JICA Clean City Initiative (JCCI)

"Challenges of managing demolition waste (debris) in Ukraine"

Tokyo, 2024/07/02
An example of the destruction caused by Russia's armed invasion against Ukraine.
An example of the destruction caused by Russia's armed invasion against Ukraine.
Unfortunately, as a result of the ongoing armed invasion, Ukraine is experiencing such destruction almost daily.
Comparison of demolition waste (debris) and disasters waste

**SIMILARITY**

**Demolition waste (debris)**

- The generation of waste occurs in an uncontrolled manner
- Most of the waste is mixed, which complicates the waste management process
- Generating a large amount of waste in a short period of time
- May contain hazardous waste

**Disasters waste**

- The generation of waste occurs in an uncontrolled manner
- Most of the waste is mixed, which complicates the waste management process
- Generating a large amount of waste in a short period of time
- May contain hazardous waste

**DIFFERENCE**

- May be contaminated with explosive substances
- Most of the composition: concrete, reinforced concrete, brick, wood, plastic, glass, metal

- Most of the composition: wood, concrete, stones, metal
Experience in regulating debris (disasters waste) management at the legislative level

Japan

- Act on the promotion of Effective Utilization of Resources Fully revised and enforced in 2001
- Construction recycling Act in 2002
- Construction recycling Act in 2002

Ukraine

- Framework law on waste management in 2023 (in accordance with EU directives)
- Demolition waste (debris) management procedure in 2022

Today, Ukraine has a short deadline to implement the best long-term global experience, including the experience of Japan

The experience of Japan in the field of disasters waste management is more than 20 years, compared to Ukraine
Overview of the current situation in the field of debris management in Ukraine
Approximate DESTRUCTION SCALE

- **280,000 +**: Damaged buildings and structures (including multifamily buildings, apartments)
- **> 100,000**: Buildings beyond repair
- **> 600,000**: Tons of debris at temporary storage yards

Millions of tons of waste have not yet been accounted for.
HARMFUL EFFECTS ON THE ENVIRONMENT AND PUBLIC HEALTH

CHALLENGES

- vast extent of destruction, challenging to evaluate before military activities cease
- difficulties in managing debris in war-affected areas
- shortage of skilled workers in communities
- communities’ limited resources for destruction aftermath
- hazardous materials mixed in the debris
LEGAL FRAMEWORK

Ukraine’s Law
“On Regulation of Urban Development Activities” (Section V, Article 9³)

Ukrainian Cabinet of Ministers Resolution
“On Establishing the Procedure for Management of Waste Arising from Damage (Destruction) of Buildings and Structures due to Military Actions, Terrorist Acts, Sabotage, or their Consequence Management Works” (as of September 27, 2022, № 1073)

Objectives stipulated by legislation:

- To mitigate and lessen the environmental and health impacts of such waste
- Recycling (repurposing) destruction waste components for construction use

Fragments of damaged or destroyed structures, including materials and items within or nearby at the time of damage or during demolition, which have lost their functionality and cannot be reused onsite.
Resolution No. 1073 of the Cabinet of Ministers of Ukraine, dated September 27, 2022 was co-developed by the Ministry of Regional Development and the Ministry of Environmental Protection

REGULATIONS FOR DEBRIS MANAGEMENT

referring to waste generated as a result of damage or destruction of buildings and structures due to military actions, terrorist acts, sabotage, or the execution of works for the elimination of their consequences

LEGAL FRAMEWORK

REGULATIONS DEFINE:

▪ Standard methods for assessing and recording debris volume and type
▪ Identification and tracking system for such waste
▪ Debris classification based on origin, contents, and hazardous material presence
▪ Guidelines for processing destruction waste (debris)
▪ Local government protocols for debris management (the main activities are aimed at clearing the territories)
▪ Arrangements for temporary storage of significant debris amounts
▪ Basic principles recycling of debris in construction and building materials production
DESTRUCTION WASTE (DEBRIS) (mixed waste)

Established list of waste components and their potential reuse in construction and the building materials industry (for manufacturing building products)

**PRIMARY**

Components like rubble and parts of structural elements, door and window fillings, utility networks, etc (concrete, brick, plastic, wood, glass, metal)

**SECONDARY**

Materials and items found inside or near the structure during damage or dismantling, such as equipment, personal items, household goods (furniture, appliances), organic materials, etc.

Aligned with the EU’s List of Waste (decision 2000/532/EU)
DESTRUCTION WASTE (DEBRIS) MANAGEMENT PROCESS

DESTRUCTION WASTE MANAGEMENT OPERATIONS

- Inspections of damaged sites, reviewing reports from citizens, organizations, media, and emergency services (including the State Emergency Service and National Police), military units, etc.
- Identifying the waste owners
- Publishing waste-related information on official websites and communication with local administrations

TEMPORARY STORAGE SITE MANAGEMENT

- Initial cleanup (collection, on-site sorting) and transportation to temporary storage
- Dismantling damaged structures as needed
- Final area cleanup and clearing
- Setting up temporary waste storage facilities
- Storing destruction waste for one year post-martial law
- Processing and neutralizing large waste amounts in case of significant volumes of waste generation

AUTHORIZED ENTITY

Local executive bodies of villages, towns, cities, and military administrations

UTILIZATION (RECYCLING)

- Repurposing destruction waste as material or energy resources
- Waste disposal, including burial
- Land reclamation at temporary storage sites
DESTRUCTION WASTE (DEBRIS)
TEMPORARY STORAGE

Storage of destruction waste
during martial law and for one year after its end

Processing operations
are limited to non-hazardous main waste components, involving:
- component separation
- crushing
- fractioning
Site planning includes areas for:

- temporary waste storage and sorting,
- processing (recycling), and storing secondary raw materials
- crushing-sorting facilities and other installations
- temporary structures for waste management activities

Sanitary protection distances:

- 2 km from water bodies
- 0.5 km from residential/public areas and social infrastructure
- 0.05 km from forests
- 0.2 km from agricultural lands, public roads, and railways

Placement decisions for temporary storage sites are made by Kyiv military (city) and regional military (state) administrations.
SITE SETUP REQUIREMENTS

- A solid, level foundation of concrete, asphalt, or compacted soil with a minimum 1.5mm geomembrane layer, protected by a 0.5m layer to prevent mechanical damage
- Accessible entrance and roads for vehicle passage
- Enclosed perimeter
- Proper illumination
- Sufficient water supply for firefighting in case of combustible waste storage
- Fire and special vehicle access necessary if combustible waste is stored
- Organized drainage for rainwater

PROHIBITIONS:

- Storage of destruction waste outside specified temporary sites or facilities
- Mixing different destruction wastes during storage
- Storing other wastes at destruction waste sites
SITE SETUP REQUIREMENTS

‘JAPAN-UKRAINE EMERGENCY RECOVERY PROGRAM’

Equipment supplied for a temporary waste facility in Kyiv region (Borodyanka city):
- Crushers
- Loaders
- Excavators
- Bulldozers
- Dump trucks
AUTHORIZED ENTITIES

- Facilitate area clearance, temporary waste storage
- Manage waste volume assessments and plans
- Determine the financial and technical needs for effective waste management
- Adopt recycling technologies for reusable waste
- Seek international support

BUSINESS AND COMMUNITY ENGAGEMENT

- Create guidelines and legislature for construction products from recycled waste
- Evaluate data from local governments
- Establish incentives for using recycled waste in construction
- Determine funding needs and sources, secure international aid
- Set goals/KPIs for waste reuse and recycling preparation

CENTRAL EXECUTIVE BODIES

- Determine funding needs and sources, secure international aid
- Create guidelines and legislature for construction products from recycled waste
- Establish incentives for using recycled waste in construction
- Evaluate data from local governments
- Set goals/KPIs for waste reuse and recycling preparation

NEXT STEPS

- Facilitate area clearance, temporary waste storage
- Manage waste volume assessments and plans
- Determine the financial and technical needs for effective waste management
- Adopt recycling technologies for reusable waste
- Seek international support
OPPORTUNITIES
Destruction Waste in Circular Economy

Destruction waste storage
Efficient waste management to lessen environmental impact

Combining destruction and construction waste
Over 600,000 tons of mixed waste mainly stored temporarily (2023/12/01) Additionally, millions of debris will be generated from dismantling and after the de-occupation of the territories of Ukraine

Construction work execution
Organized collection of waste from construction and demolition, along with recording and preliminary sorting

Government regulation and support
regulatory control, securing funding, Regulation #305 (requirements for construction products)

Support from international donors
technical and financial assistance

Executive bodies of the local authorities and military administrations
waste management, securing funding

Processing and recycling destruction waste

Converting waste into reusable components

Secondary raw materials preparation
Establishing standards and uses for recycled materials

Building materials production
Advancing and applying modern techniques in building product manufacturing, developing formulas, and adhering to safety and eco-friendliness standards per EU Regulation 305
Experience of Japan that could be implemented in Ukraine

- Regulation at the legislative level of disasters waste management (adapted to debris management in Ukraine)
- Approaches to the interaction between the state and local governments on the issues of disasters waste management (adapted to debris management in Ukraine)
- Approaches to the development of local disaster management plans (adapted to debris management in Ukraine)
- Approaches to sorting, processing and reuse of disaster waste (adapted to debris management in Ukraine)
- Requirements for specialists and personnel involved in the process of disaster waste management (adapted to debris in Ukraine)
- Technologies for processing and reusing large volumes of disaster waste (adapted to debris management in Ukraine)
- Integration of electronic systems and products into the process of disaster waste management (adapted to debris management in Ukraine)
Thank you for your attention!

We hope for further close and effective cooperation between our two countries.