



The Role of Philippine Higher Education Institutions (HEIs) in Human Resource Development for Sustainable Agricultural Mechanization

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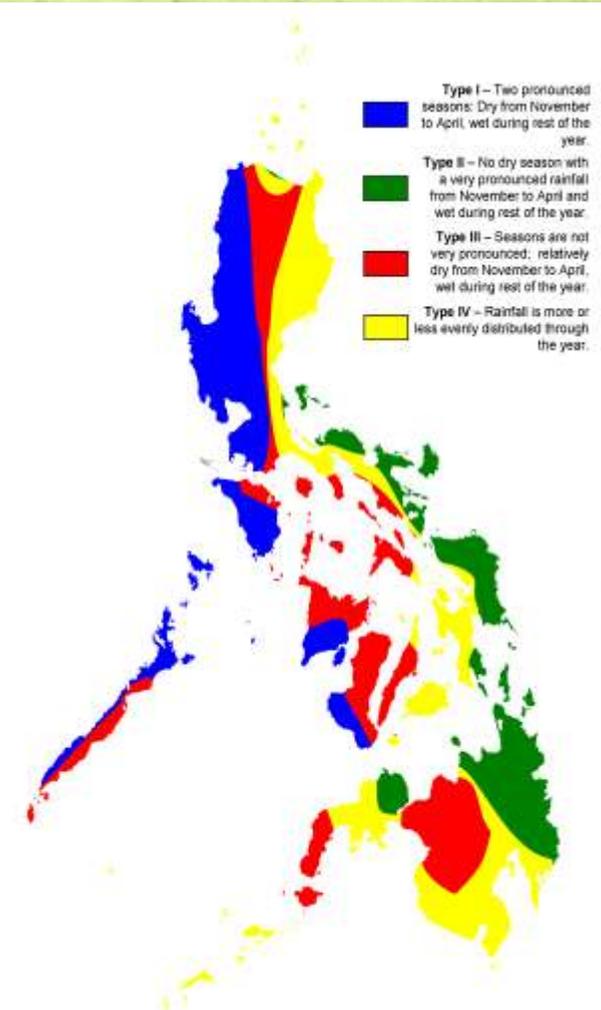
3rd Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific
3rd ASEAN Conference on Agricultural and Biosystems Engineering
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Outline

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2. Philippine Qualification Framework
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4. Degree Offerings
5. The Curriculum
6. Support Mechanism
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9. Conclusion
10. Recommendations

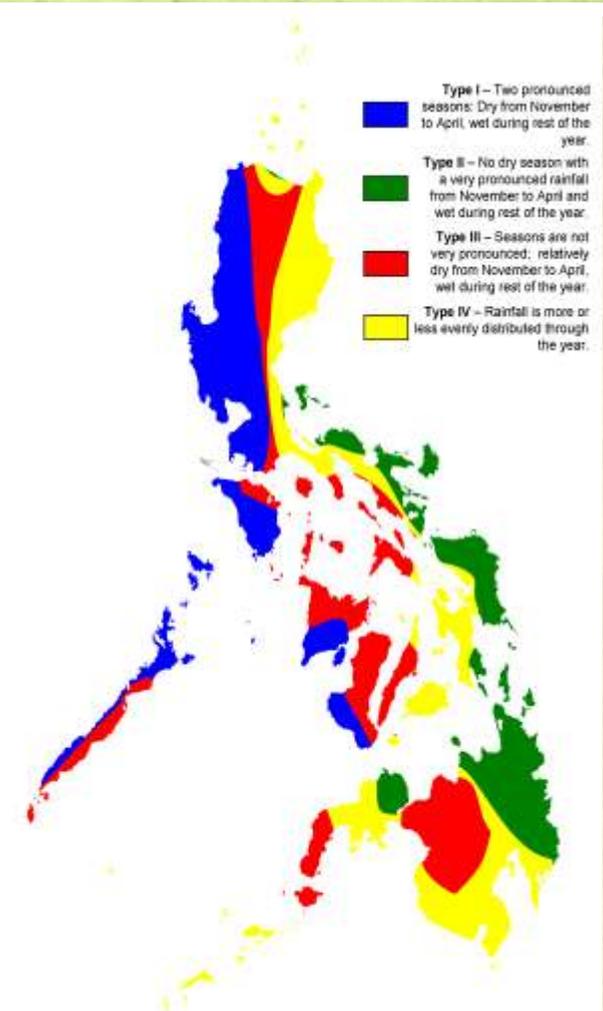
Country Background

Item	Description	Data
Geographical Location	Latitude : NL	4.7 ° N
	: SL	21.5 ° N
	Longitude: EL	117 ° E
	: WL	127 ° E
Meteorological conditions	Temperature	Min. 26.1 ° C Max. 28.4 ° C
	Annual Precipitation	2000 mm/year
Agricultural Conditions	Total Area	300,000,000 km ²
	Total Land Area	291,170,000 km ²
	Total Water Area	1,830,000 km ²
	Agricultural Land	9,671,000 km ²
	Arable Lands	4,936,000 km ²
	Permanent Cropland	4,225,000 km ²
	Agricultural Farms	4,820,000 farms (2002)

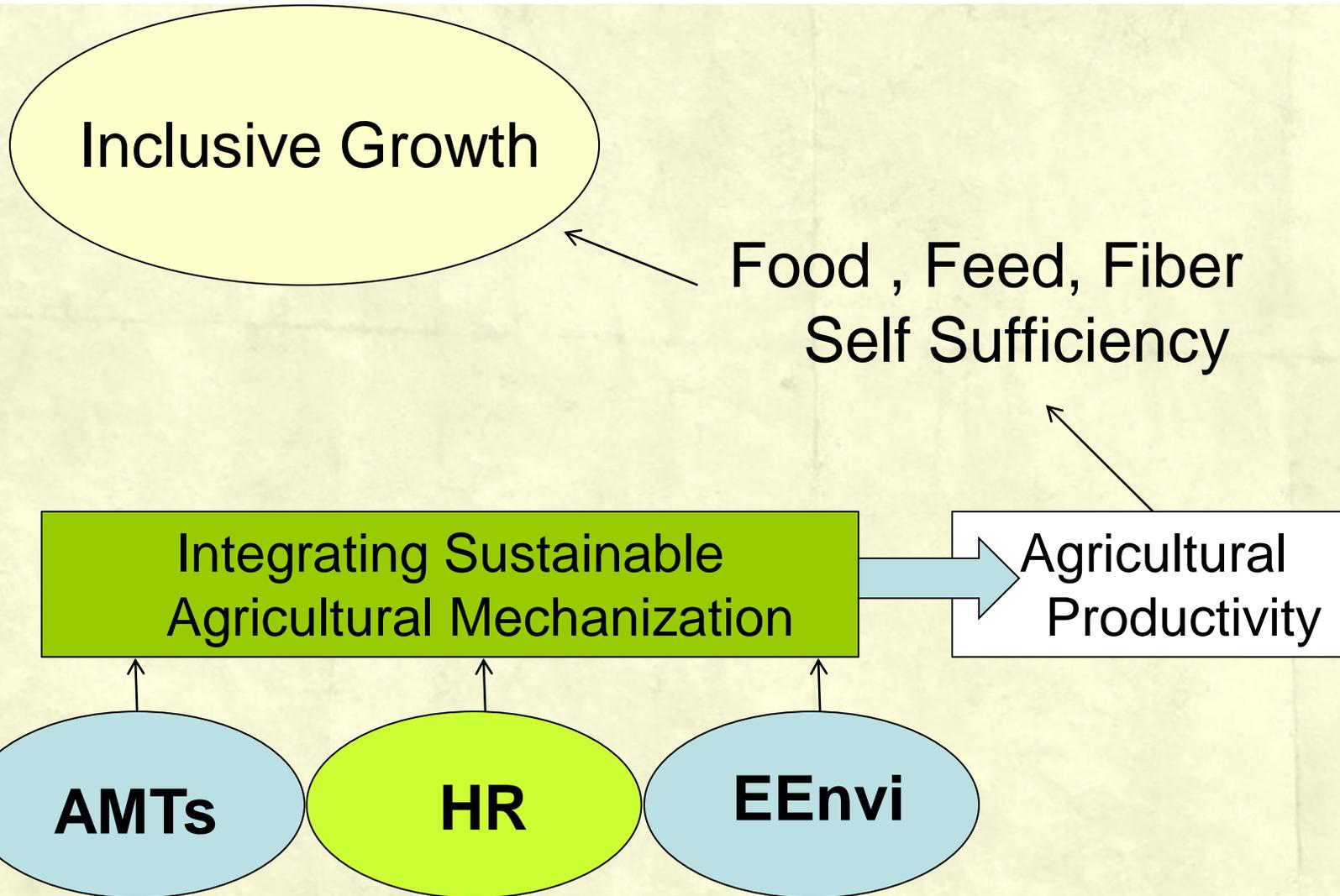


Country Background

Item	Description	Data
Agricultural Conditions	Staple foods	RICE: Production: 18.439 MT Farm gate Price: P17.33/kg
		CORN: Production: 7.377 MT Farm gate Price: P11.62/kg
	Other staples	Root Crops and Plantain
	Other major crops	Sugarcane, Coconut
	Top Export crops	Coconut Oil, Banana, Mango
Population and Employment	Total Population	100.00 million
	Agricultural Sector	86% of total population
	Total Employment	38.12 million
	Agricultural Labor	11.84 million
	Wage Rates	P 200-255 for corn & rice
Social Conditions	Official Language	English & Filipino
	National Language	Filipino
	Religion	Christians / Muslims
Economy (2013)	GNI at current prices	P 13,851 Billion
	GDP at current prices	P 11,584 Billion (10% in agriculture with 7.18% growth)
	GVA at current prices (agriculture and fishing)	P1,293 Billion
Mechanization Level (Quick Index)	For Rice	2.32 hp/ha
	For all crops	1.23 hp/ha



Introduction



The Philippine Qualification Framework

Philippine Qualifications Framework				
Level	DepEd	TESDA		CHED
L8				PhD
L7				MS
L6				BS
L5		NC5	Technical Vocational	
L4		NC4		
L3		NC3		
L2	G-12	NC2		
L1	G-10	NC1		

HEIs Offering AE/ABE Curriculum

		ISLAND GROUP	
Luzon	CAR	<u>Benguet</u> , <u>Kalinga</u>	2
	1 - Ilocos	<u>Ilocos Norte</u> , <u>Ilocos Sur</u> , <u>La Union</u>	3
	2 - Cagayan Valley	<u>Cagayan</u> , <u>Isabela</u> , <u>Nueva Vizcaya</u> ,	3
	3 - Central Luzon	<u>Bataan</u> , <u>Bulacan</u> , <u>Nueva Ecija</u> , <u>Pampanga</u> , <u>Tarlac</u> , <u>Zambales</u>	6
	4 -A- CALABARZON	<u>Cavite</u> , <u>Laguna (2)</u> , <u>Rizal</u>	4
	4 -B- MIMAROPA	<u>Oriental Mindoro</u> , <u>Palawan</u> , <u>Romblon</u>	3
	5 - Bicol	<u>Albay</u> , <u>Camarines Norte</u> , <u>Camarines Sur</u> , <u>Masbate</u>	4
		Subtotal	25

HEIs Offering AE/ABE Curriculum

		ISLAND GROUP	
Visayas	6 - Western Visayas	<u>Capiz</u> , <u>Iloilo</u> , <u>Negros Occidental</u>	3
	7 - Central Visayas	<u>Bohol</u>	1
	8 - Eastern Visayas	<u>Eastern Samar</u> , <u>Leyte</u> , <u>Northern Samar</u> , Western Samar	4
		Subtotal	8
Mindanao	9 - Zamboanga Peninsula	<u>Zamboanga del Norte</u> (2), <u>Zamboanga del Sur</u>	3
	10 - Northern Mindanao	<u>Bukidnon</u> , <u>Misamis Occidental</u> , <u>Misamis Oriental</u>	3
	11 - Davao Region	<u>Davao del Norte</u> , <u>Davao del Sur</u>	2
	12 - SOCCSKSARGEN	North <u>Cotabato</u> , <u>South Cotabato</u> ,	2
	13 - Caraga	<u>Agusan del Norte</u> , <u>Agusan del Sur</u> , <u>Surigao del Sur</u>	3
ARMM		0	
		Subtotal	13
		Total	46

The Curriculum

- BS Agricultural Engineering curriculum 5 year
- BS Agricultural and Biosystems Engineering 5 year Cu
- MS BS Agricultural Engineering 2 year Cur
- MS Agrometeorology 2 year Cur
- Phd Agricultural Engineering 3 year Cur
- Post Doctoral Fellowships 6 mos. or more

The Curriculum

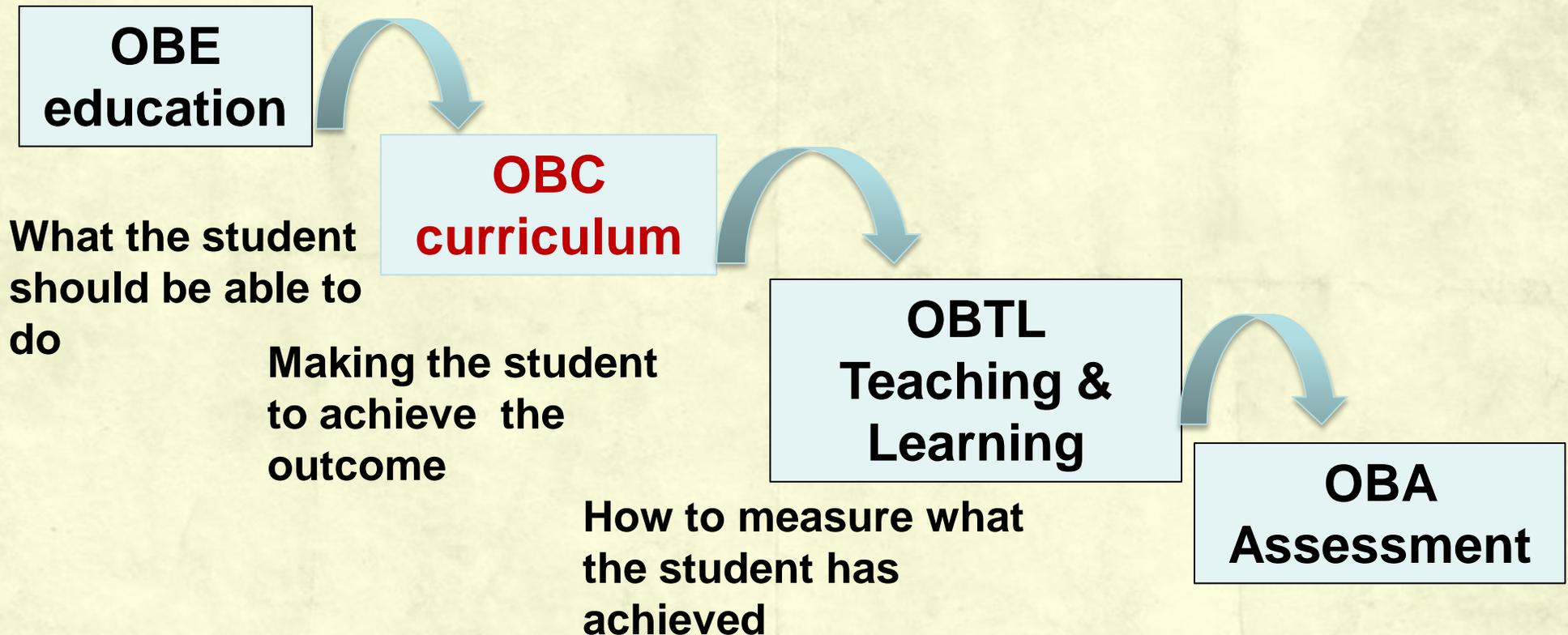
Streamlining of the BSAE/BSABE Curriculum to the K-12 and OBE Educational System

Responding to international accreditation and globalization

Changing the Curriculum from a 5year program to a four year program

Integrating TVET program to HEIs

The Outcomes Based Educational System



The Outcomes Based Educational System

A paradigm shift from traditional education system into OBE in national and international HEIs where there is greater focus on:

- ✓ program and course outcomes**
- ✓ student-centered teaching and learning activities**
- ✓ regular assessment and evaluation**
- ✓ continuous improvement**

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The Outcomes Based Educational System

International mutual agreements on educational qualification frameworks and mechanisms utilizing OBE in the academic programs:

accounting

computer science

engineering

information technology

maritime

medicine

nursing

The Outcomes Based Educational System

Washington Accord – 1989

For undergraduate engineering programs

Sydney Accord -2001

For engineering diploma/polytechnic programs

Dublin Accord – 2002

For engineering technician program

Seoul Accord – 2008

**For Professional Engineers in computing/IT
and related fields**

Support Mechanisms

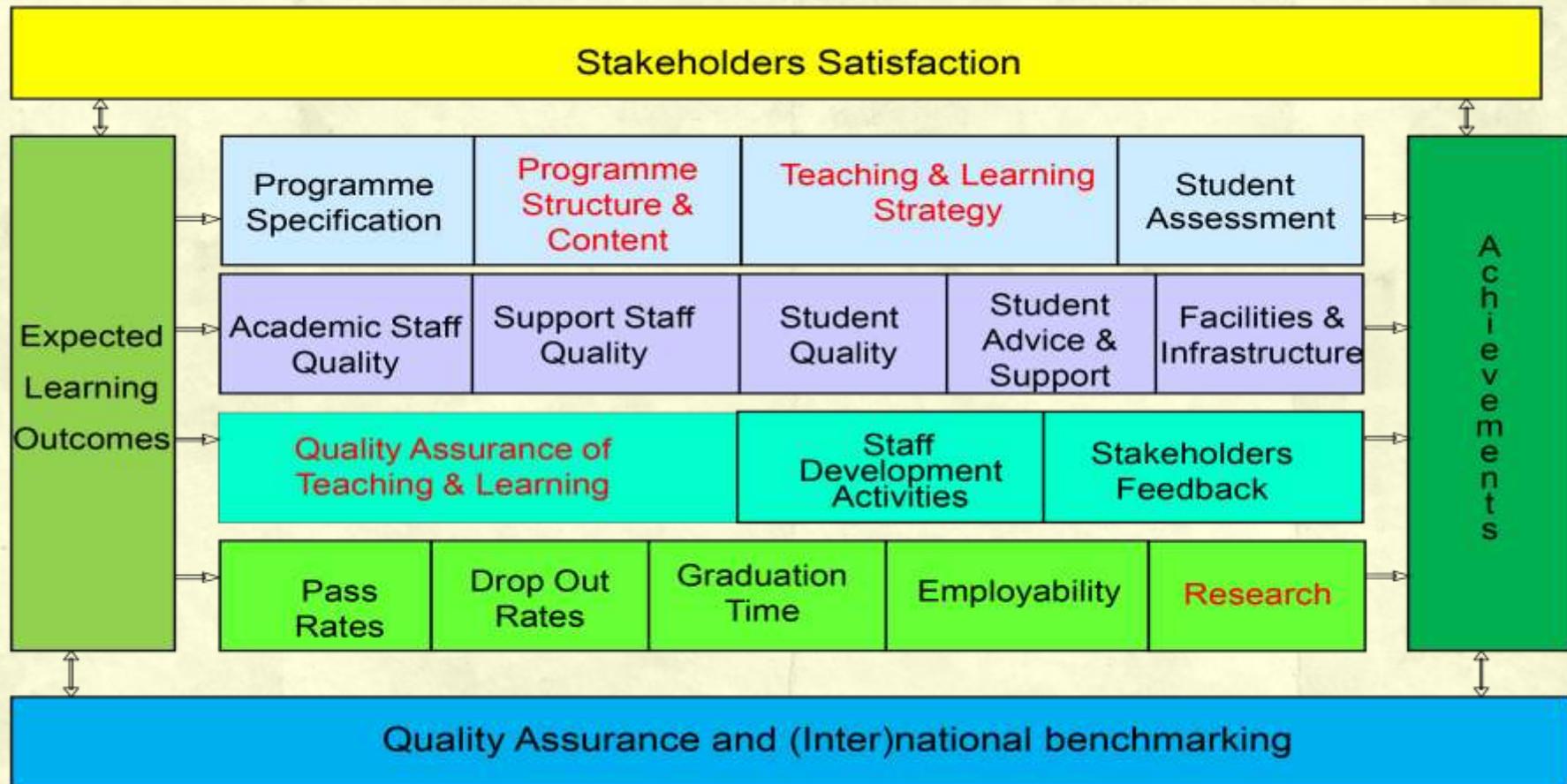


ASEAN
University
Network



FIRST AUN QA
ACCREDITED
BSABE Program

AUN-QA Criteria



Distinction-IAE

- **Center of Excellence in Agricultural Engineering – CHED**
- **Top Performing School in Agricultural Engineering - PRC**
- **National Center for Agricultural Engineering Research, Development and Extension – PCARRD and BAR**
- **8th Consortium Member - ERDT DOST**
- **Outstanding Research TEAM – UPLB-AMDP-IAE- 2013**
- **AUN –QA Accredited as of December 2014**
- **1st TESDA Accredited Service Provider for NC II –Rice Machinery Operation**
- **Elevation of AMDP to BIOMECH (Center for Agri-Fisheries & Biosystems Mechanization as of October 29, 2015**

RDE Component

Agricultural Mechanization/Agricultural and Biosystems (AM/ABE) Research and Development and Extension (RDE) in the Philippines

RDE Component

Agricultural Mechanization/Agricultural and Biosystems (AM/ABE) Research and Development and Extension (RDE) in the Philippines

- *The Agricultural and Fisheries Mechanization Law of 2013 (AFMech Law and the AFMech Research, Development and Extension Network (AFMechRDEN)*

RDE Component

AFMech Law of 2013

- Formulation of the National Agricultural and Fisheries Mechanization Plan (NAFMechP).
 - ❑ Standards and Regulations Component;
 - ❑ Support Services and Institutional Development Component;
 - ❑ Research, Development and Extension Component;**
 - ❑ Local Assembling and Manufacture of Agri-fishery Component; and
 - ❑ Human Resource Development Component.

RDE Component

AFMech Law of 2013

- Research, Development and Extension Component
 - **Unified National Research and Development (R&D) and Extension Agenda** - DA-PHiMech as lead agency in consultation with the members of the Agricultural and Fishery Mechanization RDE Network (AFMechRDEN).

RDE Component

AFMech Law of 2013

- Research, Development and Extension Component
 - AFMechRDEN - is composed of research and educational institutions, LGUs, nongovernment organizations and the well-established associations of agricultural and fisheries machinery assemblers, manufacturers and distributors, agricultural engineers, farmers and fisherfolks

RDE Component

AFMech Law of 2013

- Research, Development and Extension Component
 - AFMechRDEN - will integrate all agricultural and fisheries mechanization RDE programs and projects of all stakeholders including national government agencies, local government units (LGUs), and SUCs

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- Research, Development and Extension Component
 - AFMechRDEN - will integrate all agricultural and fisheries mechanization RDE programs and projects of all stakeholders including national government agencies, local government units (LGUs), and SUCs

RDE Component

Vision of AFMechRDE - A unified and strong Agricultural and Fisheries Mechanization Research, Development and Extension for sustainable and globally competitive Philippine agriculture.”

RDE Component

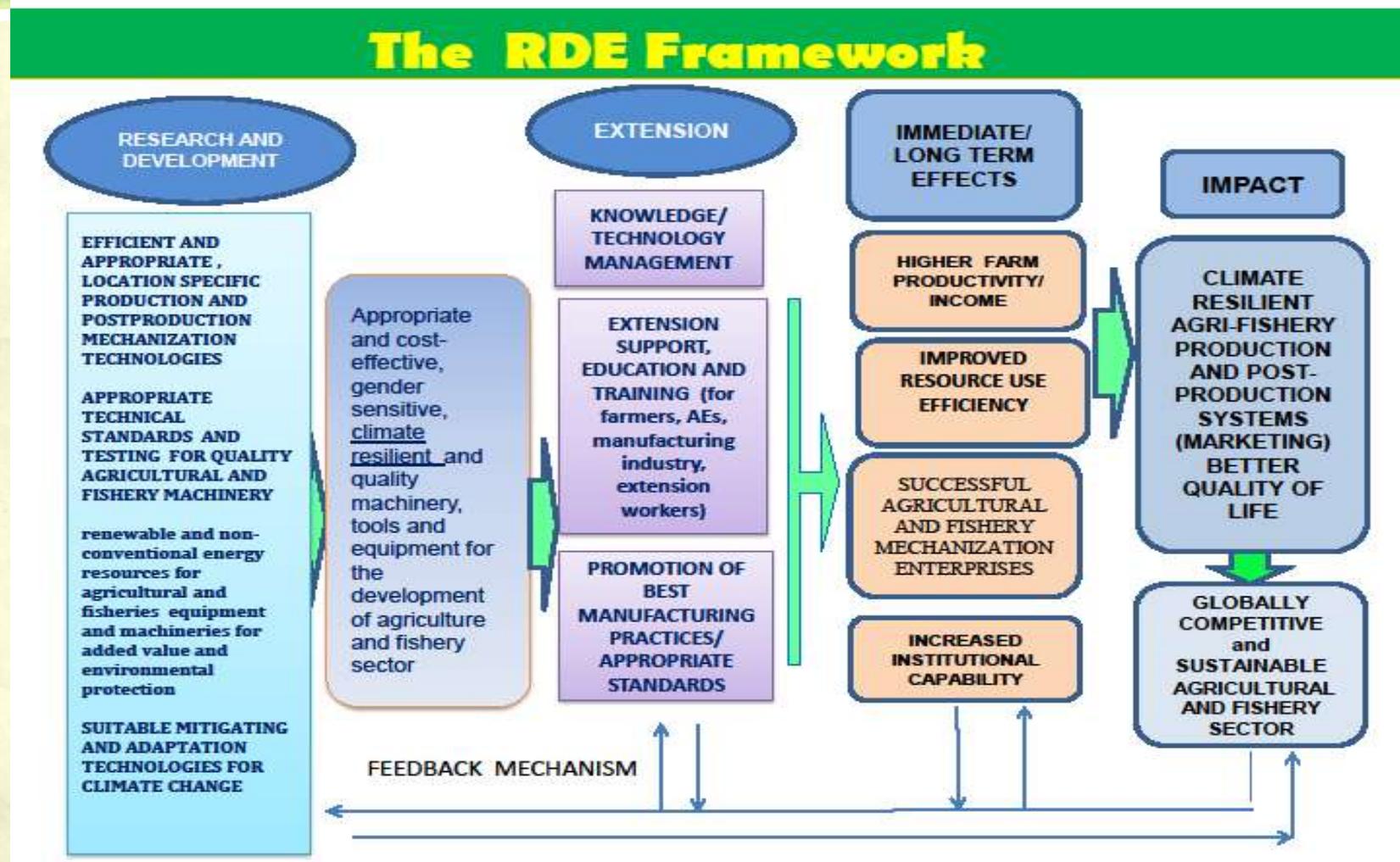


Figure 1. AFMech RDE Framework, 2015

RDE Component

Article III of AFMech Law

SEC. 8 Agri-fisheries Mechanization RDE Network. – An Agricultural and Fisheries Mechanization RDE Network is hereby organized and composed of research and educational institutions, LGUs, nongovernment organizations' and the recognized and well-established associations of agricultural and fisheries machinery assemblers, manufacturers and distributors, agricultural engineers, farmers and fisherfolk.

Moreover, the Agricultural Mechanization Development Program of the University of the Philippines, Los Baños (UPLB), which is part of the Network, shall be strengthened and institutionalized to lead and coordinate the agricultural and fishery mechanization RDE program of all academic institutions in the country.



RDE Component

Article III of AFMech Law – Role of AMDP-UPLB

now BIOMECH (as per 1312th UP Board of Regents on Oct 29, 2015)

1. To participate in the formulation of the National Agricultural and Fisheries Mechanization Plan (**NAFMP**) (**Article 2, Rule 5.1**).
2. To participate in the AFMechRDE Network and **to lead and coordinate** the agricultural and fishery mechanization **RDE program of all academic institutions in the country** (**Article 3 Sec 8 and Rule 8.3**).
3. To participate in the formulation of a unified National Agricultural and Fisheries Mechanization Research and Development and Extension (**NAFMechRDE**) **Agenda** (**Article 3, Sec. 7, Rule 7.1**).

RDE Component

Article III of AFMech Law – Role of AMDP-UPLB

now BIOMECH (as per 1312th UP Board of Regents on Oct 29, 2015)

4. The UPLB-AMDP shall be part of the **Agri-fisheries Mechanization and Engineering Resource Network**. This network shall be linked to other existing information and database networks of the DA, the Agricultural Machinery Information Network of the Department of Science and Technology (DOST), the UPLB-AMDP and other concerned government agencies (**Article 3, Section 10 and Rule 10.1, 10.3, 10.4 and 10.5**).
5. **To participate** in the national project on **contiguous farming** which shall be spearheaded DA together with DAR and other agencies concerned, to increase land, labor and crop productivity utilizing agricultural mechanization technologies (**Article 9, Rule 34.1**).

RDE Component

Table 2. Summary of the Activities, AFMechRDEN, 2014-2015

DATE	ACTIVITY/VENUE	SPONSOR
May 29-30, 2014	National Workshop on Higher Education Institutions' (HEIs) Agri-Fisheries Mechanization Research, Development and Extension (RDE) Programs and Agricultural Engineering Education Competitiveness Road Maps/ UPLB-AMDP-IAE, CEAT	UPLB-AMDP/BIOMECH, PRC-BOAE
June 10,2014	Luzon-wide Consultation Workshop for the RDE Agenda Formulation & orientation on RA 10601/PHilMech, Muñoz, Nueva Ecija.	DA-PHilMech
July 10, 2014	1 st Organizational Meeting of the AFMechRDEN to validate the RDE framework, final draft of the network's guidelines & overview on membership,/ PHilMech, Muñoz, Nueva Ecija.	DA-PHilMech
August 28,2014	VISAYAS-wide Consultation Workshop in the RDE Agenda Formulation & orientation on RA 10601/Cebu	DA-PHilMech

RDE Component

Table 2. continuation

DATE	ACTIVITY/VENUE	SPONSOR
October 8, 2014	Mindanao-wide Consultation Workshop in the RDE Agenda Formulation & orientation on RA 10601 /Davao	DA-PHilMech
November 13-14, 2014	National Fisheries RDE Agenda Formulation/Muñoz, Nueva Ecija	BFAR and DA-PHilMech
April 7, 2015	Harmonization Workshop of HEIs & Research and Development Institutions (RDIs) RDE Agenda/PHilMech, Muñoz, Nueva Ecija	DA-PHilMech
May & June 2015 (2 meetings)	Drafting of Questionnaires for Profiling of RDIs and HEIs (prepared by UPLB-AMDP together with PHilMech) that will be used in the AFMech Engineering Resource Network	PCAARRD
July 2,2015	Pre-Test of the Questionnaires for (HEIs,RDIs and DA-Regional Field Offices (RFOs))	DA-PHilMech
July 14,2015	2 nd Organizational Meeting of the National AFMechRDEN / PHilMech, Muñoz, Nueva Ecija.	DA-PHilMech

RDE Component

Table 2. continuation

DATE	ACTIVITY/VENUE	SPONSOR
July 21-22, 2015	National Consultative Workshop on Aquaculture Engineering and Aquaculture-Fisheries Research Development and Extension (RDE) Agenda for the AFMechRDEN	DA-PCAF, UPLB-AMDP/BIOMECH, PRC-BOAE
November 25-27, 2015	National Consultative Workshop on the Formulation of Agricultural and Fisheries Mechanization Research, Development and Extension Agenda for Livestock and Poultry	UPLB-AMDP/BIOMECH, PRC-BOAE
September – November 2015	Preparation of the NAFMechP per region which include the AFMechRDE agenda/Respective Regions	DA-PCAF, RFOs, DA-BAFE

Challenges of AM/ABE & Recommendations

Challenges	Recommendations
Fast-tracking the conversion of HEIs from AE into Agricultural and Biosystems Engineering	Active and continued advocacy, assist other HEIs to attain this goal
Aligning BSABE with international standards	
Integration of TVET program to HEIs	CHED institutional support Assuring the implementing mechanism that would not affect the role of HEI in producing professionals in AE/ABE
Strengthen capabilities of HEIs to produce world-class human resource	Strong government support

Challenges of AM/ABE & Recommendations

Challenges	Recommendations
Operationalization of AFMechRDEN	Formalize the implementing mechanisms with corresponding budget
Implementing technology transfer mechanisms to realize the benefits of RDE activities	Technology transfer mechanisms should include institutional and support services for sustainability

Conclusion

AEC implementation/integration

- Aligning the educational system with international standards will allow free flow of goods and services- (agricultural engineers and technicians)

Successful implementation of the AFMech Law 2013 will result to sustainable RDE in agricultural mechanization

End of presentation.
Maraming Salamat po! 😊