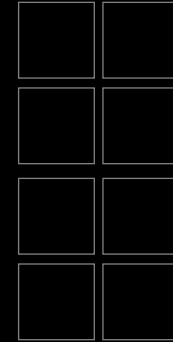


EC-ASEAN Energy Facility (EAEEF)



Projects 64 and 68 Commencement Meeting

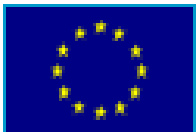


Development of a Business Model for Building Energy Performance Services in the ASEAN Region (Project 64)

Bing Dong

Energy Sustainability Unit
National University of Singapore





Outline of Presentation

Objectives

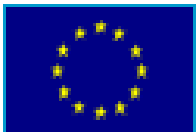
Tasks/Sub Tasks

Schedule and Targets

Methodology

Documentation and Publication

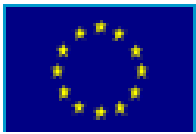
Information Centre



Objectives

To develop a complete business model to serve the needs of energy retrofiting projects involving existing buildings. The model comprises:

- **An ASEAN Building Energy Performance model for commercial buildings**
- **Energy Service Procurement template in terms of procedure and documentation.**
- **Project financing options and relevant documents, and project progress monitoring and management documentation.**



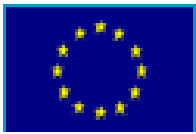
Objectives

Target Groups

Building owners, financiers, energy services companies (ESCOs) and public agencies

Main Activities

Data collection, performance simulations, review of existing systems and documentation



Tasks/Sub-Tasks

Task 1: Investigation to identify and develop a suitable base model for energy performance of commercial building (Main Action)

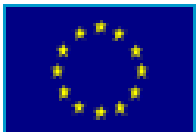
Sub-Task

1.1 Project inception meeting (CTBP)

1.2 Review energy simulation methods commonly used in the region (IEN)

1.3 Field data collection (6 in Singapore and 6 in Malaysia) (CTBP,PTM)

1.4 Workshops among members (CTBP)



Tasks/Sub-Tasks

Task 1: Sub-Task

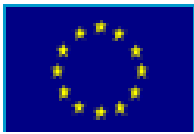
1.5 Verify performance of simulation methods using actual measured data (PTM, IEN)

1.6 Development of a base model for building energy simulation (CTBP)

1.7 Group meeting and study tour to key centers in Europe (INIVE-EEIG)

1.8 Develop measurement and verification protocol (M&VP) (CTBP,IEN)

1.9 Preparation of report (CTBP, IEN)



Tasks/Sub-Tasks

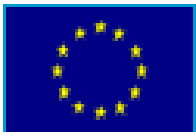
Task 2: Develop energy services project documentation

-----Davis Langdon and Seah Asia Pacific will be engaged to assist in this task.

Sub-Task

2.1 Review existing standard forms of contract (CTBP)

2.2 Develop standard forms of contract for energy retrofit projects (CTBP)



Tasks/Sub-Tasks

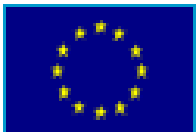
Task 2: Develop energy services project documentation

Sub-Task

2.3 Development of tender document and specification (CTBP)

2.4 Document project procurement and procedures and evaluation (CTBP)

2.5 Seminar workshop to disseminate findings and seek feedback from industry (CTBP)

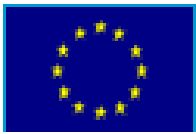


Tasks/Sub-Tasks

Task 3: Review local financing practices and options and develop document templates for project financing and the computation of returns and benefits

Sub-Task

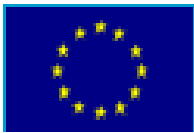
- 3.1 Review European and ASEAN experiences in performance contracting (PTM)**
- 3.2 Investigate local and regional financing options for energy performance (CTBP)**
- 3.3 Prepare documentary requirements of each financing option (CTBP)**



Tasks/Sub-Tasks

Task 4: Preparation of Final Report and Dissemination of Findings (CTBP)

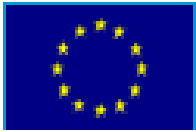
- All experienced gained and document prepared will be consolidated into a single comprehensive document
- The final report will be adopted and submitted to ACE for record.
- A regional seminar will be organized to disseminate the findings of the project.



Tasks/Sub-Tasks

Responsibility of Partners for All 4 tasks

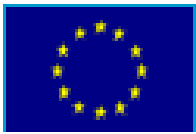
Partners Participating	Leader of Tasks
CTBP, NUS	Sub-Task: 1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 2.1, 2.2, 2.3, 2.4, 2.5, 3.2, 3.3, 4.1
PTM, Malaysia	Sub-Task: 1.5, 1.3, 3.1
IEN, Consultants	Sub-Task: 1.2, 1.5, 1.8, 1.9
INIVE-EEIG	Sub-Task: 1.7; Advisory: 1.2, 1.3, 1.5, 1.8, 1.9, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3



Schedule and Targets

The duration of the action will be 23 months.

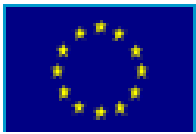
Year 1 of Action and Year 2 of Action



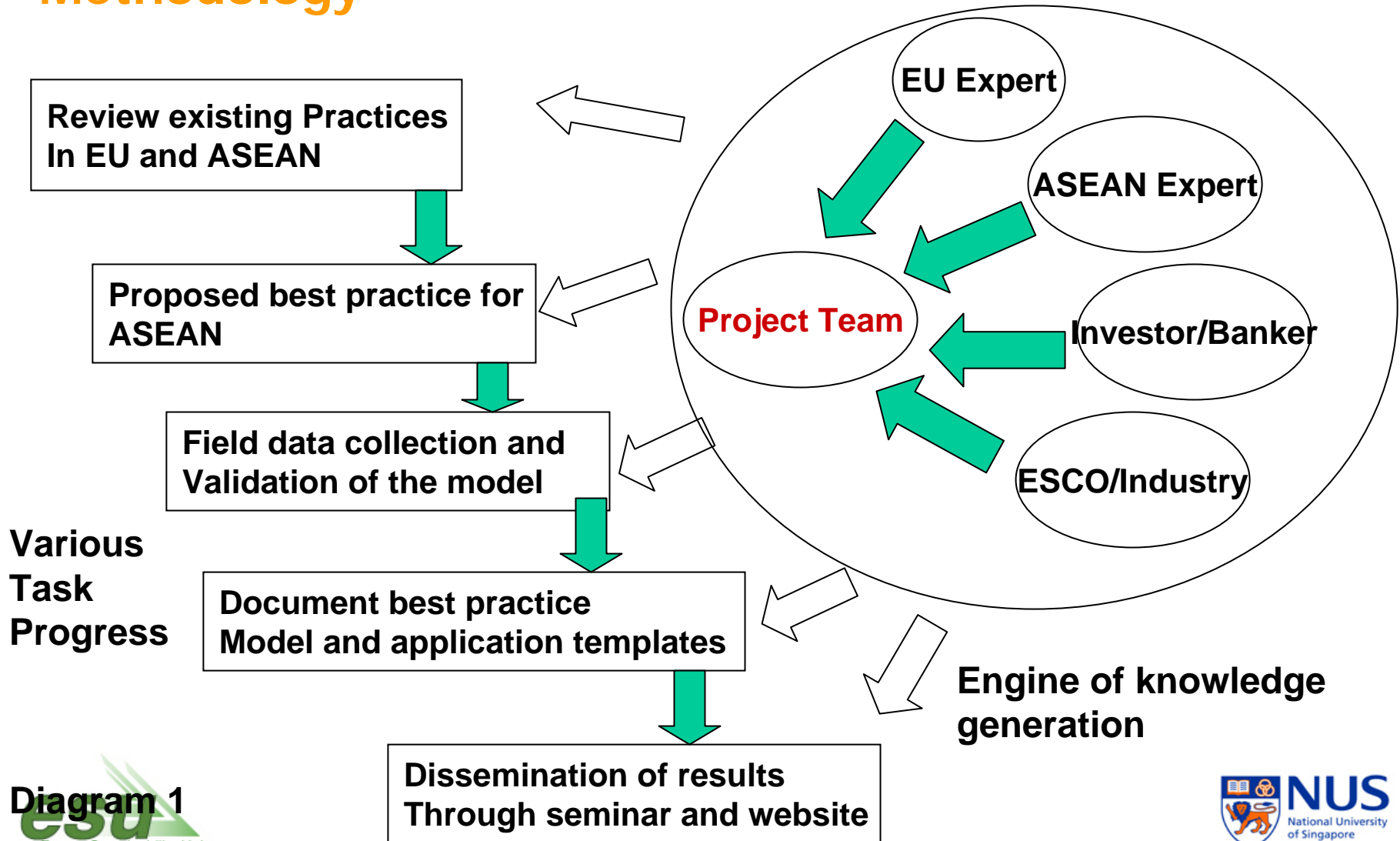
Methodology

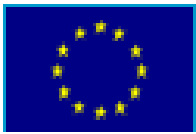
The proposed methodology should have:

- 1. Technologically sound and up-to-date**
- 2. The findings should be accurate and tested for practical applications**
- 3. The deliverables should be relevant to the local context and meet the immediate needs of the target groups**
- 4. The deliverables should be able to bring about enhanced growth in the energy services sector**



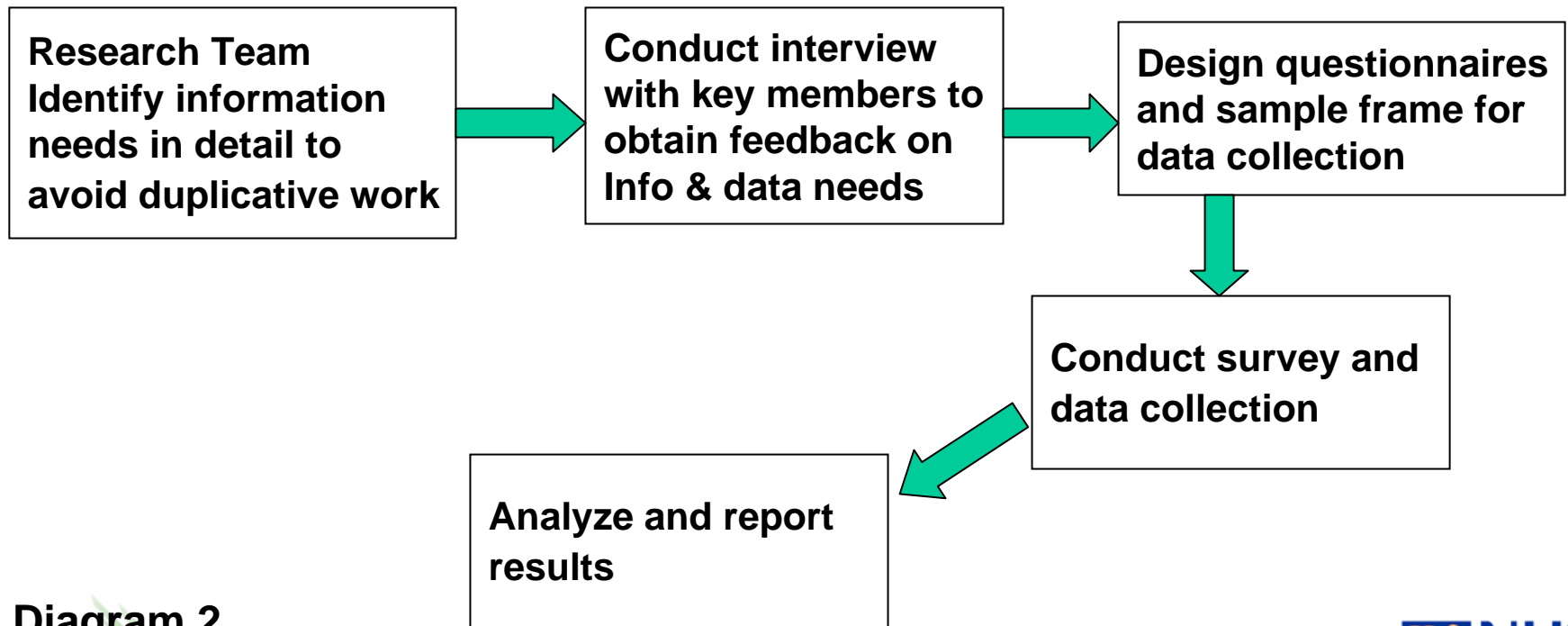
Methodology

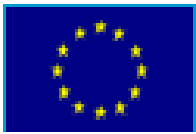




Methodology

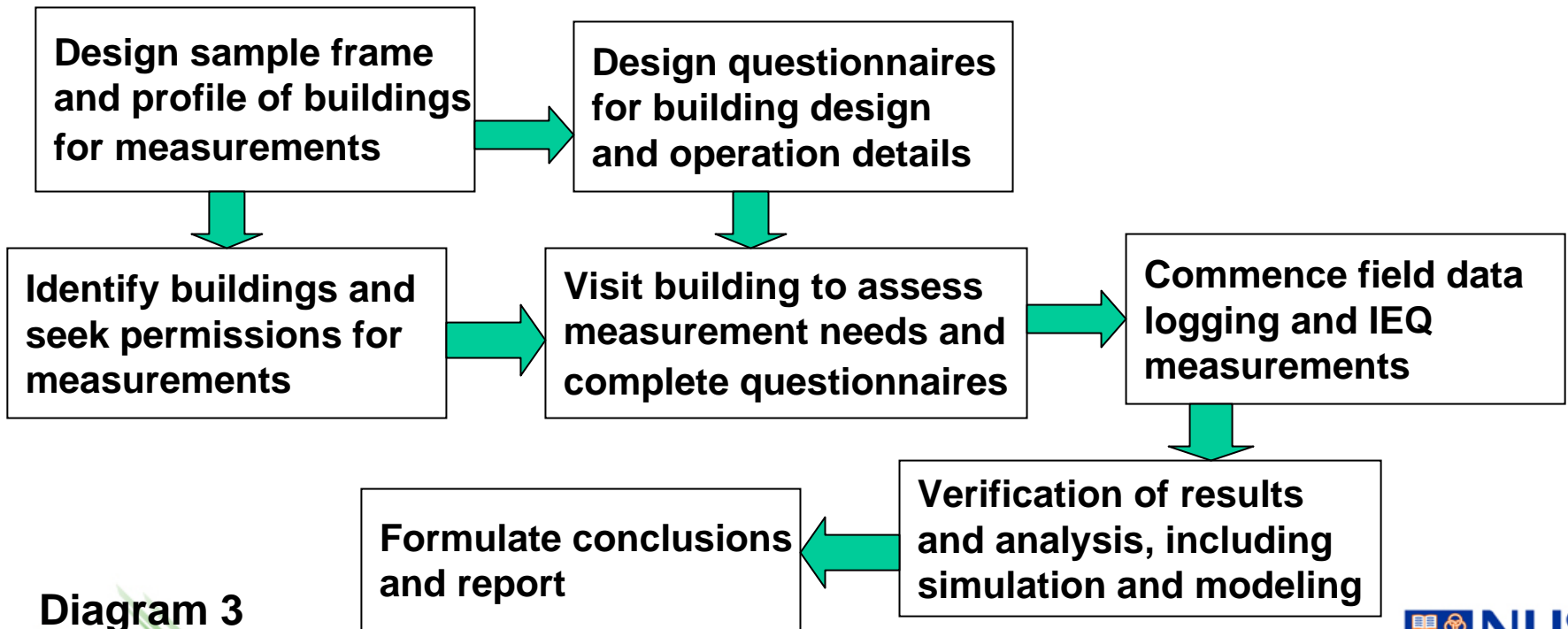
Survey Methodology

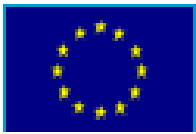




Methodology

Measurement Methodology

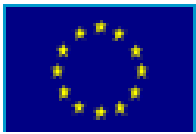




Documentation and Publication

Publish Documents:

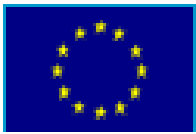
- 1. Building simulation and energy performance base model development manual**
- 2. Building energy performance and retrofitting work measurement and verification protocol**
- 3. Standard forms of contract**
- 4. Final report**



Documentation and Publication

Learned Journals:

1. Energy simulation and verification
2. Energy performance characteristics in tropical buildings
3. Energy retrofitting work and base model development and verification
4. Energy saving potential predictions and realization



Information Centre

1. Seminar and Workshops

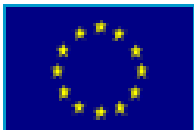
At least two seminars and two workshops

2. On site training

Bring about capacity and awareness

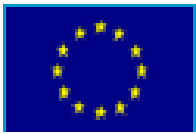
3. Website

www.esu.com.sg (launched on April 7th)



First 6 Months Schedule & Responsibilities

First Year (2005)	CTBP-NUS	PTM	IEN	INIVE (Advisory)
Feb	1.1			
Mar	1.1		1.2	1.2
April			1.2	
May	1.3_2.1	1.3_2.1_3.1	1.2	2.1
June	1.3_2.1	1.3_2.1_3.1		2.1_2.2_3.1
July	1.3_1.4_2.1_2.2_3.2	1.3_1.5_3.1	1.5	2.1_2.2_2.3_3.1



Thank You

