

Project Responsible:	A2PBEER
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This is a 1 day workshop. It is proposed to concentrate on using videos to demonstrate the A2PBEER technologies, short Powerpoint presentations to present a case study and interactive learning for the tools. All these materials will be available prior to workshop on the A2PBEER Moodle platform. Classroom presentations followed by a worked example will be provided for the A2PBEER Support Guide toolkit and the financial tool for best practice retrofitting.

Module Overview:

The aim of this Training SMEs and Demonstration Site programme is to develop the knowledge and skills of participants such that they will be able to understand the nature of the A2PBEER Project, the nature of the technologies developed during the project and to effectively apply the technology and financial tools developed through the project in making the most effective retrofitting decisions regarding public buildings and districts in the management of which they are engaged. .

The key component of the training programme will be based around the retrofitting activities of the demonstration buildings. The content will be developed to reflect both new construction, renovation and change of use scenarios from each stage of the demonstration project development. The workshop will include the following:

1. Introduction and overview of the A2PBEER technologies and retrofitting project.
2. The technological components of the façade envelope, windows, lighting systems, district thermal networks and absorption technologies.
3. Presentation of a case study investigating the use of the technologies and how these are implemented and retrofitted to best practice. These will be enhanced by the partners' experiences and practices.
4. The A2PBEER Support Guide Toolkit is to assist stakeholders in making best practice decisions on how to improve the energy performance of their public building or district. The Guide will outline the methodology on how to carry out a district and building assessment from the viewpoint of energy consumption. There are six stages to understand and complete.
5. The Financial tool will focus on financial analysis, return on investment, cost control and evaluation of rehabilitation of public buildings. It will include data from a case study which is to be completed and understood. It will also focus on strategies and opportunities with alternative financing mechanisms (ESCOs, EPCs, etc.)

Learning Outcomes (LO):

At the end of this programme the participants will know -

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| 1 | The principles and benefits of a system approach to the retrofitting of major public buildings |
| 2 | The nature of the technologies which have been developed under the A2PBEER project including the issues which each technology is intended to address, the nature of the developed solution and the ways of applying the technology in different contexts |

3	How to use the technology and financial tools developed under the A2PBEER project in order to make the most effective decisions regarding the retrofitting of major public buildings of different types
At the end of this programme the participants will be able to -	
4	Describe the nature and benefits of a best practice system approach to the retrofitting of large public buildings and districts of different types
5	Describe the advanced technologies developed under the A2PBEER project to a variety of stakeholders responsible for building energy management in buildings and districts of different types
6	Demonstrate the use of the technology and financial tools developed under the A2PBEER project to participants on the A2PBEER Training Programme and facilitate participants in learning how to use the tools in question to make decisions for different building types

The following is the role of each unit in achieving the programme learning outcomes

Unit/Learning Outcome	Part 1	Part 2	Part 3	Part 4	Part 5
LO 1	X	X		X	
LO 2			X		
LO 3		X			X
LO 4		X		X	
LO 5			X		
LO 6		X			X

Indicative Syllabus:

Part 1: A2PBEER Project and Workshop Overview:

- Address the principles and approaches of the A2PBEER project,
- The concept, implementation and Partners.
- Project Video
- Overview of the A2PBEER programme,
- Intended target audience and delivery.
- Access and understanding of Moodle.

Part 2: A2PBEER Retrofit Technologies: *(summary of technologies - videos available on Moodle)*

- Technological components for the external and internal envelope, windows, lighting systems district thermal networks and absorption technologies.
- Specific emphasis on Public Buildings.
- Reflect new construction, renovation and change of use scenarios
- Site visit to the demonstration building/district, to demonstrate and review the monitoring, installation and performance of the technologies, the benefits for installing technologies to improve the energy performance of the building and the process of retrofitting. (optional)

Part 3: Public Building Case Studies: *(summary of a choice of 4 case studies with presentations are available on Moodle)*

- Case study utilizing content from one of the project demonstration sites.
- Depicting partners' experiences and practices.

Part 4: Systemic Approaches and Integration:

- Introduction to the A2PBEER Support Guide Toolkit:
- Description of its tools and techniques
- Carrying out a practical example from an appropriate Demo Site.

Part 5: Financial Analysis Tools & Methodologies:

- Cost / benefit balance
- Investment return
- Cost optimality
- Carry out a practical example continuing from appropriate Demo Site from Unit 4.

Learning and Teaching Methods:

- Online Moodle with relevant resource material (reports, guides, photographs and videos)
- Project video(s)
- Classroom interactive PowerPoint presentations
- Technology videos
- Classroom-based paired and group work
- Classroom discussions
- Site visit to a retrofitted demonstration building (optional)
- Self-directed learning during and outside contact hours
- On-line use of the Web-tool and methodologies developed by the A2PBEER project
- On-line use of the financial tool.

Essential Reading available in Moodle:

Part 1:

Website link to the A2PBEER project.

<http://www.a2pbeer.eu/>

Link to the A2PBEER video

<http://www.a2pbeer.eu/results-reports/presentations/>

Part 2:

Analysis of the Public Building envelope and strategies for energy efficient retrofitting - http://www.a2pbeer.eu/wp-content/uploads/2013/11/D3-1_Analysis-of-the-Different-Existing-Envelopes-of-Public-Buildings_Final_AbudIK.pdf

Indoor lighting technologies for public buildings - http://www.a2pbeer.eu/wp-content/uploads/2013/11/D4-1_Analysis-of-Lighting-Needs_Final_Toshiba_FR.pdf

Conceptualization of the smart dual thermal network - http://www.a2pbeer.eu/wp-content/uploads/2013/11/D5-1_Conceptualization_Final_Dapp_SA.pdf

Part 3:

Replicability framework for virtual pilots - <http://www.a2pbeer.eu/wp-content/uploads/2015/04/8.1-Replicability-framework-for-virtual-pilots-Final.pdf>

Part 4:

Public-Building-and-District-Characterization of common retrofitting approaches - http://www.a2pbeer.eu/wp-content/uploads/2013/11/D2-1_Public-Building-and-District-Characterization_Final_AbudAG.zip

Technologies and strategies of public building retrofitting - http://www.a2pbeer.eu/wp-content/uploads/2013/11/D2-2_Technologies-and-strategies_Final_AccionaAR.pdf

Best Practices on Public Building and District Retrofitting - http://www.a2pbeer.eu/wp-content/uploads/2013/11/A2PBEER_D2-3_Best-Practices-on-Public-Building-and-District-Retrofitting_Final_AccionaAR.pdf

Definition of a Systemic Public Building and District Retrofitting Methodology - http://www.a2pbeer.eu/wp-content/uploads/2013/11/A2PBEER_D2-5_Definition-of-a-Systemic-Public-Building-and-District-Retrofitting-Methodology.pdf

Part 5:

Financial assessment of public building retrofitting - http://www.a2pbeer.eu/wp-content/uploads/2013/11/A2PBEER_D2-4_Financial-assessment_Final_DAPP_MM.pdf

Supplemental Reading: To be provided