Supporting a greener and more energy efficient construction sector in Mongolia

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Introduction

• Duration of the project: 48 Months, January 2012-December 2015
• Total budget: 1 690 341 Euros
• Project partners: Mongolian national chamber of commerce and industry (SCP department), Caritas Mongolia, the Swedish environmental research institute (IVL)
• Objective: To reduce the environmental impact of the construction boom taking place in Mongolia
• Targeted areas: Urban centres (Ulaanbaatar, Erdenet and Darkhan)
General context in Mongolia

- Construction boom taking place in Mongolia (120% increase between 2010 and 2012)
- Limited awareness of value of insulation and reduction of the environmental impact of the industry
- Due to the climate condition, the construction season is very short (May-October) and heating season lasts 9 months
- Internal use and distribution and transmission losses account for more than 30% of the total electricity produced by Combined Heat and Power Plants (CHPs) in Mongolia (Due to poor insulation)
- Very high CO2 footprint in Ulaanbaatar (13.5 tonnes per capita)
- Currently more than 50% of construction materials are imported (Poor quality)
- Reliance on numerous coal power plants for the electricity and heating supply that are producing each year around 1 million tons of ashes disposed in landfills
Specific objectives of the project

- Identification, development and official approval of green construction products made with fly ash from PP
- Support the production and sale of fly ash products (Reinforce the production capacities of the Mongolian SMEs and their share of the market)
- Promotion of green construction practices by SMEs in the construction industry and vocational training schools
- Improvement of the policy environment conducive to sustainable construction products and practices
Background of the research

- Research in Europe, USA and Australia has shown that construction products can be made with fly ash used as an additive or substitute to aggregates
- Products made with fly-ash presents better strength and insulation properties
- Cost-effective (Recycling materials, cheap to produce)
- Save natural raw materials (Sand, clay, etc)
- Reduce the need for disposing fly ash in landfill
1) Research and development of ash based products

- **International research** (selection through an international call for tender)
- Cross checking research with **local production units** (SMEs)
- Official approval of **new standards** (based on EU standards)
- **Production of ash based products by Mongolian SMEs**
- **Training sessions** for the interested SMEs
- **Conferences** to introduce findings to all SMEs in the sector
- Form a producer’s group, assist them to organize a large scale fly ash collection and transportation system, advertising campaign
Actions implemented

- Level of fly ash radioactivity tested (Below EU and Mongolian standards)
- 5 commonly used construction materials have been identified (AAC blocs, Aggregate and Keramsite blocs, bricks and dry mortar mixture)
- Pilot production in real condition and crosschecking of the research in Mongolia on the way to be completed
- Report under preparation detailing the characteristic/properties of the different product
- Research pre-results introduced to key stakeholders and the standardization agency
- MoUs signed with Key stakeholders (Research and design institute, Construction development center, Association of producers) to support the standardization process
A CCR volunteer collecting fly ash at PP3

Pilot production of fly ash autoclaved aerated concrete blocs in an SME factory

Fly ash autoclaved aerated concrete blocs
Upcoming activities and challenges

**Upcoming activities**

- A working group with the standard will be formed with representatives of key stakeholders
- Expected outcome: New standards for fly ash construction materials
- Conference/Training for SMEs and establishment of producer group (Middle of 2015)
- Partner with Power plants to organize a large scale fly ash collection
- A green label for construction materials will be established

**Challenges**

- Difficulties to work with a Foreign research institute not located in the country (Logistic, monitoring, communication, local context)
- Delay in the crosschecking due to the weather condition
- Uncertainty on the duration of the standardization process
2) Training activities on Green construction products

- Research on existing regulations and practices
- Identification of possible improvements
- Preparation of training content for construction professionals (designers and workers)
- Acknowledgement of green practices through new regulations
- Training sessions for the interested SMEs
- Conferences with all the SMEs of the sector
- Training of the teachers of the Vocational Training schools and of the Universities/incorporation of the training materials into the curriculum
Facts and actions

- Regular conferences organized on SCP and GCP for SMEs
- Training materials finalized on GCP, based on good European practices adapted to the Mongolian context
- Training sessions adapted to different targeted groups (Decisions makers, Professionals and skilled workers), (Developers, designers, contractors, material producers, inspectors, TVETs and university)
- In 2014, around 50 training sessions on GCP will be conducted
- Training material incorporated into the official training program for Engineer of the CDC
- Working in close cooperation with TVETs, university and ministry of labor (curriculum)
- A marketing group will be established for Construction companies adopting green practices (In 2015)
3) Advocacy towards government bodies to pass incentive laws

- Supporting government bodies responsible for construction and environmental policy standards to gain awareness of the benefits of green construction practices
- Advocacy towards government bodies to pass incentive laws
- The improvement of the policy environment in order to facilitate the use of the green construction products and practices
- Institutional support for different project activities (Standardization, green construction label, etc)
Actions taken

- A conference on green urban development for Decision makers took place in February 2014 (public/private actors)
- A stakeholder mapping was conducted
- A study tour for decisions makers on green construction in Czech Republic organized at the end of May 2014 and will be followed by 2 post-tour workshops
- Regular meeting with relevant ministries, implementing agency and professional agencies

Participants of the study tour
Associated stakeholders

- The Ministry of Construction and Urban Development
- The Ministry of Environment and Green Development
- The labour ministry
- The Municipality of Ulaanbaatar and all the districts (Chingeltei, Bayangol, Sukhbaataar, etc)
- The Agency for Metrology and Standardisation
- The Power plants 3, 4, in UB and the power plants in Darkhan and Erdenet
- The Building Material Manufacturers’ Association of Mongolia
- The Mongolian Builder’s Association
- The Mongolian University of Science and Technology
- The Construction College of Mongolia
- The UN Building Energy Efficiency Project
- Construction Development Center and Design and research institute
Thank you!

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