

PVPS

Task 15. Enabling Framework for BIPV Acceleration

Paris, April 28th 2015

Michiel Ritzen, Martje van Horrik, Zeger Vroon, Elianne Demollin, Tjerk Reijenga, Tilmann Kuhn, Simon Boddaert, Jerome Payet, Greg Watt



Why not BIPV?

- Does the architect know the possibilities, restrictions, consequences, etc?
- Does the business developer and project manager have adequate business models for BIPV?
- Is the constructor and installer aware of the regulations, requirements and specifications?
- Does the BIPV solution contribute to a lower overall environmental impact?
- Is there insight in the actual BIPV performance based on demonstration projects?

PVPS Probably, most questions above will be answered by **no**... this contributes to why it is not BIPV...

→ Development of Task 15 on BIPV



Content

- Item 15.1: status report
- Item 15.2: final workplan



Task 15 Status Report

- April 2014: launch Task at PVPS ExCo
- September 2014: expert workshop
- November 2014: presentation concept work plan
- Jan – March 2015: final workplan, based on participant & ExCo input
- Feb 2015: Task 15 presentation and discussion at IEA BCG
- **April 2015: Dutch stakeholders verification meeting**
- April 2015: presentation final work plan

Planned:

- June 2015: 1st Task meeting (delayed due to funding participants)
- September 2015: seminar at EU PVSEC
- November 2015: workshop at conference on building skins
- Jan 2016 (?): 2nd Task meeting



Task 15 Status Report

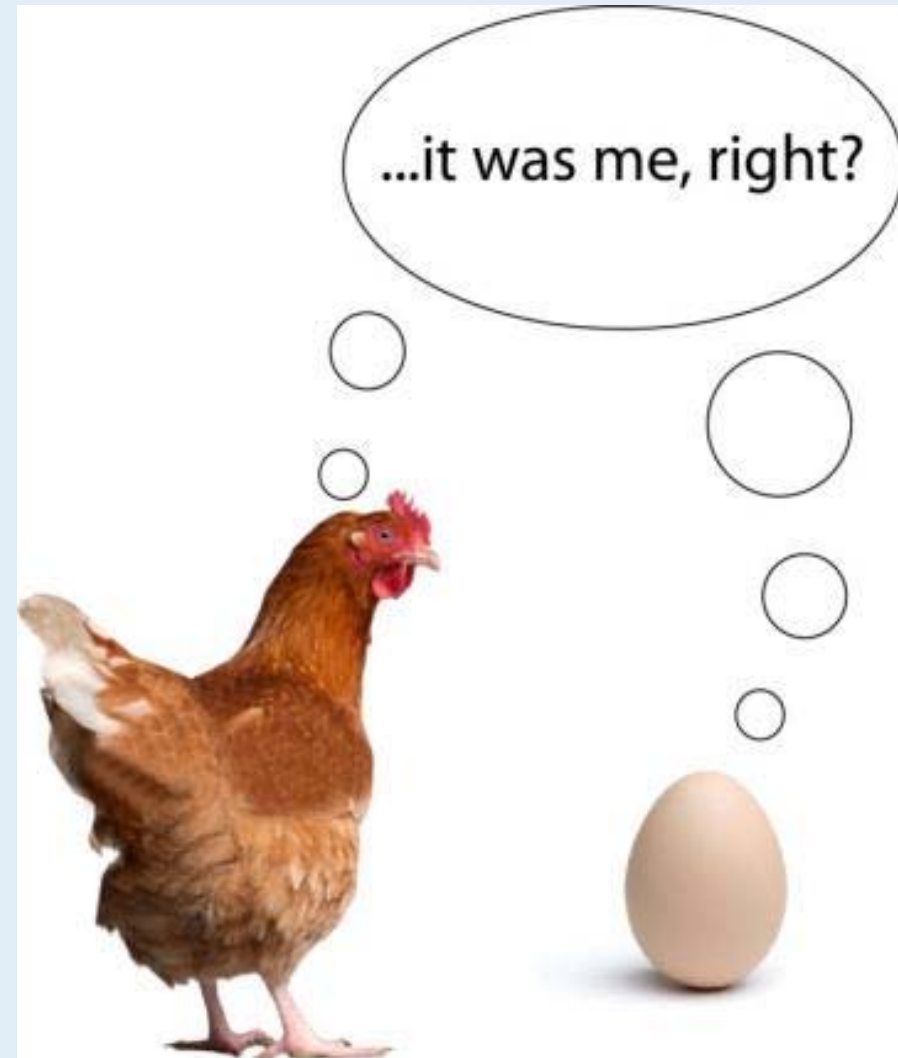
Involvement of participants:

- 16 countries
- 60 participants

from:

- 32 institutes
- 21 SME
- 7 MN

PVPS covering the complete BIPV supply chain.
Support from ExCo facilitates the progress...





Task 15 Status Report

NPP's received from:

China, Denmark, Lithuania, the Netherlands (partly), Spain, Switzerland (partly).

NPP's pending:

Australia, Austria, Belgium, France, Germany, Italy, Japan, Korea, Norway, Sweden.



Task 15 Status Report

Subtasks:

A: - elaboration on questionair
- inventory existing databases BIPV

A&C: - elaboration on BIPV definition

D, E and F in the process of finalizing program.

B lacking subtaskleader.



Task 15 Workplan

From concept → final version

Scope → from acceleration in general to the creation of a framework for decision makers in the BIPV supply chain.

→ *What do the stakeholders in the process need to design, realize and operate a BIPV project?*



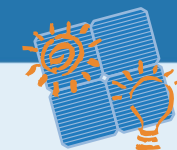
Task 15 Workplan

- Presentation of the concept paper in Aachen (April 2014)
 - Suggestions ExCo:
 - Past lessons; compare to other / past Tasks and other activities
 - Specific workplan
 - Propose solutions
 - Worldwide approach
 - Practical approach (scope and workplan)
 - Define outreach, target audiences, method to reach them
- Expert Workshop



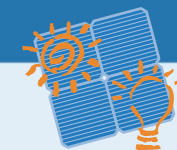
Task 15 Workplan

- Presentation of the concept workplan in Kyoto (Nov. 2014)
- Adjustments in the Workplan:
 - Define the barriers and solutions.
 - Emphasize the need for international cooperation.
 - A. Create a database with both projects and products.
 - B. Cope with global differences in construction industry, include costs and markets.
 - C. Harmonization of regulations in different steps, and include the investigation of 'best regulations'.
 - D. Cooperate with T12, SHC and EBC on environmental aspects.
 - E. Include reliability of BIPV.



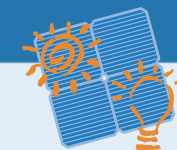
BIPV Barriers defined for workplan

- **Databases** of exemplary projects and products do not fulfill market demands (mostly customized prototypes)
- The BIPV ecosystem is not yet mature, **businessmodels** have to be developed.
- Producers and installers do not have the insight in the **differing regulations** / certifications, requirements and needed specifications
- **Environmental aspects** of BIPV products are not yet comparable to regular building components
- BIPV testing and **demonstration** is internationally fragmented, adaptability of BIPV products in differing climatic circumstances unclear.
- **Dissemination** of BIPV expertise does not have a deep societal penetration



Subtasks and target audiences

- A. BIPV project and product database → designers
- B. Transition towards sound BIPV business models → project managers
- C. International framework of BIPV specifications → policymakers, BIPV product developers
- D. Environmental aspects of BIPV → assessors, BIPV product developers
- E. Demonstration → BIPV researchers, BIPV product developers
- F. Dissemination → BIPV and general public



Adjustments to the subtasks

- A. Database → products and projects included
- B. Businessmodels → different markets included, different parameters included; no STL currently
- C. International framework of BIPV specifications → development of a guideline for harmonization and benchmark of regulation included
- D. Environmental aspects of BIPV → cooperation with T12, SHC and EBC included

In the different subtasks milestones are included and activities can be (partly) conducted seperately.



Subtask A: BIPV project database

Subtask Leader: BEAR Architects (NL)

Contributing countries: AT, FR, DE, IT, KO, LT, NL, ES, SE, CH, UK

Aim: not to get as many projects as possible; but to get from a selection of projects all relevant information.

Main target audience: designers (to be)

Results:

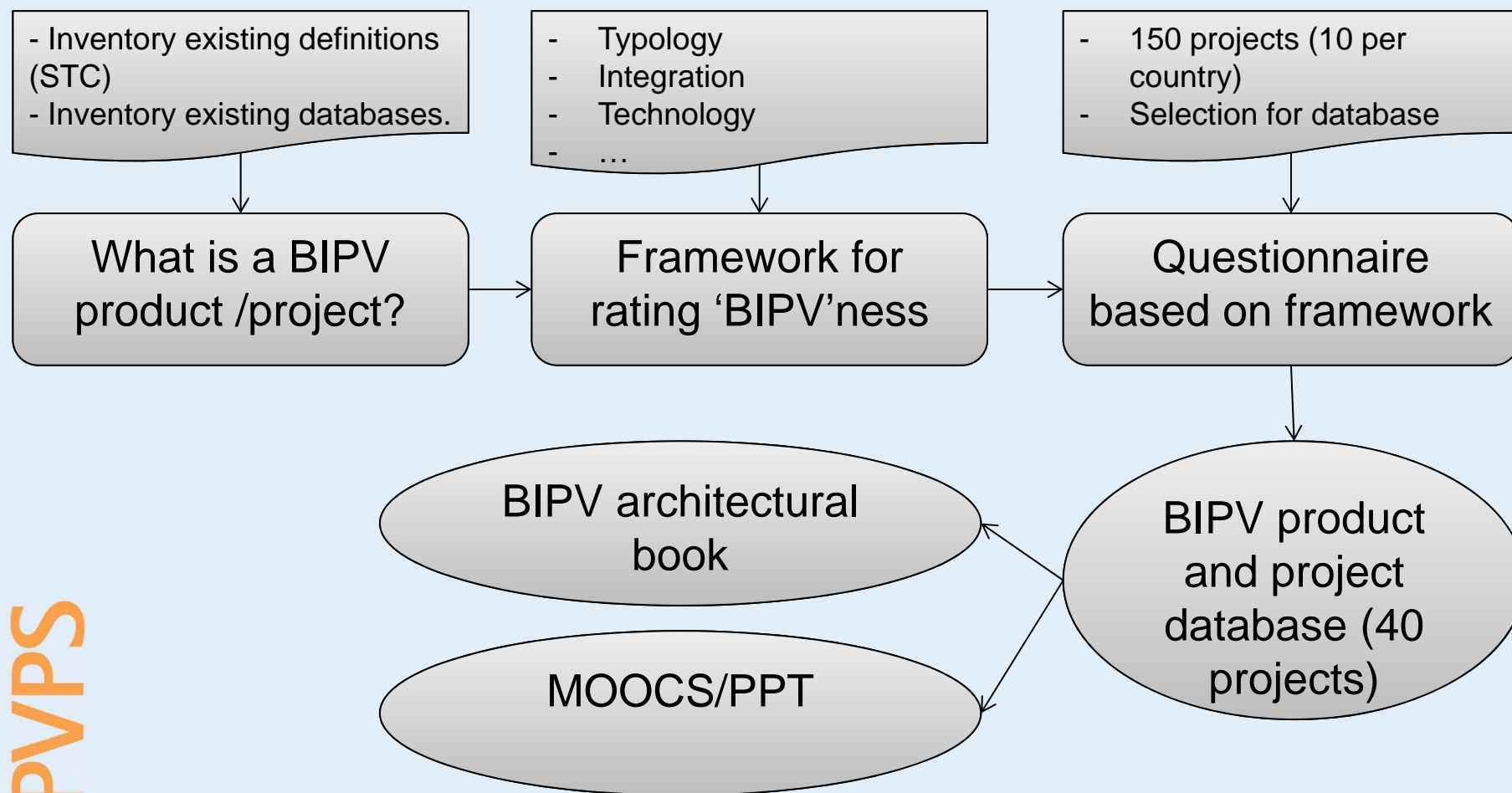
- Interactive database (+/- 40 projects)
- Architectural book (with activity F.1.)
- MOOCs

PVPS

Total Effort: 21.9 mm



Subtask A: BIPV project and product database





Subtask B: Transition towards sound BIPV business models

Subtask Leader: To be decided (economic / commercial background)

Contributing countries: AT, FR, DE, KO, LT, NL, ES, SE, CH, emerging countries?

Aim: develop specific business models for BIPV realization, including policy recommendations.

Main target audience: project managers

Results:

- Report with inventory on existing business models
- Report with business models and recommendations
- MOOCs & PPT

Total Effort: 34.8 mm



Subtask B: Transition towards sound BIPV business models

Activities:

B.1: Analysis of the BIPV business models status quo [M1-M12]

B.2: Analysis of existing market situations, regulations and governmental market support [M12-M24]

B.3: Development of new business models [M24-M36]

B.4: Testing of new business models in demonstration projects [M36-M48]



Subtask C: International framework of BIPV specifications

Subtask Leader: Fraunhofer (DE)

Contributing countries: AT, FR, DE, IT, JP, KO, LT, NL, ES, CH, UK

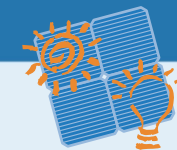
Aim: improve the market potential of BIPV products by facilitating a internationally applicable regulatory framework.

Main target audience: policymakers, BIPV product developers

Results:

- Report on evaluation methodology and criteria
- Report on requirements, specifications and regulations and their barriers
- Guide of BIPV components that do have a general approval as building product in a certain country/region.
- Guidelines for harmonization

Total Effort: 45.4 mm



Subtask C: International framework of BIPV specifications

Activities:

C.0: International definition of BIPV [M1-M6]

C.1: BIPV needs & functions analysis [M1-M6]

C.2: BIPV requirements, specifications and regulations overview, best practice [M6-M24]

C.3: Multifunctional BIPV evaluation [M12-M30]

C.4: Suggest topics and guidelines for exchange between different standardization activities on international level [M24-M36]



Subtask D: Environmental benefits of BIPV

Subtask Leader: Cycleco (FR)

Contributing countries: AT, FR, DE, IT, JP, KO, LT, NL, ES, CH

Aim: provide the tools to compare the environmental aspects of BIPV with regular building components.

Main target audience: assessors, BIPV product developers

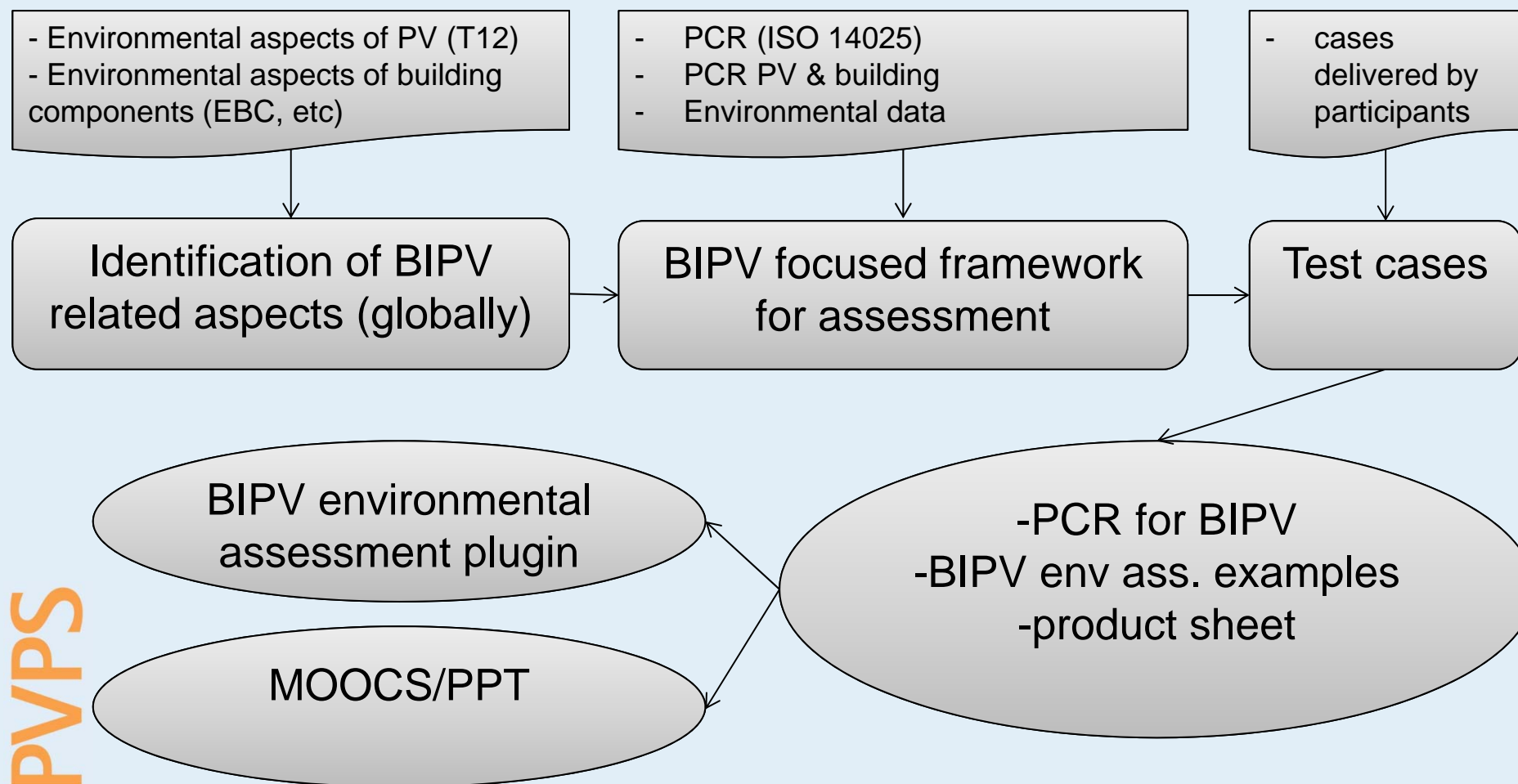
Results:

- Report with Product Category Rules (PCR) for BIPV products (T12)
- Report with BIPV environmental assessment comparison with regular building components, BIPV product datasheet
- BIPV environmental assessment plug-in for existing assessment tool

Total Effort: 31 mm



Subtask D: environmental aspects of BIPV





Subtask D: Environmental benefits of BIPV

Activities:

D.1: Identification of BIPV related environmental benefits worldwide [M1-M12]

D.2: BIPV focussed methodology for environmental assessment [M12-M24]

D.3: BIPV environmental assessment test cases [M24-M36]

D.4: BIPV environmental assessment plug-in for building environmental assessment tools [M36-M48]



Subtask E: Demonstration

Subtask Leader: CSTB (FR)

Contributing countries: AT, FR, DE, IT, KO, LT, NL, ES, CH, UK

Aim: to harmonize international BIPV demonstration activities and realize joint demonstration projects.

Main target audience: BIPV researchers, BIPV product developers

Results:

- Report on different existing test sites and in-depth comparison (T13)
- Guide for the installation and maintenance of BIPV demonstration facilities
- Cooperation agreement of the realization / exchange of BIPV product demonstrations based on specific needs (different climatic zones).

PVPS

Total Effort: 15.8 mm

Actions SUBTASK E

Main part. work program

SA E-1 Definition draft of ST E main objectives

SA E-1 : t1 = t0+1,5 mo.

SA E-2 Collective request ST E main objectives

SA E-3 Request ST E main objectives (strong implication)

SA E-2 ; SA : E-3 : t2 = t1+2 mo.

SA E-4 Collection of proposals

SA E-5 Common definition of final main objectives

SA E-6 Final validation main objectives

SA E-4 ; SA : E-5 ; SA : E-6: t3 = t1+4 mo.

SA E-7 Definition of information sharing rules

SA E-7 Definition of information sharing rules

SA E-7 : t4 = t0+3 mo.

Demonstration

Monit. / meas. - share data

SA E-8 Framework new building

SA E-8 Framework older building

SA E-9 New construction

SA E-9 Older construction

SA E-8 : t5 = t4+3 mo.

SA E-9 : t6 = t4+4 mo.

SA E-10 Demo site number (Identification) and Building features

SA E-10 : t7 = t0+12 mo.

- SA E-11
- Technologies
 - Integration category
 - Diff. with former sites
 - Exp. From former sites
 - innovation
 - Energy contribution (+/-)
 - Environnemental contrib.
 - Price
 - Aging

- sensors
- accuracy
- Kind of data
- Dissemin.
- Info for users...
- Active actions...

SA E-11 : t8 = t7+12 mo.

Results / demo

SA E-12 Data collection / improvement / Open data...

SA E-12 Data dissemination / Examples / success stories

SA E-11 : t9 = t8+24 mo.

Contributors

All participants in ST E
Other IEA TASK via MR

All ST leaders
All participants in ST E

ST E Leader

All ST leaders
All participants in ST E

ST E Leader
Other IEA TASK via MR

All ST leaders

ST E Leader
All participants in ST E
All ST leaders
Other IEA TASK via MR

ST E Leader
All participants in ST E

ST E Leader
All participants in ST E
All ST leaders
Other IEA TASK via MR

Lead / validation

ST E / EX CO

...





Subtask E: Demonstration

Activities:

- E.1: Inventory of existing test sites [M12-M18]
- E.2: Comparison of field tests, reliability tests [M18-M24]
- E.3: Installation and maintenance issues [M24-M36]
- E.4: Diversity of product demonstration [M36-M48]



Subtask F: Dissemination

Subtask Leader: Cat Out of the Bag Communication (AUS)

Contributing countries: all

Aim: to maximally disseminate Task 15 outcomes to specific target audiences.

Main target audience: non-BIPV related

Activities / Results:

F.1: Book on case studies (subtask A) [M6-M12; M36-M42]

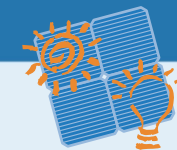
F.2: Youtube movies [M9-M45]

F.3: MOOCs [M9-M45]

F.4: Exchange of students, researchers, professors, professionals [M12-M30]

F.5: Website, Linkedin, Twitter, Facebook [M3-M48]

F.6: Total Effort: 16.6 mm, to some extent manageable without STL



Next steps

- Further sharpening the work plan (continuously)
- National Participation Plans (Pending)
- National ExCo's approval of national participants (Pending)
- Commitment letters from participants (Pending)
- Hand-over letters to director IEA by OA (June 2015)
- Task 15 kick-off June 2015 (Heerlen, NL)



Task 15 ExCo key matters

- ExCo members are asked to support their participants in finalizing the NPP's.
- ExCo members are asked to support their participants / subtaskleaders in the Task.
- ExCo members are asked to suggest contributors for the seminars at the EU PVSEC and conference on advanced building skins.
- ExCo approval of workplan (this meeting)
- ExCo contribution of pending and new countries
- ExCo members are asked to suggest subtask leader for subtask B.



Thank you for your attention

Contact details:

- Michiel Ritzen, michiel.ritzen@zuyd.nl
 - Martje van Horrik, martje.vanhorrik@zuyd.nl
 - Zeger Vroon, zeger.vroon@zuyd.nl
-
- BIHTS / Zuyd University of Applied Sciences
Nieuw Eyckholt 300
6419 DJ Heerlen, the Netherlands
www.bihts.nl / www.zuyd.nl