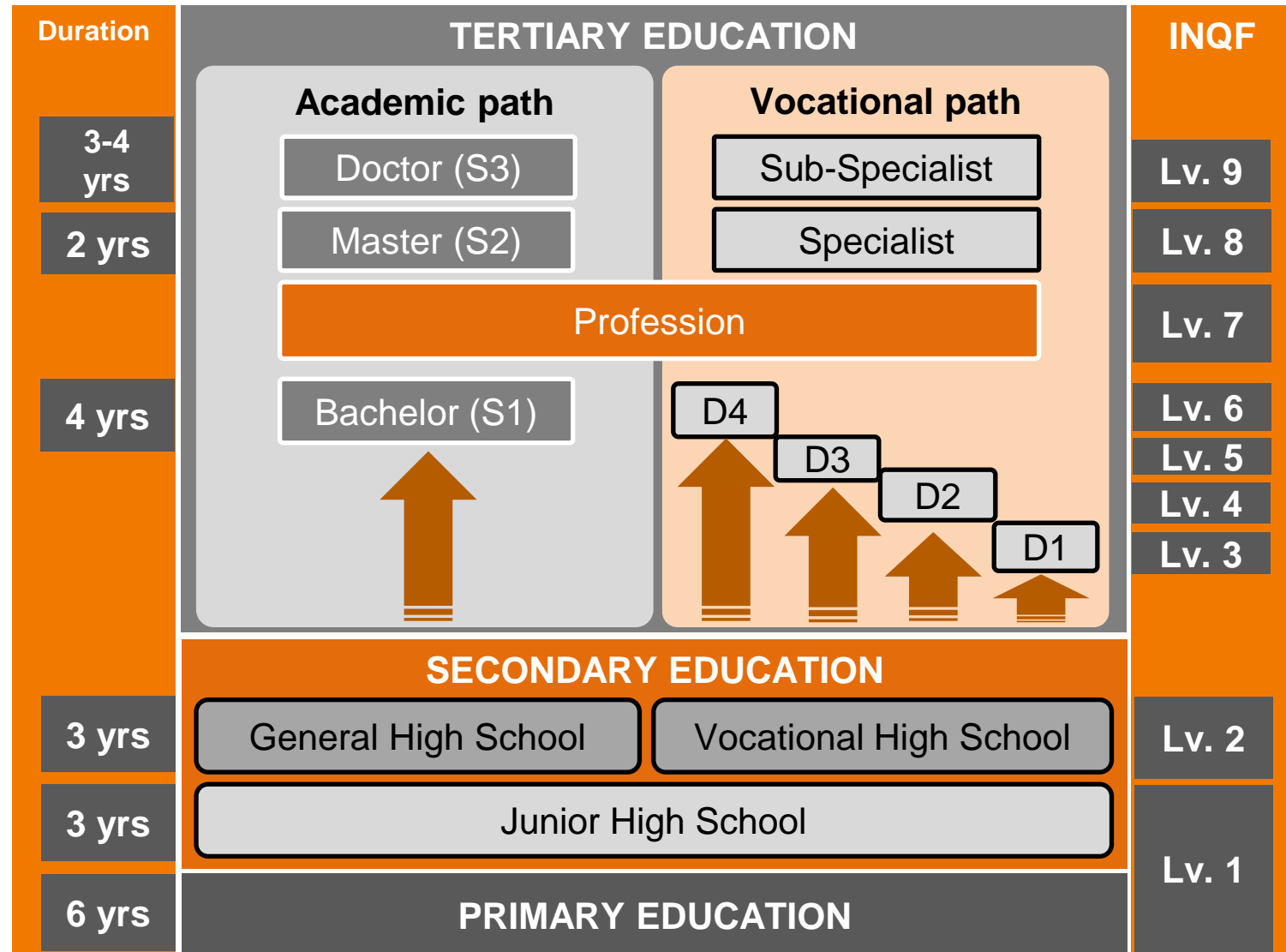
**5017**

Bachelor Eng. Programs

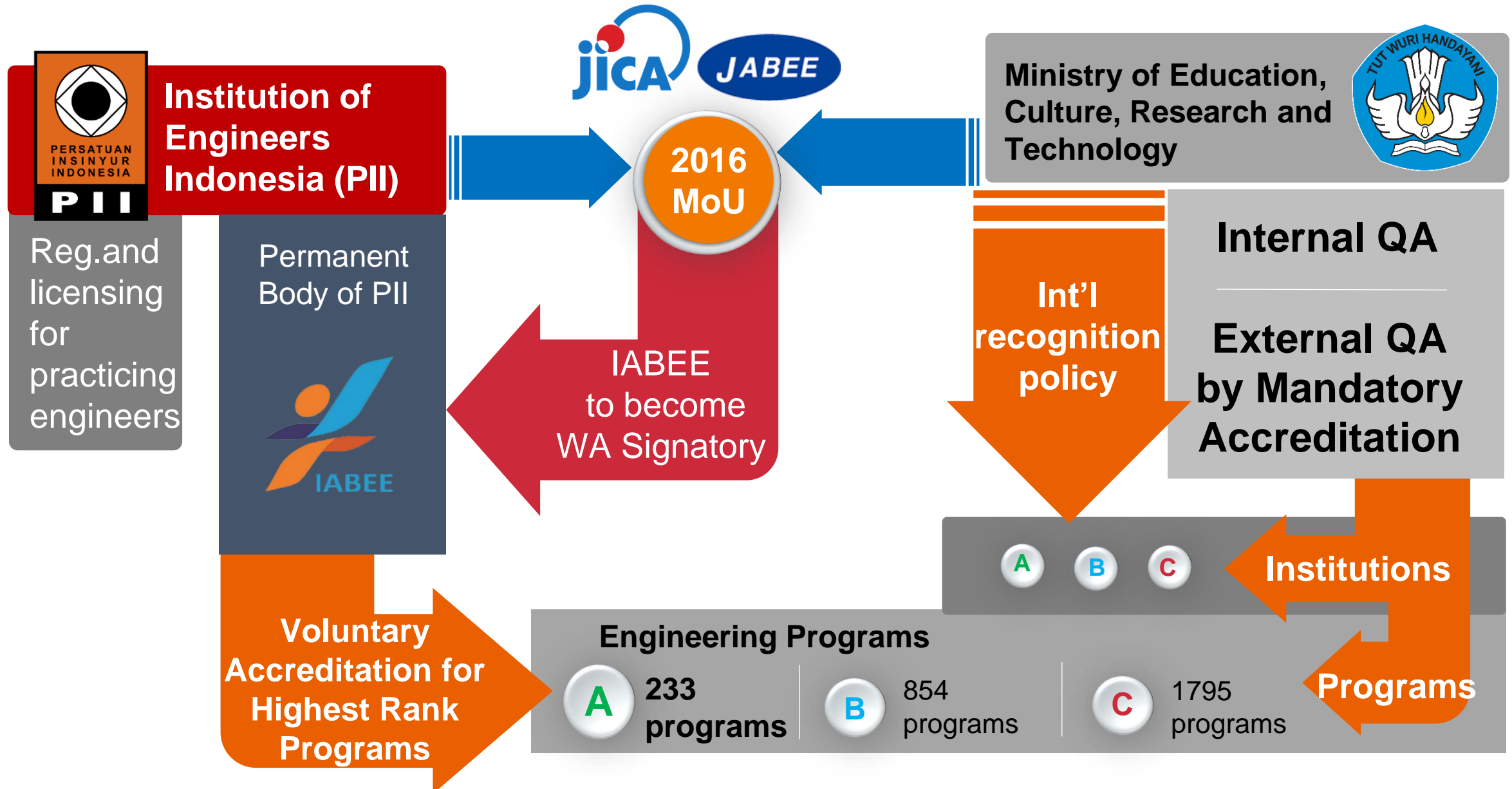
**2882**

Eng. Students

**1,023,251**



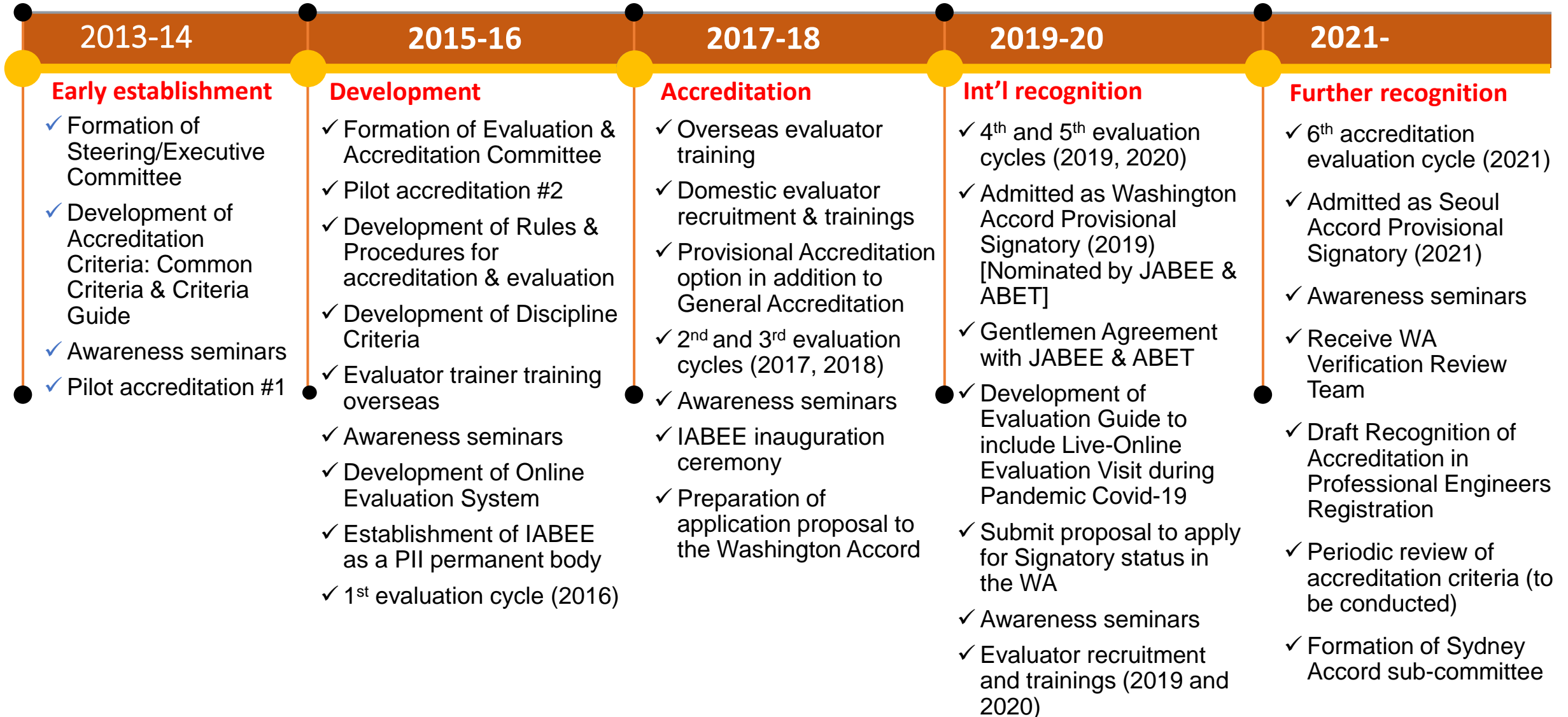
# IABEE Establishment



# Higher Education Law

- ❑ Implementation of the National Quality Assurance Systems for HE
  - Internal QA (set up by own institutions/programs)
  - External QA (through accreditation)
- ❑ **Mandatory** Accreditation
  - Accreditation of institutions is conducted by BAN PT
  - Accreditation of engineering programs is conducted by LAM TEKNIK rank “*Excellent*”, “*Very Good*”, and “*Good*”
- ❑ IABEE accreditation is **voluntary**, international level (Washington Accord), and is recognized as rank “*Excellent*” by the government
- ❑ Programs accredited by IABEE will be **exempted** from the mandatory re-accreditation

# Our journey so far...



# Reinforcing IABEE Accreditation's reputation: Gentlemen Agreement with ABET & JABEE

COVID-19 UPDATES

ABOUT ABET

ACCREDITATION

COVID-19 Updates

What is Accreditation?

Why ABET Accreditation Matters

What Programs Does ABET Accredit?

Program Eligibility Requirements

Licensure, Registration & Certification

Get Accredited

Accreditation Step by Step

Assessment Planning

Request for Evaluation (RFE)

Changes During the Period of Accreditation

Decision & Notification

Accreditation Outside the U.S.

Reaccreditation

Additional Resources

Promote Your ABET Accreditation

ABET-Accredited Logos

## ABET'S Role in Global Accreditation

ABET is engaged globally through four primary means: 1) accreditation of academic programs; 2) mutual recognition of accreditation organizations; 3) Memoranda of Understanding with accreditation/quality assurance organizations; and 4) engagement in global STEM education organizations.

We take an active role in the global quality assurance process for technical education programs through numerous agreements with organizations worldwide. These include Mutual Recognition Agreements (MRAs) and Memoranda of Understanding (MOUs). A list of our MRA global partners can be found [here](#) and [here](#). A list of our MOU global partners can be found [here](#).

We respect the autonomy of each nation's higher education quality assurance organization. While ABET accredits programs outside of the US, we also encourage all academic programs located in these countries and regions to pursue accreditation by the appropriate MRA or MOU partner. We will conduct an accreditation review in the MRA/MOU country/region only if our partner does not object.

In addition, programs located outside of the U.S. must have each appropriate education authority, recognition or accreditation agency complete a [Request for Acknowledgement form](#) to be submitted with the formal Request for Evaluation. We will conduct an accreditation review outside the U.S. only in cases where there is no objection from all applicable education authorities or recognition/accreditation agencies in that program's country or region.

Source: abet.org



# Reinforcing IABEE Accreditation's reputation: Gentlemen Agreement with ABET & JABEE



## Supports for Establishment of Oversea Accreditation Bodies and Oversea Evaluations & Accreditations

Recently, a number of study programs from different countries contact JABEE to seek for JABEE accreditation. However, in principle, JABEE does not conduct accreditation activities out of Japan.

The Washington Accord has a policy that the signatories have an uncontested right within their respective national or territorial boundaries (jurisdiction). The signatories of the Washington Accord recognize under the Accord the substantial equivalency of study programs accredited by the signatories only in their jurisdiction. In other words, study programs accredited out of jurisdiction are not considered as substantially equivalent under the Accord.

JABEE is of the opinion that if multiple accreditation agencies accredit study programs in a jurisdiction, study programs are most likely to seek for “the easiest” accreditation. As a result, the level of engineering education may be jeopardized.

It is a freedom of study programs to choose an accreditation agency. If study programs contact JABEE to seek for JABEE accreditation, JABEE's advices are the following depending on the 2 different cases:

(1) If an authoritative accreditation agency exists in a jurisdiction, accreditation conducted by such an agency should be considered as priority. Study programs should be encouraged to seek for accreditation by its country-based accreditation agency, who knows the nation's needs better than any foreign accreditation agencies and who accredits study programs using its own accreditation criteria. If the study programs still prefer to be accredited by JABEE as an international-level and outcomes-based accreditation agency, JABEE will contact the country-based accreditation agency to ask whether they agree that JABEE will conduct program evaluation. If they agree, JABEE could evaluate the study programs only if they have been accredited by the country-based accreditation agency in the first place. The accreditation by JABEE has only an additional value. This policy applies for the Washington Accord signatories and provisional members as well as those, who are preparing joining the Accord.

(2) If a country does not have an international-level engineering accreditation agency, JABEE is happy to assist the country to establish an agency and to join the Washington Accord rather than conducting a spot accreditation of a study program.

There is a good practice for the case (2):

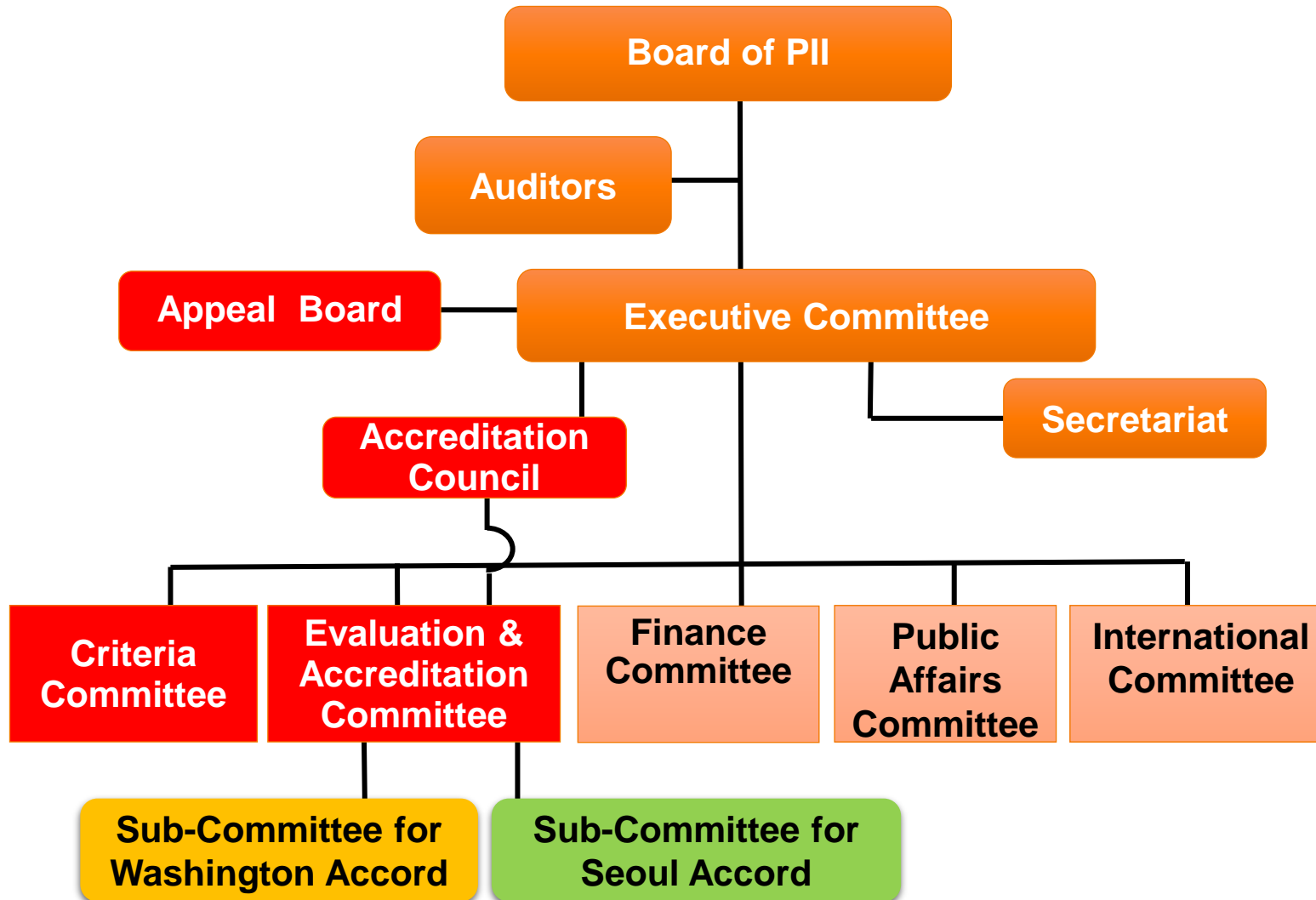
Since 2013, under the Japan International Cooperation Agency (JICA) project, JABEE has been assisting Indonesia to establish the Indonesian Accreditation Board for Engineering Education (IABEE). Within the framework of JICA project, JABEE did accredit 4 study programs as pilot accreditations. IABEE was admitted to a provisional member of the Washington Accord in 2019 and expects to be a signatory within a few years. Some study programs in Indonesia contact JABEE to seek for JABEE accreditation, nevertheless JABEE explains that JABEE will not accredit study programs in Indonesia anymore and advises them to be accredited by IABEE. The following are the 4 study programs JABEE accredited for IABEE.

# Accreditation by foreign agencies prior to IABEE Establishment

HE Institution	Program	Accredited by
<b>Institut Teknologi Bandung (ITB)</b>	Chemical Engineering	ABET
	Civil Engineering	ABET
	Electrical Engineering	ABET
	Engineering Management	ABET
	Engineering Physics	ABET
	Environmental Engineering	ABET
	Industrial Engineering	ABET
	Informatics and Computer Science	ABET
	Metallurgical Engineering	JABEE
	Mining Engineering	ABET
	Ocean Engineering	ABET
Petroleum Engineering	ABET	
<b>Institut Pertanian Bogor (IPB)</b>	Agro-Industrial Technology	ABET
	Mechanical and Biosystem Engineering	JABEE
<b>Universitas Gadjah Mada (UGM)</b>	Chemical Engineering	IchemE
	Civil Engineering	ABET
	Geodetic Engineering	ABET
<b>Universitas Indonesia (UI)</b>	Chemical Engineering	JABEE
<b>Bina Nusantara University (Binus)</b>	Civil Engineering	ABET
	Industrial Engineering	ABET
<b>Universitas Islam Indonesia (UII)</b>	Civil Engineering	JABEE
	Environmental Engineering	ABET



# IABEE Organizational Chart



**Criteria Committee** establishes and approves the Accreditation Criteria which form the basis for the program evaluation.

In charge of conducting periodic reviews and revisions of the Accreditation Criteria

**Evaluation & Accreditation Committee** develops RPEA & RPARC, evaluation instruments, Online Evaluation System

It also plans, conducts and monitors the program accreditation processes, and recommends accreditation status to the Accreditation Council.

**Accreditation Council** validates the results of accreditation and ensures that the right process has been carried out

**Appeal Board** appointed to hear appeals; judges whether an evaluation/accreditation decision was right or wrong, when the party affected by it thinks that it was wrong

# The Accreditation Criteria: Common Criteria



1

1. Autonomous Professional Profile as PEO
2. APP Publicity & Review System
3. Program Learning Outcomes

2

1. Curriculum & Syllabus
2. Faculty: quality, quantity, role in student learning
3. Students & Academic Atmosphere
4. Facility: adequacy, proper & safe operations
5. Institutional Responsibility

3

1. Effective Assessment of Learning Outcomes
2. Assurance of LO Attainment by Graduates

4

1. Continual Improvement based on LO Assessment
2. Maintenance & Access of Documents & Records

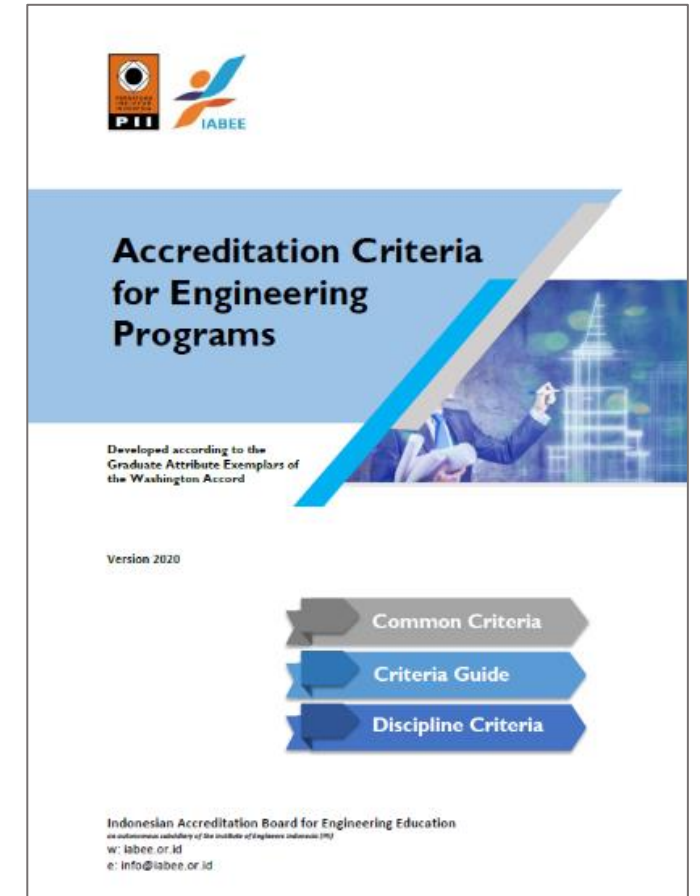
Common Criteria & Criteria Guide are available for download from <https://iabee.or.id/en/accreditation/accreditation-criteria/common-criteria/> and <https://iabee.or.id/en/accreditation/accreditation-criteria/criteria-guide/>

# The Accreditation Criteria: Discipline Criteria

## DISCIPLINE Criteria

Specific Learning Outcomes, Faculty, and/or Curriculum Requirements in ENGINEERING Disciplines:

 Agricultural & Biosystem	 Agroindustrial	 Chemical, Biochemical, Biomolecular	 Civil	 Earth & Energy
 Electrical, Computer, Communications, Telecommunications	 Environmental	 Engineering Physics	 Geodetic, Geomatic	 General
 Ocean	 Nuclear	 Mechanical	 Materials, Metallurgical	 Industrial



Discipline Criteria are available for download from <https://iabee.or.id/en/accreditation/accreditation-criteria/discipline-criteria/>

# The Accreditation Criteria: Discipline Criteria



Specific Learning Outcomes, Faculty, and/or Curriculum Requirements in COMPUTING Disciplines:

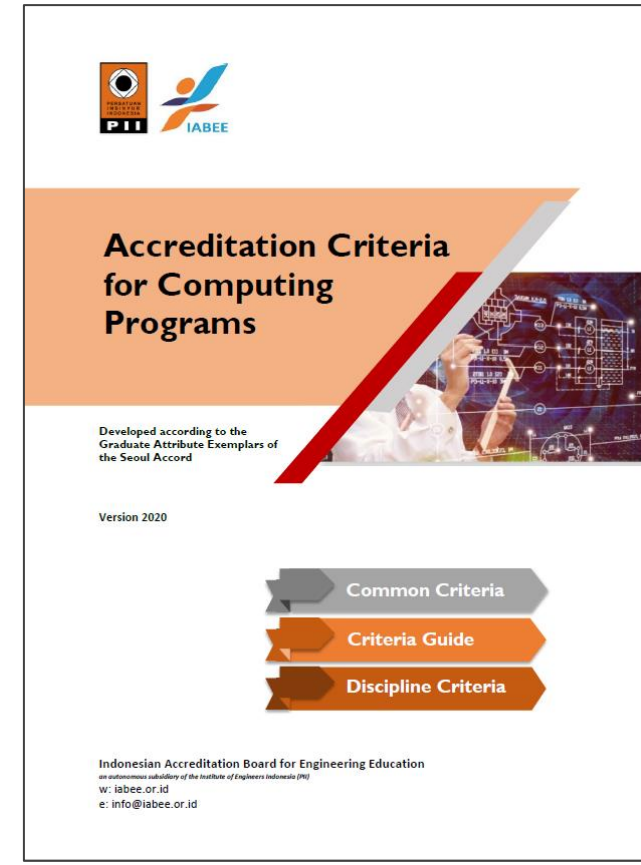
Computer Science/Informatics

Information System

Information Technology

Software Engineering

Computer System



Discipline Criteria are available for download from <https://iabee.or.id/en/accreditation/accreditation-criteria/discipline-criteria/>

# IABEE Learning Outcomes Criterion *vis-à-vis*

## Washington Accord Graduate Attributes

- (a) an ability **to apply knowledge** of mathematics, natural and/or materials sciences, information technology and engineering **to acquire comprehensive understanding** of engineering principles
- (b) an ability **to design components, systems, and/or processes** to meet desired needs within realistic constraints in such aspects as law, economic, environment, social, politics, health and safety, sustainability as well as to recognize and/or utilize the potential of local and national resources with global perspective
- (c) an ability **to design and conduct laboratory and/or field experiments** as well as **to analyze and interpret data** to strengthen the engineering judgment
- (d) an ability **to identify, formulate, analyze, and solve complex** engineering problems
- (e) an ability **to apply methods, skills and modern engineering tools** necessary for engineering practices
- (f) an ability **to communicate effectively** in oral and written manners
- (g) an ability **to plan, accomplish, and evaluate tasks** under given constraints
- (h) an ability **to work in** multidisciplinary and multicultural **team**
- (i) an ability **to be accountable and responsible to the society and adhere to professional ethics** in solving engineering problems
- (j) an ability **to understand the need for life-long learning**, including access to the relevant knowledge of contemporary issues

1. Engineering Knowledge **a**
2. Problem Analysis **d**
3. Design/development of Solutions **b**
4. Investigation **c**
5. Modern Tool Usage **e**
6. The Engineer and Society **i**
7. Environment and Sustainability **b**
8. Ethics **i**
9. Individual and Team Work **h**
10. Communication **f**
11. Project Management and Finance **g**
12. Life-long Learning **j**

# IABEE Learning Outcomes Criterion *vis-à-vis* Seoul Accord Graduate Attributes

Program shall establish its expected LOs which consist of the following abilities to be acquired by the graduate:

- (a) **Analyze a complex computing problem** and to **apply principles of computing** and other relevant disciplines to identify solutions,
- (b) **Design, implement, and evaluate** a computing-based solution to meet a given set of computing requirements in the context of the program's discipline,
- (c) **Communicate** effectively in a variety of professional contexts,
- (d) **Recognize professional responsibilities** and make **informed judgments** in computing practice based on legal and ethical principles,
- (e) **Function effectively** as a member or leader of a team engaged in activities appropriate to the program's discipline, and

(f) Discipline-specific ability:

- **Computer Science/Informatics:** apply computer science theory and software development fundamentals to produce computing-based solutions
- **Information System:** support the delivery, use, and management of information systems within an information systems environment
- **Information Technology:** identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems
- **Software Engineering:** develop a software system to meet desired needs within realistic constraints and resources
- **Computer System:** design computers, computer-based systems, and networks that include both hardware and software as well as their integration

	Dimension	Relevant IABEE Criteria
1	Academic Education	4-year program; min. 144 credits
2	Knowledge for Solving Computing Problems	(a), (f)
3	Problem Analysis	(a), (f)
4	Design/Dev. of Solutions	(b), (f)
5	Modern Tools Usage	(b)
6	Indiv. & Team Work	(e)
7	Communication	(c)
8	Comp. Professionalism and Society	(d)
9	Ethics	(d)
10	Life-long Learning	(d)



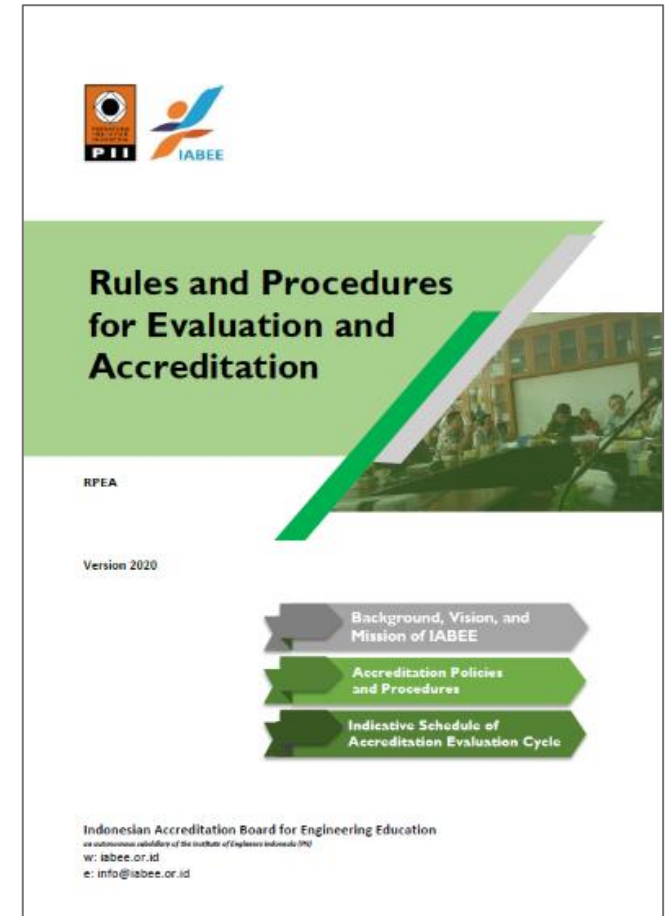
# Accreditation Rules and Procedures

## RPEA

### Rules and Procedures for Evaluation and Accreditation

- ❖ **Background, Vision, & Mission**
- ❖ **Accreditation Policies & Procedures**
  - Confidentiality and Conflict of Interest
  - Scope of Accreditation
  - Eligibility for Evaluation
  - Accreditation Criteria
  - Program Evaluation Process
  - Accreditation Decisions
  - Public Disclosure
  - Feedback and Appeals
  - Policies on Conducting On-Site Visit
- ❖ **Indicative Schedule for Accreditation Evaluation Cycle**

To be accredited, a program must satisfy the Accreditation Criteria & RPEA



RPEA document available for download from

<https://iabee.or.id/en/accreditation/rules-and-policies-for-evaluation-and-accreditation/>

# Program Evaluation Procedures

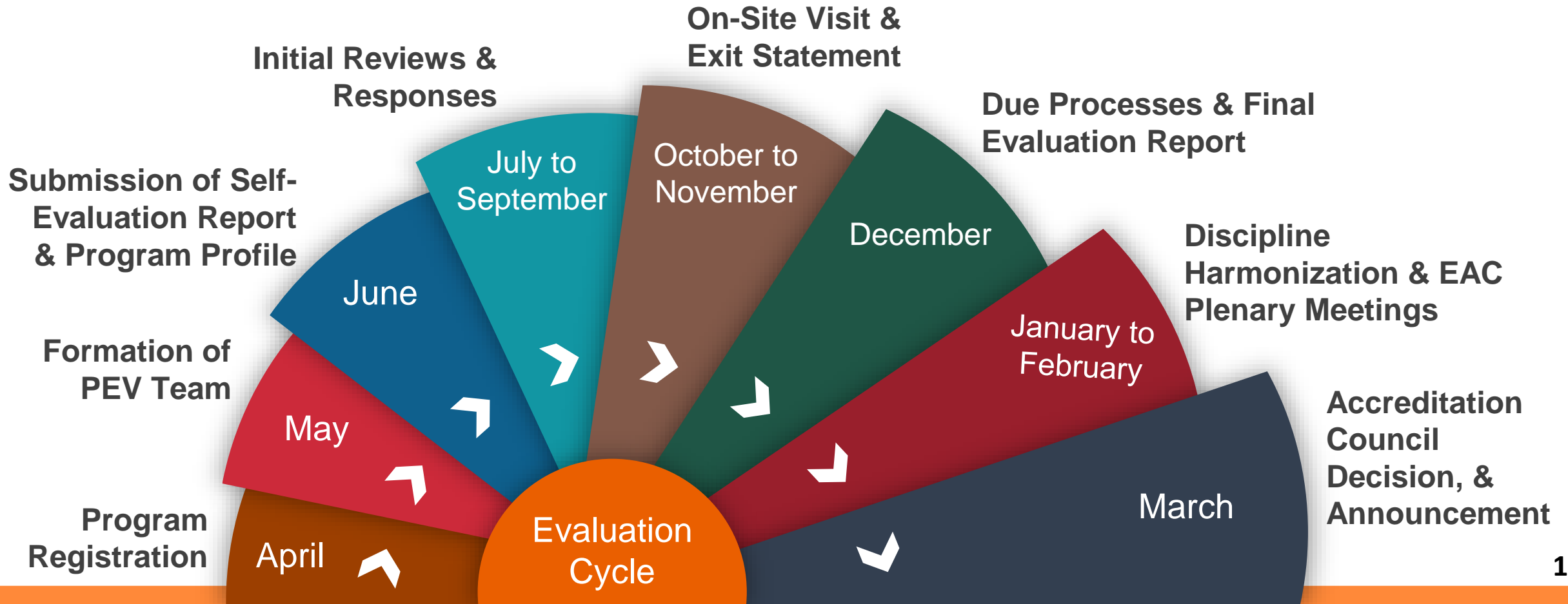


Evaluation for PA

Evaluation/re-evaluation for GA

Interim Evaluation with Visit

Interim Evaluation without Visit





# Program Evaluators

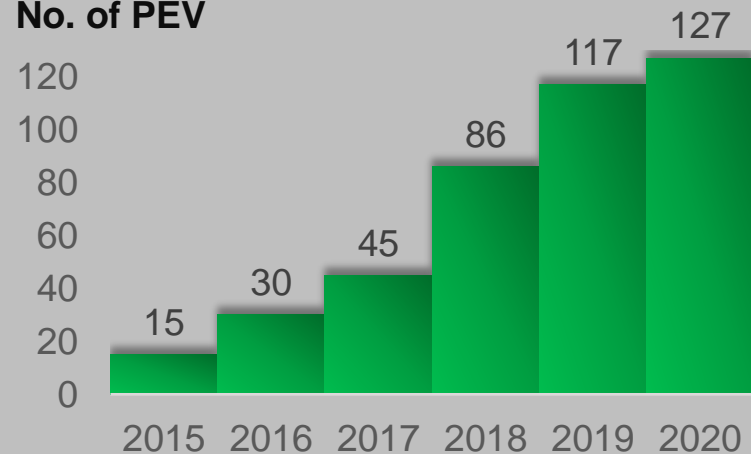
- Currently 127 PEVs in total, 80% academic and 20% industry
- Overseas training & observation (2015-2017):
  - 44 PEVs to JABEE,
  - 16 to ABET,
  - 3 observed CAST, and
  - 3 visited EA
- Since 2017, 5 domestic PEV trainings have been conducted
- More PEVs to be recruited and trained (midterm target: 200)

## IABEE PEV Training

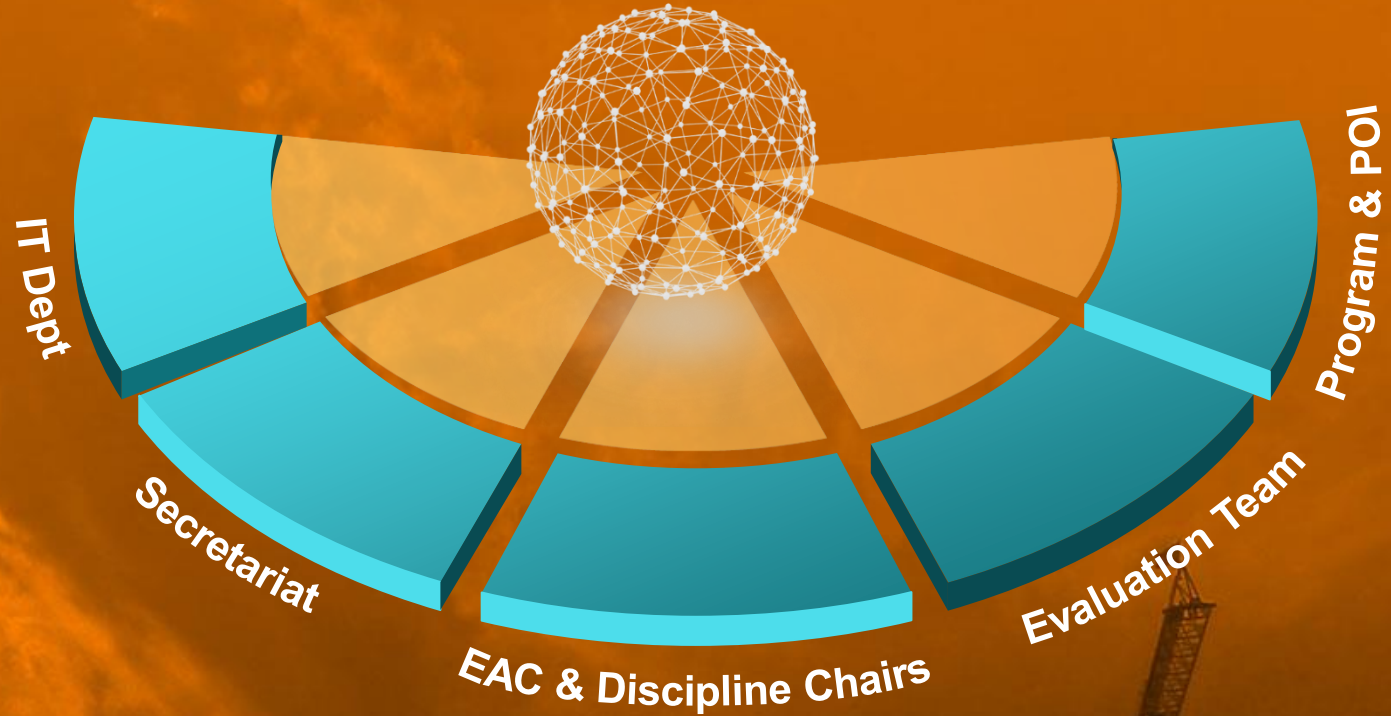
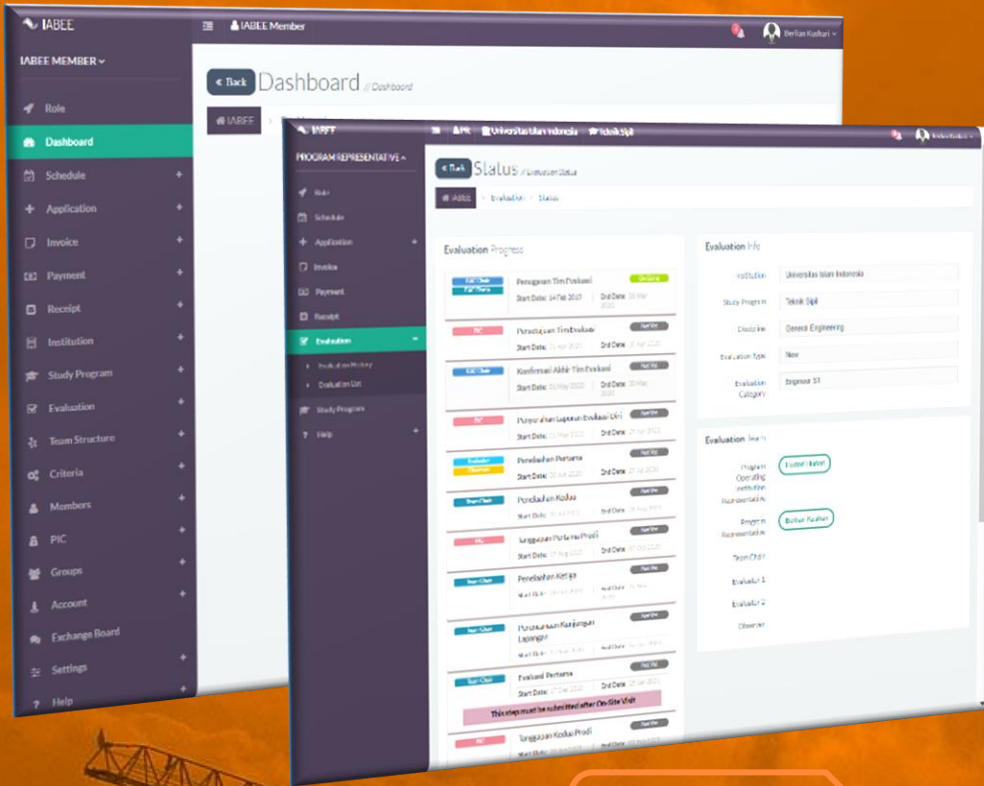


<https://training.iabee.or.id/>

No. of PEV







### IT Dept

- System development & maintenance

### Secretariat

- Preparation of evaluation cycle
- User accounts & data management
- Invoice & payment
- Process monitoring

### EAC & DCs

- PEV Team formation
- Progress monitoring
- Decision recommendation

### PEV Team

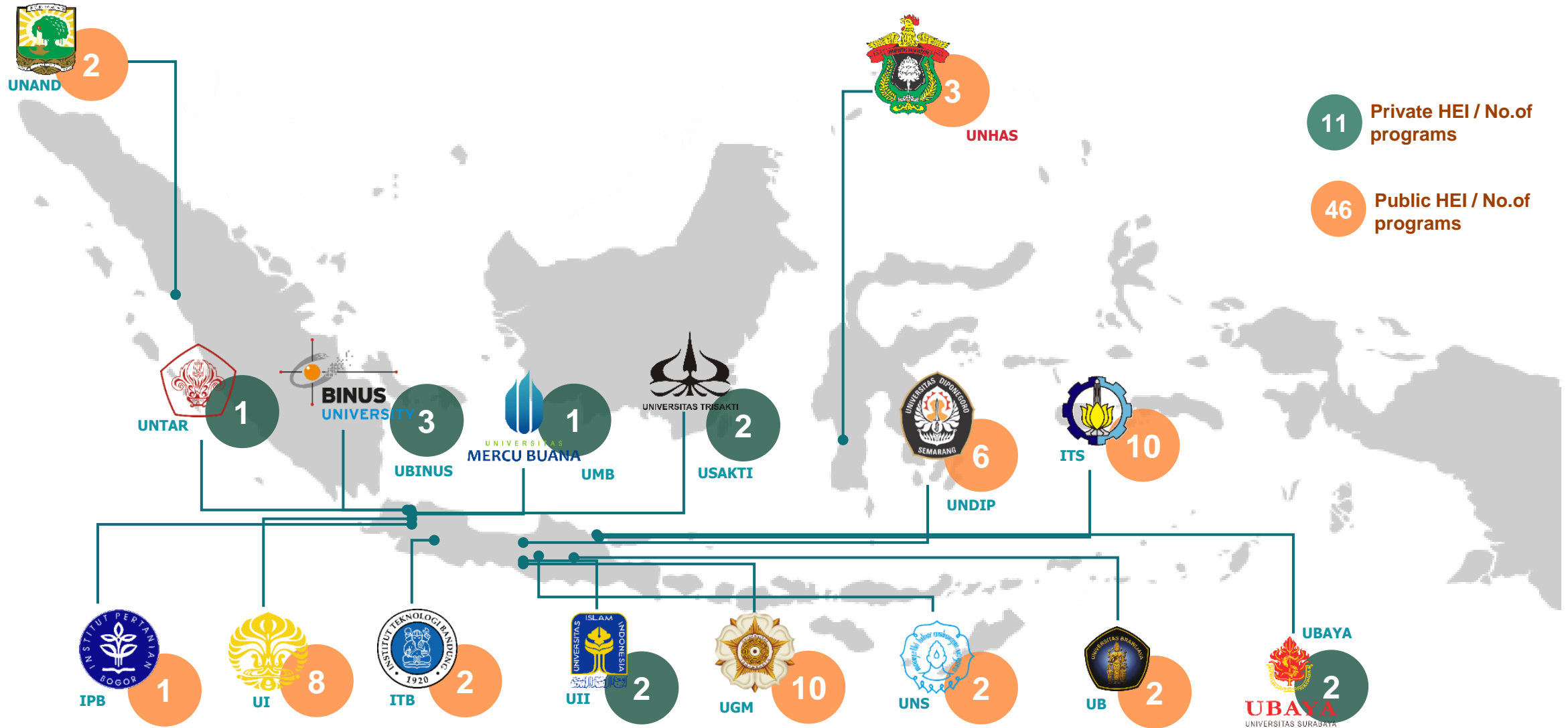
- Program evaluation
- On-site visit planning
- Reports submission
- Communication with Program

### Program & POI

- Registration
- PP & SER submission
- Progress monitoring
- Communication with Evaluation Team
- Receive results

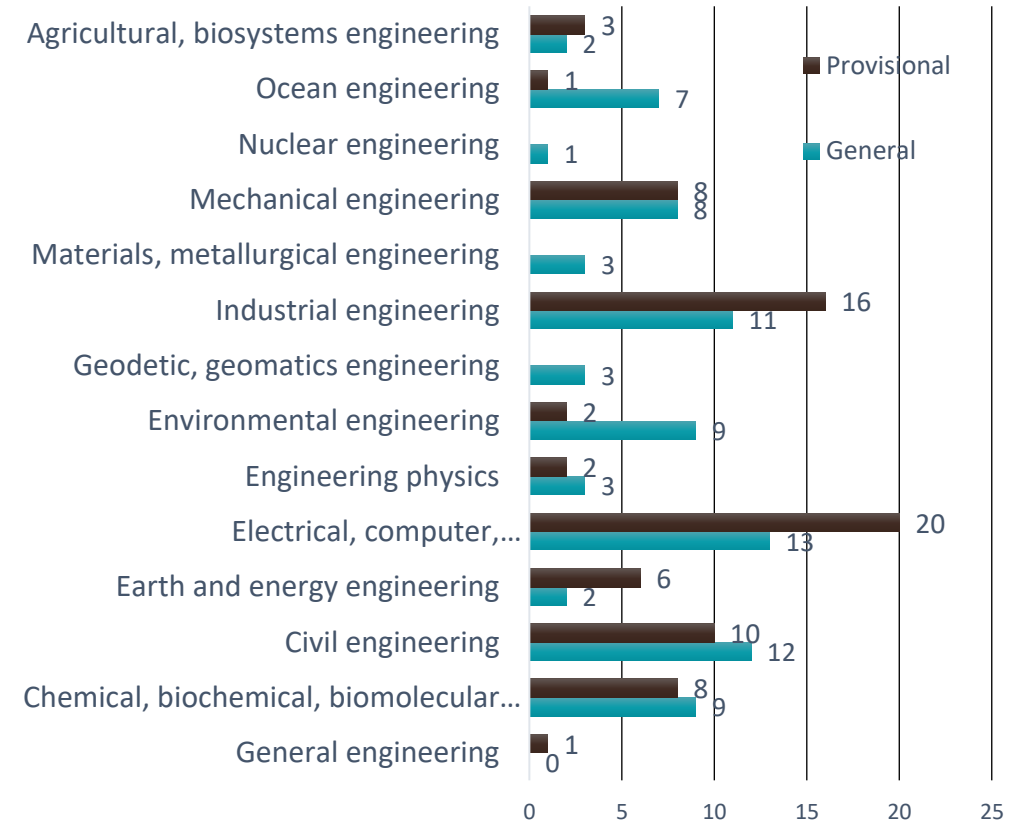
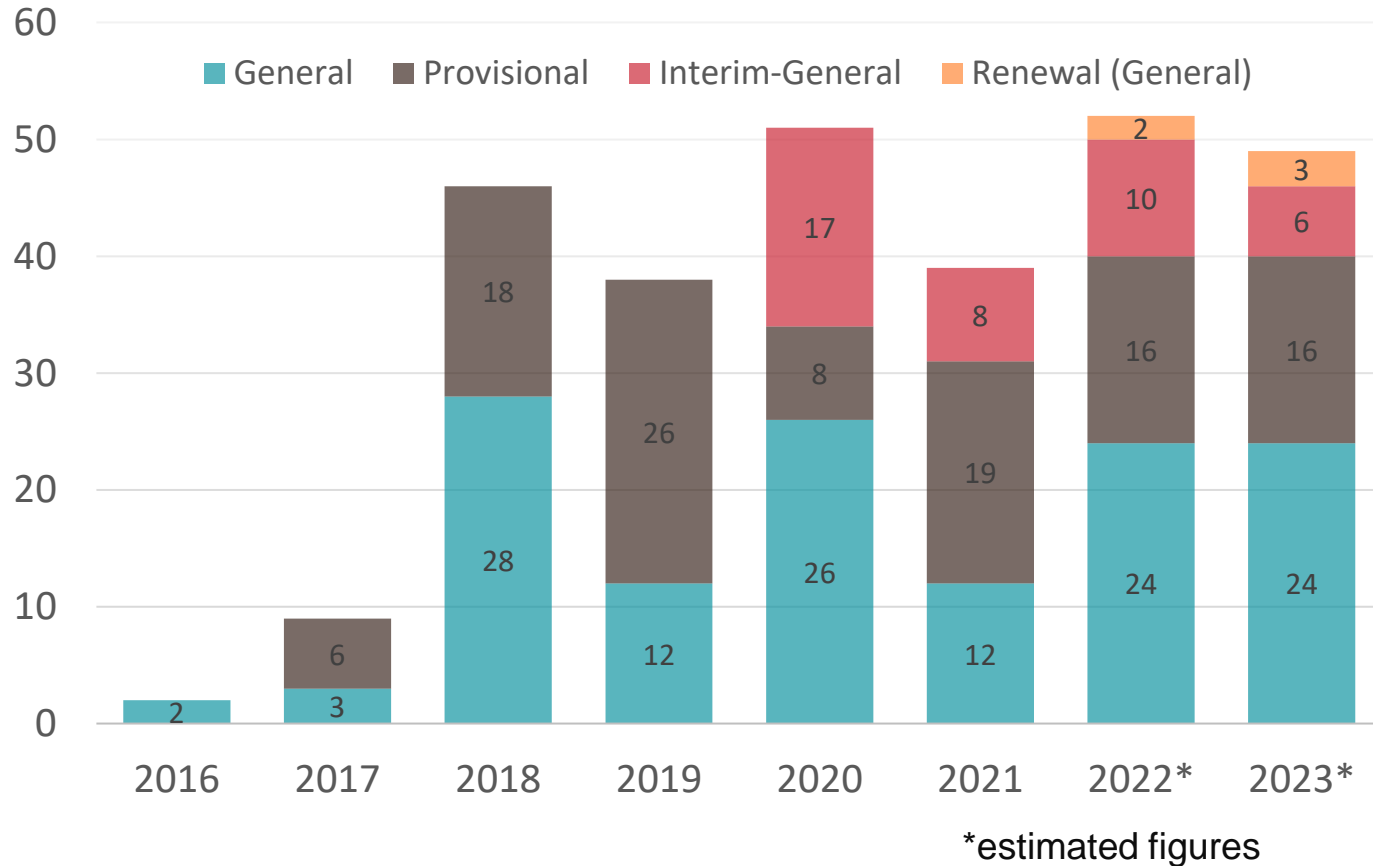
# Accredited Programs

\* Engineering Programs only & not including Provisional Accreditation



11 Private HEI / No.of programs  
46 Public HEI / No.of programs

# Request for Accreditation



Requests by Eng. fields, up to 2021

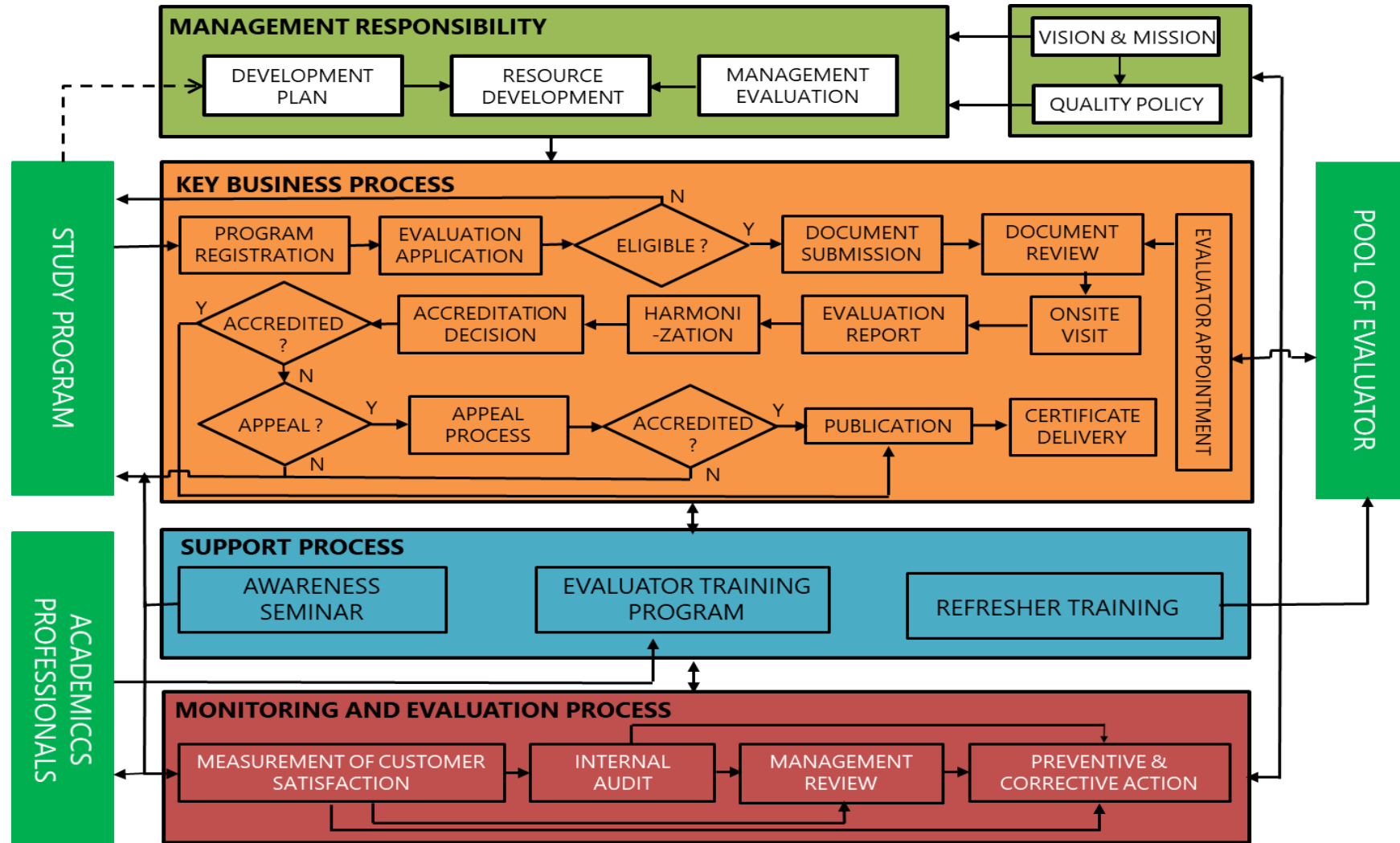


# IABEE Quality Management System

## (ISO 9001:2015)

Level	Document
1	Quality Manual
2	16 Procedures
3	2 Work Instructions
4	32 Forms/Records

No.	Standard Operating Procedure
1	Document control
2	Record control
3	Internal Audit
4	Control of NC products
5	Corrective action
6	Preventive action
7	Management review
8	Measure customer satisfaction
9	Evaluator assignment
10	Document review
11	Onsite visit
12	Report of evaluation results
13	Harmonization
14	Accreditation decision
15	Dev't of Accreditation Criteria
16	PEV recruitment and training





Thank you