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BUILD UP Skills TRAINBUD**

**Upgrading training schemes for building workers and building up demand for skilled
workers to boost sustainable construction in Hungary**

Intelligent Energy – Europe (IEE)

Key action:

WP6 – D6.1 Report with set of performance indicators

Start date of the action: 2014.09.01.

Duration: 36

End date of the action: 2017.08.31.

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1. Summary

The performance indicators given in the proposal were calculated for the project duration and for the period after the end of the project until 2020. The indicators were defined by the training courses, expected numbers of participants and expected energy efficient interventions performed by skilled workers who successfully completed the training. We calculated the number of pilot courses and also courses triggered during the project duration. With that information we calculated the number of trainees successfully completed the courses and the possible number of energy efficient interventions the skilled workers will be able to perform. For the calculations regarding the reduction of energy consumption and the use of renewable energy, we also used information based on hypothetical average houses and outcomes of relevant national surveys.

The assumptions made in the proposal can be effectively revised with the experiences of the first courses. The Sustainable Construction Skills Alliance plays a significant role in defining the training concept, developing the training materials and creating the structure of the courses. During this period there are lot of dissemination possibilities including national events where the Alliance can find more expert members and also we have the possibility to measure the demand for energy efficient investments between home-owners.

After the members of the Alliance agreed on the concept and training programme the consortium will be able to start the courses. With the experiences of the pilot courses (number of participants attending the courses, number of courses, demand of skilled workers) and the information about the demands of home-owners the revision of the performance indicators will be more effective and the updated numbers will be more accurate.

2. Impacts and performance indicators

| Common Performance Indicators | Target within the action duration: | Target by 2020: |
|---|------------------------------------|-----------------------------|
| Number of training courses triggered by the action (trainees) | 25 | 148 |
| Number of training courses triggered by the action (trainers) | 3 | 4 |
| Number of people that will be trained (trainees) | 416 | 2 428 |
| Number of people that will be trained (trainers) | 54 | 68 |
| Number of hours taught in the frame of the courses triggered (trainees) | 660 | 3 560 |
| Number of hours taught in the frame of the courses triggered (trainers) | 32 | 40 |
| Estimated specific cost to qualify each trainee | 678 Euro/trainee | 116,2 Euro/trainee |
| Renewable Energy production triggered | 344 toe/year | 15 804 toe |
| Primary energy savings compared to projections | 2 006 toe/year | 92 190 toe |
| Reduction of greenhouse gas emissions | 8 054 ton CO ₂ /year | 370 094 ton CO ₂ |
| Specific indicators for your action | | |
| Number of skilled workers acquire voluntary quality label | 350 | 2 200 |
| Number of organizations participating in the Sustainable Construction Skills Alliance | 70 | 120 |
| Number of visitors at the online platform for the Skills Alliance | 16 000 visitors/year | 14 000 visitors/year |

- During the project duration we have only calculated the pilot courses plus courses triggered between month 25 and month 32, giving some time for evaluation purposes. We did not calculate courses between month 33 and month 36.
- Number of energy efficient and renewable energy interventions is an average number based on the assumption that a micro company with max 5 employees would commission 20-30 energy efficient interventions, while a company with more than 5 employees would commission 30-50 such interventions. Therefore 5 intervention/trainee seems a good estimation.
- There is a considerable lower level of interest in renewable energy interventions, due to the investment cost for such large scale interventions. Therefore we used 3 intervention/trainee in our calculations.
- In every year we have to calculate with the cumulative number of trainees doing interventions in the given year, not only with the number of trainees in the given year, since every single skilled worker previously trained will be available for such interventions.
- For energy reduction we used a hypothetical detached family house of 100 square meters. With energy efficient renovations it is possible to achieve a 40% reduction in energy consumption from 175 GJ/year to 105 GJ/year, thus we calculate with 70 GJ/year energy saving/intervention.
- For the use of renewable energy sources, the need for traditional energy sources can be lowered with up to 80% depending on the type of renewable energy source. According to a national survey about 7% of households wish to introduce solar collector system in their property and 3% is ready to introduce photovoltaic system. With solar systems it is possible to cover 5-60% of total energy need of a household by solar energy. Based on statistical data we used 11,4% reduction as estimation. Thus an average detached house energy reduction due to renewable energy sources – mainly using solar energy – is 20 GJ/year.
- For CO₂ emissions we used the following calculation: 1 GJ energy produces 0,08 ton of CO₂ emission.

- Regarding the given common performance indicators it is important to note that the numbers depend significantly on several factors such as the Hungarian GDP, energy prices, tender opportunities within the next years. These factors have great influence on the population's willingness regarding renovations therefore on the need for trained and skilled workers.

Table 1 for calculating number of training outcomes

| | | A | B | C | D | E | F | G | H |
|----|--|----------------------------|-------------------|--|---------------------------|------------------------------|---|---------------------------|--------------------------------------|
| | | Length of training (hours) | type of trainings | Nr of trainings (per type of training) | total number of trainings | total number of hours taught | Number of participants at single training | Number of trained workers | cumulative number of trained workers |
| 1 | No. of pilot training courses until month 24 | 60 | 1 | 2 | | 120 | 20 | 40 | 40 |
| 2 | | 20 | 7 | 1 | 9 | 140 | 16 | 112 | 112 |
| 3 | No. of triggered training within action duration | 60 | 1 | 2 | | 120 | 20 | 40 | 80 |
| 4 | | 20 | 7 | 2 | 16 | 280 | 16 | 224 | 336 |
| 5 | No of trainings in 2017/18 | 60 | 1 | 3 | | 180 | 20 | 60 | 140 |
| 6 | | 20 | 7 | 5 | 38 | 700 | 16 | 560 | 896 |
| 7 | No of trainings in 2018/19 | 60 | 1 | 4 | | 240 | 20 | 80 | 220 |
| 8 | | 20 | 7 | 5 | 39 | 700 | 16 | 560 | 1456 |
| 9 | No of trainings in 2019/2020 | 60 | 1 | 4 | | 240 | 20 | 80 | 300 |
| 10 | | 20 | 7 | 6 | 46 | 840 | 16 | 672 | 2128 |
| 11 | No of trainings within project duration | | | | 25 | 660 | | 416 | |
| 12 | No of trainings until 2020 | | | | 148 | 3560 | | 2428 | |

- No. of trained workers within project duration = 416 = G1+G2+G3+G4
During the project duration we have only calculated the pilot courses plus courses triggered between month 25 and month 32, giving some time for evaluation purposes. We did not calculate courses between month 33 and month 36.
- No. of trained workers until month 24 (pilot courses) = 152 = G1+G2

Table 2 for calculating energy savings and CO2 emission reduction

| Year | Number of trained workers | cumulative number of trained workers | Average renewable energy intervention (3/skilled worker/year) | Average energy efficient intervention (5/skilled worker/year) | Sum energy saving by renewable measures (in GJoule) | Sum energy saving by efficiency measures (in GJoule) | Average energy saving from renewable energy/year (in toe) | Average energy saving from energy efficiency/year (in toe) | Total CO2 emission in Ton | Yearly CO2 emission in Ton/year |
|-----------------|---------------------------|--------------------------------------|---|---|---|--|---|--|---------------------------|---------------------------------|
| Pilot action | 40 | 40 | 120 | 200 | | | | | | |
| | 112 | 112 | 336 | 560 | | | | | | |
| action duration | 40 | 80 | 240 | 400 | | | | | | |
| | 224 | 336 | 1 008 | 1 680 | | | | | | |
| 2017/18 | 60 | 140 | 420 | 700 | | | | | | |
| | 560 | 896 | 2 688 | 4 480 | | | | | | |
| 2018/19 | 80 | 220 | 660 | 1 100 | | | | | | |
| | 560 | 1 456 | 4 368 | 7 280 | | | | | | |
| 2019/20 | 80 | 300 | 900 | 1 500 | | | | | | |
| | 672 | 2 128 | 6 384 | 10 640 | | | | | | |
| | 416 | | 1 704 | 2 840 | 43 200 | 252 000 | 344 | 2 006 | 24 163 | 8 054 |
| | 2 428 | | 17 124 | 28 540 | 661 680 | 3 859 800 | 2 873 | 16 762 | 370 094 | 67 90 |

3. Update of performance indicators

At this early stage of the process the Consortium believes that the project is not advanced enough to update the performance indicators.

In our opinion the next months will significantly influence the performance indicators defined in the proposal. In order to update the indicators effectively we need the contribution of the members of the Sustainable Construction Skills Alliance. The database for the Sustainable Construction Skills Alliance started to be set up in project month 6 therefore the work with the members starts in March 2015. The Consortium is currently contacting possible members (policy makers, training institutions, manufactureres) of the Sustainable Construction Skills Alliance. Also there will be significant events in Hungary in April regarding he building industry which can provide opportunity to involve more members in the Alliance.

The Sustainable Construction Skills Alliance will be one of the major pillars that will provide the sustainability of the project. The members will provide input in developing training concept, training materials and they will paritcipate in building up the training assessment system.

The indicators set up in the proposal are based on assumptions before the beginning of the project. In order to update these indicators (number of trained worker, number of courses...etc.) the training concept and the structure of the courses have to be finalised. The contribution of the Alliance is essential in this phase. The final training concept and final structure of the courses will indicate a more percise number of participants than at the start of the project. We also expect the members to provide professional input.

Regarding energy savings and CO₂ emission it is still early to update the indicators. In order to revise the indicators set in the proposal we need to start the pilot trainings. As we complete the first trainings we will have a more accurate number of workers attending the courses, interest in participation, structure of the courses and applicability of the training. Also the events organised for home-owners can provide additional information about the demand for skilled workforce and energy efficient improvements which is essential in revising the number of energy interventions.

The strategy of the Sustainable Construction Skills Alliance, the experiences of the pilot trainings and the dissemination activities for the public can give the Consortium enough information to revise the indicators.