



# Climate Change Vulnerability, Impact and Adaptation Assessment

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## 1. Introduction and Objective

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Climate change impacts many areas of society, industry and the environment. Climate impact and vulnerability assessments are used to identify the nature of its impact and those systems that are particularly vulnerable. Vulnerability to climate change describes the degree to which a system – an ecosystem, an economic system or a social system – is endangered by climate changes. Knowledge of vulnerability is an important prerequisite for tackling the impacts of climate change: it is necessary for assessing the need and urgency of adaptation measures, planning actions and providing the resources needed. Vulnerability and climate impact assessments are therefore important prerequisites for the development of adaptation strategies: they identify which regions or sectors are particularly affected by climate change and where there is a particular need to adapt.

Vulnerability and climate impact assessments enable the science-based identification of vulnerability or degree of threat due to climate change. The aim is to recognise the need for action and prioritise options for action. However, prioritisation is usually not easy. First, scientists cannot solely perform the number of normative steps for vulnerability and climate impact assessments. Second, there are also other aspects and processes besides the vulnerability of a system to climate change; some of these decision makers may consider more important, more urgent or more certain, and they may ultimately influence adaptation actions.

Providing training for policy makers on the importance of climate change vulnerability, impact and adaptation assessment in developing strategies for climate resilience development is required. This will provide the policy makers with knowledge how climate change will influence development and how climate change vulnerability, impact and adaptation assessment is used to design policies and measures to minimize and avoid worse impact of climate change and the important of sectoral coordination in implementing adaptation measures and avoiding maladaptation. Thus a training workshop on “Climate Change Vulnerability, Impact and Adaptation Assessment”, was organized by DCC in cooperation with Royal University of Agriculture, with financial support from the Cambodia Climate Change Alliance (CCCA) on 03-05 April 2018 at Cambodianna Hotel, Phnom Penh Capital City.

The objective of the training was to provide technical capacity strengthening on climate change vulnerability, impact and adaptation assessment, the use the approach in developing climate resilience development strategies, adaptation measures and the contribution to adaptation elements towards preparing Third National Communication.

## 2. Summary of the Training

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The three-day training workshop focus on the meaning of climate change for the Cambodia; methods and approaches for assessing climate change vulnerability; applying the approaches for vulnerability assessment; understanding climate change scenarios and impact assessment; and the use of the results of the assessment in developing climate change responses and climate proofing.

It was participated by Climate Change Technical Working Group (CCTWG) of the National Council for Sustainable Development (NCSD) composed of relevant ministries/agencies, academia and students, totally 52 participants, including 16 women.

The training setting was plenary and group discussion starting with the introductory remarks from the GSSD and RUA representatives. Then the trainer, Dr. Rizaldi Boer, Executive Director Center for Climate Risk and Opportunity Management, Bogor Agricultural University, led throughout sessions.

Prioritized sectors were identified to be included in the TNC: agricultural sector, health, water resources, forest, settlement, education and infrastructure. Also, the sub-sector to be included: agricultural sector (Fruit free, Rice, Agro-industry, Cassava, Fisheries, livestock, land use, post-harvest, and commercial crop); Health (disease and Wash); water resource, coastal, forest, settlement, education, and infrastructure.

The next training shall be made in order to build additional capacity in climate change which mainly focus on climate model, analyst excel fact sheet, and advance of V&A assessment. This will contribute to the third national communication report which is the further step that have to care about

### 3. Opening Session

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**Mr. KIM Soben** expressed his great felling “it is a great for me today, to be with you and to note that MoE in collaboration with Royal University of Agriculture has the honor to jointly organize and host the first training workshop on Climate Change Vulnerability, Impact and Adaptation Assessment. On behalf of the Royal University of Agriculture (RUA), I would like to warmly welcome all participants, who kindly accepted the invitation to participate in this important meeting. I also would like to take this occasion to extend my sincere thanks to MoE in collaboration with RUA to organize this training workshop”. Finally, he wished all participants an enjoyable and meaningful stay and the workshop a great success.



**Mr. Kim Soben**  
*Vice Dean of Graduate  
School, Royal University of  
Agriculture (RUA)*

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**Mr. SUM Thy** expressed his good willing to participate in that training workshop. He furthered pointed out Climate Change occurred by the nature, but since the beginning of industry revolution over the past 200 years, Climate was changed remarkably. It will impact to three main drawbacks on the earth, such as global warming, rainfall change, and sea level rise which influenced directly on many countries in the world, he added. He noted that the poor will be more vulnerable because they have less technologies and financial assistance to respond to the climate change.



**Mr. SUM Thy**  
*Director, Department of  
Climate Change,  
General Secretariat of the  
National Council for  
Sustainable Development*

## 4. Presentations

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There were 8 modules were presented by Dr. Rizaldi Boer from Center for Climate Risk and Opportunity Management in Southeast Asia and Pacific. The following are the summary for each presentation:

**Module 01:** What is climate change and what does it mean for the Cambodia? The objective of the presentation was to introduce briefly about climate change and key element on Paris Agreement related to adaptation and its linkage with mitigation and loss and damage, to provide overview on vulnerability and climate change impact assessment in Cambodia, to identify gaps on V&A assessment for the TNC.

**Module 02:** what is climate change and what does it mean for the Cambodia? The objective of the presentation was to introduce briefly about climate change and key element on Paris Agreement related to adaptation and its linkage with mitigation and loss and damage to provide overview on vulnerability and climate change impact assessment in Cambodia, to identify gaps on V&A assessment for the TNC.

**Module 03:** Introduction of vulnerability and climate change impact assessment and adaptation. The objectives of the presentation are to understand the definition of Vulnerability, to have an idea on basic choices of the V&A assessment, framework, approach, and epilogue.

**Module 04:** Understanding Vulnerability Assessment. The objectives of the presentation were to elaborate on vulnerability concept and to understand the steps of vulnerability and climate risk assessment. The presentation mainly focused on the general concept of V&A and some evidence for climate change.

**Module 05:** Applying the Approach for vulnerability assessment (EXERCISE). That practice exercise was very comprehensive to all participants in the workshop since they understand well how to conduct Vulnerability Assessment. The trainer had crossed checked with all the result from the participants.

**Module 06:** Understanding Climate Change Scenarios and Impact Assessment. The objectives of the presentation were to provide overview about emission and climate change scenarios, and to introduce approach for addressing limitation of the global model and their use for sectoral impact assessment.

**Module 07:** Developing climate change responses using vulnerability and climate risk assessment. The objective of the presentations was to introduce approaches on the use of results of vulnerability and climate impact assessment in developing adaptation strategies, actions and policies.

**Module 08:** Communicating Climate Change Adaptation. This presentation was very comprehensive since it included adaptation component, adaptation in Paris Agreement, transparency framework for adaptation, potential benefit of adaptation communication, scope of information under UNFCCC for communication.

## 5. Discussions

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The result from the discussion revealed that the sector which need to include for the Third National Communication (TNC) were: **agricultural sector, health, water resources, forest, settlement, education and infrastructure**. In addition, the challenges identified by participants were include: limited national experts on climate model, lack of data management system, data consistency, and lack of historical data.

The participants were formed into group to discuss the following questions: What are the sub-sector need to be added into the third TNC? And what are weakness and challenge? The participants discussed and reported as follow: agricultural sector (Fruit free, Rice, Agro-industry, Cassava, Fisheries, livestock, land use, post-harvest, and commercial crop); Health (disease and Wash); water resource, coastal, forest, settlement, education, and infrastructure. The challenge include: Limited/few national experts on model, Data management system, Data consistency of data, Historical data, Don't know the pro and con of using different models.

## 6. Closing Session and Next Step

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To sum up, the climate change technical working group as well as academia more advanced on the climate change impact and vulnerability assessment concepts. The participants identified the prioritized needs to be included in the TNC: **agricultural sector, health, water resources, forest, settlement, education and infrastructure**. The sub-sector to be included: agricultural sector (Fruit free, Rice, Agro-industry, Cassava, Fisheries, livestock, land use, post-harvest, and commercial crop); Health (disease and Wash); water resource, coastal, forest, settlement, education, and infrastructure.

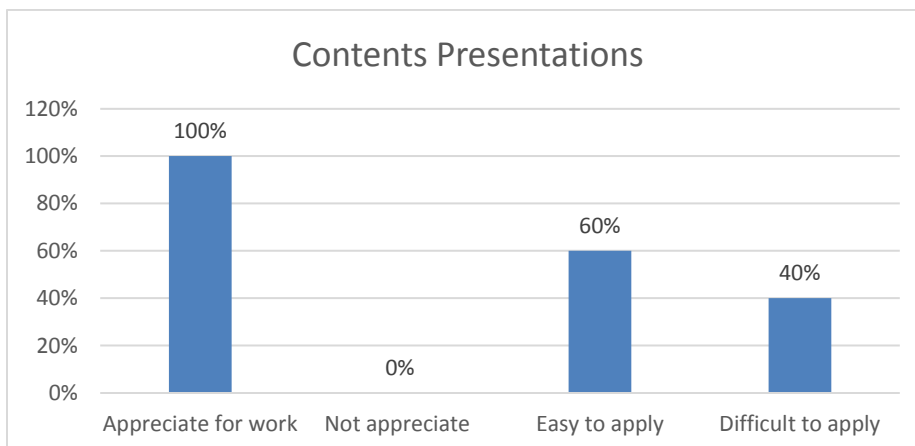
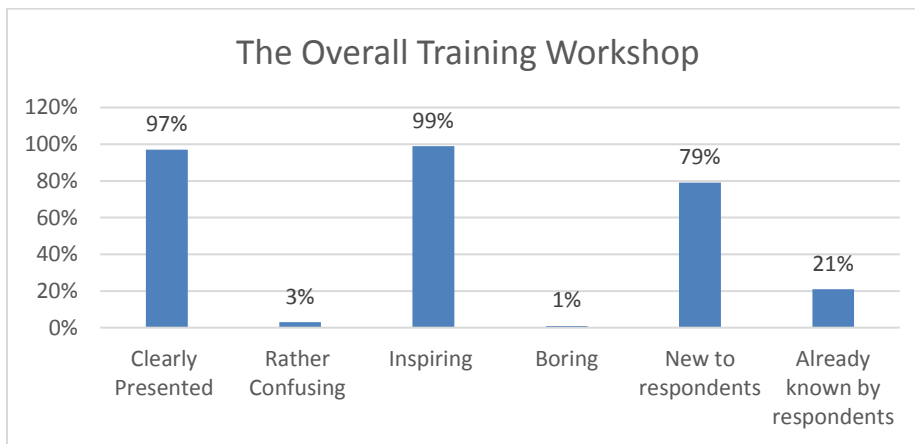
It was concluded that the next training shall be made in order to build additional capacity in climate change which mainly focus on climate model, analyst excel fact sheet, and advance of V&A

assessment. This will contribute to the third national communication report which is the further step that have to care about.

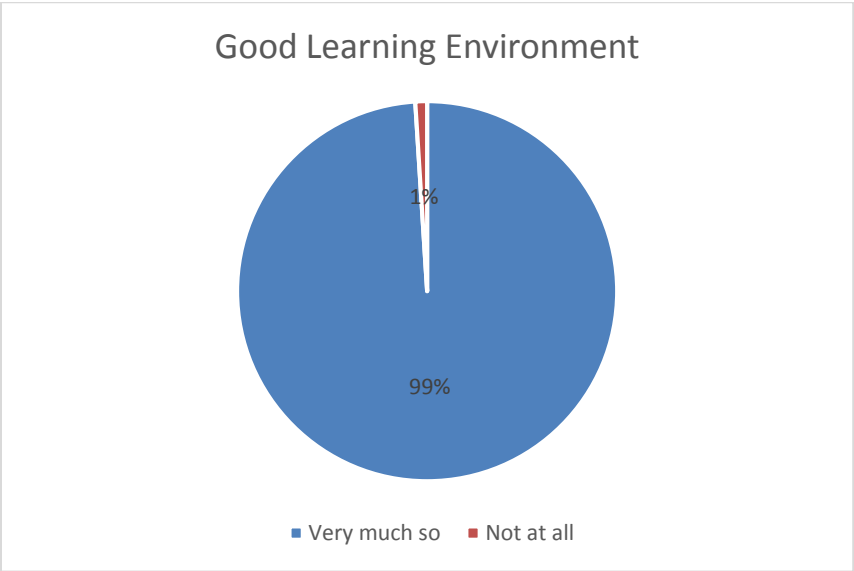
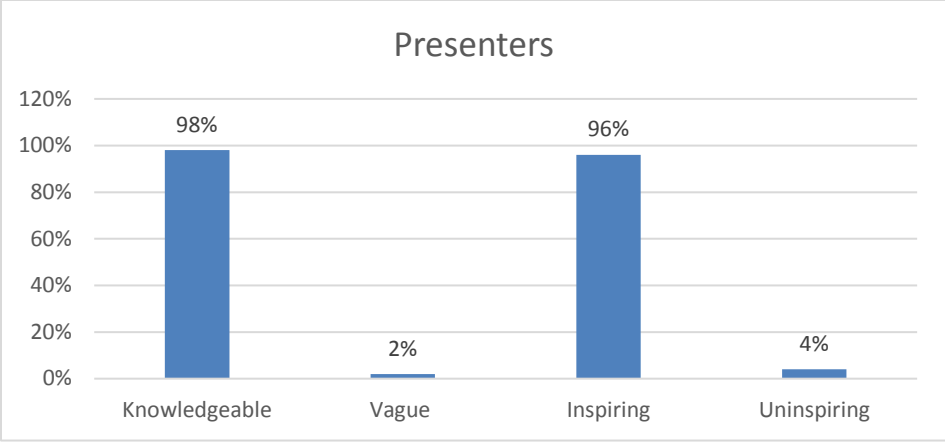
At the end of the training workshop, Mr. KIM Soben had concluded and expressed his deeply thanks to all participants who involved actively during the 3 days. He finally, wished all of the participant a great time and suggest to put strong effort on third communication report.

## ANNEX 1: Training Workshop Assessment

It was reported that 97% of the participants defined the workshop as clearly presented. Nearly all of them (99%) claimed that the workshop was very inspiring. However, 79% of them responded that it was new for them to learn such a workshop while 21% answered that they had had experience/knowledge about this workshop. Regarding to the content of the workshop, all of the respondents mentioned that it was really appreciated for their job to participate in this training. Among of that, 60% of them reported that they could easy apply this knowledge for their work while 40% other said it was really difficult for them since their capacity still limit. In the case of presenter, most of the participants admired that the presenter was very knowledgeable and inspiring since the invited speaker/presenter was very expert one the field of climate change. Finally, 99% of them described that the training was a good learning environment. Therefore, they suggest to have future training to improve more capacity in the vulnerability impact assessment.







## ANNEX 2: AGENDA

| Time                        | Subject                                                                                                                                                                                                                                                                                                                                          | Speaker                                                                                                                               |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>DAY 1 - 3 April 2018</b> |                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                       |
| 08:00 – 09:00               | Registration                                                                                                                                                                                                                                                                                                                                     | Admin DCC/CCCA                                                                                                                        |
| 09:00 – 09:05               | National Anthem                                                                                                                                                                                                                                                                                                                                  | MC                                                                                                                                    |
| 9:05 – 09:30                | Remarks                                                                                                                                                                                                                                                                                                                                          | <b>Mr. Kim Soben</b><br>Vice Dean of Graduate School Royal University of Agriculture (RUA)                                            |
| 9:30 – 9:45                 | Opening Remarks                                                                                                                                                                                                                                                                                                                                  | <b>Mr. Sum Thy</b><br>Director, Department of Climate Change, GSSD                                                                    |
| 09:45 – 10:30               | Photo Session & Coffee break                                                                                                                                                                                                                                                                                                                     |                                                                                                                                       |
| 10:30– 12:00                | <p>What is climate change and what does it mean for the Cambodia?</p> <p><b>Summary presentation on:</b></p> <ul style="list-style-type: none"> <li>- Climate change and key elements on the Paris Agreement related to adaptation</li> <li>- its linkages with mitigation and loss and damage</li> </ul>                                        | <b>Dr. Rizaldi Boer</b><br>Executive Director<br>Center for Climate Risk and Opportunity Management,<br>Bogor Agricultural University |
| 12:00 – 13:30               | Lunch Break                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                       |
| 13:30 – 15:00               | <p>What is climate change and what does it mean for the Cambodia? (cont.)</p> <p><b>Continued discussion on:</b></p> <ul style="list-style-type: none"> <li>- overview on vulnerability and climate change impact assessment drawn from the Cambodia SNC</li> <li>- gaps for the TNC</li> </ul>                                                  | <b>Dr. Rizaldi Boer</b>                                                                                                               |
| 15:00 – 15:30               | Coffee Break                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                       |
| 15:30 – 17:00               | <p>Introduction of vulnerability and climate change impact assessment and adaptation</p> <p><b>Introductory presentation on:</b></p> <ul style="list-style-type: none"> <li>- the concept of vulnerability and climate change impact assessment</li> <li>- the use of the results of the assessment in developing adaptation measures</li> </ul> | <b>Dr. Rizaldi Boer</b>                                                                                                               |
| <b>DAY 2 - 4 April 2018</b> |                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                       |
| 08:30 – 10:00               | <p>Understanding vulnerability assessment</p> <p><b>Presentation on:</b></p> <ul style="list-style-type: none"> <li>- introduce methods and approach for assessing climate change vulnerability (top-down and bottom up approach)</li> </ul>                                                                                                     | <b>Dr. Rizaldi Boer</b>                                                                                                               |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                            |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
|                             | <ul style="list-style-type: none"> <li>- how to use socio-economic and biophysical data in assessing the vulnerability of regions or sectors to the impact of climate change (bottom up approach)</li> <li>- examples from other countries</li> </ul>                                                                                                                                                                                        |                                                                            |
| 10:00- 10:30                | Coffee break                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                            |
| 10:30 - 12:00               | Applying the approach for vulnerability assessment                                                                                                                                                                                                                                                                                                                                                                                           | <b>Group Discussion</b>                                                    |
| 12:00 - 13:30               | Lunch Break                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                            |
| 13:30 - 15:00               | <p>Understanding climate change scenarios and impact assessment</p> <p><b>Introduction to:</b></p> <ul style="list-style-type: none"> <li>- climate change projections and connection with 1.50 and 2.00 targets (RCP scenarios) for Cambodia taken from global model</li> <li>- the need for downscaling these for regional impact studies</li> <li>- the use of the impact model at local, regional level and to national level</li> </ul> | <b>Dr. Rizaldi Boer</b>                                                    |
| 15:00- 15:30                | Coffee break                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                            |
| 15:30 - 17:00               | Understanding climate change scenarios and impact assessment (cont.)                                                                                                                                                                                                                                                                                                                                                                         | <b>Dr. Rizaldi Boer</b>                                                    |
| <b>DAY 3 - 5 April 2018</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                            |
| 08:30- 10:00                | <p>Developing climate change responses and climate proofing</p> <p><b>Presentation and discussion on:</b></p> <ul style="list-style-type: none"> <li>- use of the results of impact assessment in developing adaptation</li> </ul>                                                                                                                                                                                                           | <b>Dr. Rizaldi Boer</b>                                                    |
| 10:00- 10:30                | Coffee break                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                            |
| 10:30- 12:30                | <p>Communicating climate change adaptation</p> <p><b>Presentation on:</b></p> <ul style="list-style-type: none"> <li>- important elements to be communicated to UNFCCC on adaptation based on Decision 17/CP.8</li> </ul>                                                                                                                                                                                                                    | <b>Dr. Rizaldi Boer</b>                                                    |
| 12:30 - 14:00               | Lunch Break                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                            |
| 14:00- 15:15                | Capacity Building Needs on CCVIA                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Group discussion</b>                                                    |
| 15:15 - 15:45               | Coffee break                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                            |
| 15:45- 16:30                | Presentation from participants of technical capacity building needs identified                                                                                                                                                                                                                                                                                                                                                               | <b>Group presentations</b> with discussion facilitated by Dr. Rizaldi Boer |
| 16:30- 16:45                | Wrap up and summary the training                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Mr. Kim Soben</b>                                                       |
| 16:45 - 17:00               | Closing remarks                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>H.E. Chuop Paris</b><br>Deputy Secretary General,<br>GSSD               |

## ANNEX 3: PARTICIPANTS LIST

| No.                              | Name               | Sex | Position              | Organization | Tel. Number | E-mail                          |
|----------------------------------|--------------------|-----|-----------------------|--------------|-------------|---------------------------------|
| Department of Climate Change     |                    |     |                       |              |             |                                 |
| 1.                               | Sum Thy            | M   | Director              | DCC/MoE      | 016 907 764 | cceap@online.com.kh             |
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| Cambodia Climate Change Alliance |                    |     |                       |              |             |                                 |
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| 12.                              | Kien Danary        | F   | Admin Officer         | CCCA         | 012 391 869 | admin@camclimate.org.kh         |
| 13.                              | Chrun Naren        | F   | Secretary             | CCCA         | 012 998 626 | chrunnaren@camclimate.org.kh    |

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| 15. | Sor Bunhieng | M | Driver | CCCA | 012 690 429  |                                 |

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| 22.             | Sok Pheak            | M | Staff           | RUA    | 098 378 721  | sopheakstar14@gmail.com    |
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| 25.             | Sovann Chansopheatra | M | Lecturer        | RUPP   | 012 220 785  | chansopheakra@gmail.com    |
| 26.             | Uon Sophal           | F | Lecturer        | UHST   | 092 762 109  | Sophal106@gmail.com        |
| 27.             | An Theal             | F | Staff           | UHST   | 077 563 851  | thealan567@yahoo.com       |
| 28.             | Chea Sovannara       | F | Student         | RUPP   | 096 432 0933 | sovannarachea11@gmail.com  |
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| 30.             | Tim Sophea           | M | Lecturer        | RUA    | 012 291 592  | stim3993@gmail.com         |

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| 32. | Rann Rany           | M | Lecturer    | RUPP | 089 771 104 | rannreuy@gmail.com        |
| 33. | <b>Rizaldi Boer</b> | M | Trainer     | BAU  |             | rizadybre@gmail.com       |
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| 35. | Kea Rotha           | F | Lecturer    | PNCA | 017 512 912 | rotha_kea@gmail.com       |
| 36. | Yorn Try            | M | Vice Rector | MCU  | 017 589 494 | yorntry@yahoo.com         |
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