

**IMPACT SHEET:** Improving resource-efficiency and cleaner production in the Mongolian construction sector through materials recovery project

## Sustainable construction and demolition waste management



*Promoting sustainable consumption and production in the construction sector in Mongolia through improving waste management*



## CHALLENGE

The construction and demolition waste management sector in Mongolia faces many challenges. First, there is a lack of legal regulations for illegal dumping of Construction and Demolition Waste (CDW) or sustainable CDW management. Also, construction sector stakeholders don't have proper knowledge on sustainable CDW management. Moreover, there is a lack of official data and studies, lack of technical and academic capacity, lack of human resources, and misconceptions among the public about reused and recycled materials. All of the existing buildings are not sustainable and many of them rely on fossil fuels for heating and cooling and use old technologies and wasteful appliances, which has resulted in the production of massive amounts of CDW. More than 80% of the CDW is illegally dumped; therefore, it harms both human health and the environment, contributes to the increase of energy consumption, and depletes finite landfill resources.

## PROJECT BACKGROUND

Mongolia is the 19th largest country in the world by area, however, its population of just 3.29 million makes it the world's most sparsely populated country. Since the 1990 democratic revolution, people moved to the Ulaanbaatar city, now occupied by 40% of the population. As a result of local migration, the construction industry is growing rapidly year by year in the urban areas. The booming construction industry in Mongolia has resulted in the production of massive amounts of CDW. It is estimated that this waste accounts for 20-25% of all overall solid waste produced in Mongolia. CDW is thus one of the largest waste streams in Mongolia. In Ulaanbaatar (UB) and other cities in Mongolia, construction waste is often dumped illegally. A huge part of the construction and demolition work is done by small and medium-sized contractors and subcontractors. Thus, SMEs are producing most of the CDW, and their current unsustainable approaches have negative impacts on human health and environment in Mongolia. In Mongolia, CDW management represents a significant challenge because the performance of SMEs in construction and demolition debris management is still poor. Numerous challenges keep SMEs away from good CDW management practices. Also, CDW Recycling SMEs in Mongolia face a lack of knowledge and technical capability to deal with negative environmental impacts. Furthermore, there are no specific regulations or certifications for a proper demolition of an End of Life (EoL) building, recycling, and reuse of CDW in Mongolia.

## PROJECT OBJECTIVES

The project objective was to contribute to poverty reduction and mitigation of climate change in Mongolia by promoting sustainable production and consumption in the construction sector, through supporting SMEs to switch to more resource-efficient practices.

The expected results were the following:

- To build capacity for the key stakeholders in the construction sector, so they are prepared to adopt sustainable CDW management practices.
- To develop a CDW-based product that is tested, verified, and prepared for commercial production.
- To raise awareness of the advantages of CDW-based products among SMEs and state administration bodies.
- To contribute to the development of a more conducive legal framework for sustainable CDW management.

## TARGET GROUPS

- **Small and medium-sized enterprises (SMEs)** in the construction industry (Construction and demolition SMEs, Construction material producer SMEs)
- **Mongolian state institutions**
- **Urban residents** in Mongolia
- **Mongolian University of Science and Technology**, other universities, and students

## PROJECT ACTIVITIES

### Capacity building for key stakeholders

The first step towards building sustainable CDW management in the construction sector was to build capacity of key stakeholders. Over 4,000 stakeholders were trained on sustainable CDW management looking at best practices from the EU. To ensure its sustainability, the project developed several training materials for online and classroom training and made it accessible to the public. Moreover, the new university curriculum entitled "CDW recycling technology I" is currently taught at Mongolian University of Science and Technology.

### Development of a new CDW-based product

Under this activity, the project developed a CDW-based product (a recycled concrete aggregate) that can be most successful in the Mongolian context. To prepare the product for commercial production and further development, its technical standards

got approved by the authorities, an economic feasibility study was conducted for the product to make sure it is profitable for those who are interested, and different awareness raising and promotional activities were organized.

### Legal framework development

To strengthen legal certainty and incentives for public and private owners to support sustainable consumption and production, the project was determined to improve the Mongolian legal framework regarding the CDW management. The approval by the Ministry of Construction and Urban Development of the “Procedure on cleaning, collecting, segregating, transporting, recycling, recovering, disposing and landfilling of construction and demolition waste” is an important step towards the sustainable development of the Mongolian construction sector.

## PROJECT ACHIEVEMENTS

The main achievement was the preparation of the groundwork for the sustainable CDW management development by creating a more conducive legal environment, ensuring the sustainability of the project by different training programmes, commercially and technically feasible CDW-based product.

- **Training and awareness-raising** for more than 4000 representatives in all 21 provinces of Mongolia;
- **Developed the first CDW-based product** that is economically and technically feasible in the Mongolian context;
- **Developed a university curriculum** and online and classroom training platforms for non-formal education;
- **Developed the first legal procedure** on the CDW management that was approved and implemented;
- **Published 7 different studies** in the CDW sector;
- **Successful adaptation** of the EU policies.

## LESSONS LEARNED

The main challenges during project implementation were a lack of official statistics and data, together with the fact that most of the CDW was illegally dumped and the construction sector in Mongolia was not as advanced as in European countries. Therefore, adjusting the training resources, as well as the recycling technologies to the Mongolian context, was one of the biggest challenges faced. We have overcome these challenges by engaging with important stakeholders.

Key lessons learnt during the project implementation included:

- Engaging professional associations and CSOs in the sector and creating awareness among them is an essential first step.
- Involvement of the respective authorities with diverse backgrounds is key to policy development and implementation.
- Detailed planning, regular communication, and easy accessibility of senior team members enable successful operation. The easier the accessibility of senior team members, the more engaged the SMEs and partners are.





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We have achieved tremendous results on the policy level by ensuring the legal environment and leverages to enable commercial production, but the real impact wouldn't be generated without private sector engagement. So, we tried our best to increase the interest of SMEs in the actual production of the recycled concrete aggregate so that the CDW-based product can be further developed. As a result of our diligent team effort, several SMEs have expressed their interest in the commercial production of the product and the project team has helped them to develop their business proposals so that they can find financing. This was one of our efforts beyond our initial plan.



## Long-term project sustainability

The project results will be sustained in the following ways:

- Ensuring the implementation of the legal procedure, the government support on the CDW-based product production and CDW management is reflected in the government policy strategy until 2029;
- A new university curriculum will be taught for environmental engineering students at the Mongolian University of Science and Technology;
- CDW management training shall be taught by the Mongolian Builders' Association in the professional engineering certificate programme;
- The project promoted a business plan for commercial production of the CDW-based product and helped Tenger Uul Trade LLC, to get in touch with Ulaanbaatar Investment Management (UBIM), a green development funding company under Ulaanbaatar City Mayor's Office.

## Project contributions to Climate Change Mitigation and SDGs

A CDW-based product, recycled concrete aggregate, developed under the project can replace 30-50% of the natural aggregate that is mined from the riverbanks nearby cities. By developing the product and making it available for production, the project has contributed to [SDG 12](#) by encouraging the construction companies to switch to more sustainable consumption and production practices.

**SDG1:** According to the newly developed CDW management procedure, it is now required to have a professional engineer on the construction site who is responsible for the CDW management of the operation. On the other hand, the project also developed different training platforms for current students, professionals who are already graduated, and the general public. By closing the gap between supply and demand in the labour market, the project is contributing to creating more job positions and decreasing poverty.

**SDG 13:** The project has been promoting sustainable practice, 3Rs, and its impacts on the environment throughout the implementation period. By replacing natural aggregate, there will be less GHG produced by the mining sector. Also, the natural aggregate is usually mined from the riverbanks and mountains, by replacing it in the concrete production, nature preservation will increase.

In the beginning of the project more than 80% of the construction waste was illegally dumped, according to the Economic feasibility study of the CDW-based product conducted under the project, 86% of the CDW is dumped at the landfill sites out of which, 32% of the CDW is properly buried at the landfill site.

# Impacts at a Glance

<b>Economic Impact</b>	<ul style="list-style-type: none"> <li>• Average production cost will be reduced by 20% by switching to recycled concrete aggregate</li> <li>• Opportunity for the commercial production of the recycled concrete aggregate is created on the market</li> </ul>
<b>Environmental Impact</b>	<ul style="list-style-type: none"> <li>• 30-50% reduction of resources use, waste generation, soil, water and air pollution through resource efficiency and responsible waste management</li> </ul>
<b>Social Impact</b>	<ul style="list-style-type: none"> <li>• More than 50% of the total participants of the training, partners, and stakeholders were women</li> <li>• The project has supported youth through engaging them in expos, youth summits, supporting their innovative ideas in 3Rs and providing training materials</li> </ul>
<b>Climate Benefits</b>	<ul style="list-style-type: none"> <li>• The approval of the CDW management procedure is one of the biggest measures implemented by the project to mitigate GHG by legalizing the sustainable practice. Furthermore, the CDW-based product and its approved production technology will be one of the main actors in the mitigation of GHG in the future</li> <li>• The project has not only focused on CDW management but also equally promoted 3Rs and waste recycling practices and included them in the training materials for SMEs and trained more than 1000 representatives from the business sector. Handbooks and training materials on SCP practices for businesses, are published on public platforms and free of charge.</li> </ul>
<b>Green Finance</b>	<ul style="list-style-type: none"> <li>• The project has organized B2B events to enable interaction between 90 SMEs and investors</li> <li>• 1 SME is currently being reviewed by an investor on their business proposal to produce recycled concrete aggregate and to further develop the CDW-based product that was developed under the project</li> </ul>
<b>Target Group Engagement</b>	<ul style="list-style-type: none"> <li>• 459 SMEs engaged in project activities</li> <li>• 4,154 stakeholders involved - SMEs, state institutions, professional associations, CSOs, students, professors, universities, TVETs and public</li> <li>• Outreach activities included 14 expos and 2 media campaigns</li> </ul>
<b>Policy Development</b>	<ul style="list-style-type: none"> <li>• 4 new policies, regulations or standards defined based on recommendation from project</li> <li>• New procedures on cleaning, collection, segregation, transportation, recycling, reuse, disposal and burial of construction waste</li> </ul>
<b>Europe-Asia Cooperation</b>	<ul style="list-style-type: none"> <li>• 7 workshops, seminars, technical trainings and a study tour with European and Asian participants</li> <li>• A new EU-Asia partnerships initiated</li> </ul>



## FUNDING

EUR 1,366,891.83  
(EU Contribution: 80%)

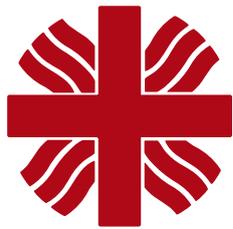


## DURATION

March 2016 - November 2020



## PARTNERS



Caritas Czech Republic



Mongolian University of Science and Technology



Mongolian National Recycling Association



Technical University of Delft



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