

**Example of best practices and available tools  
for the use of indigenous and traditional knowledge and practices for adaptation**

**Inputs provided by:**

Korea Adaptation Center for Climate Change (KACCC), Korea Environment Institute

**Title of practice/tool**

Ondol, Korean heating system

**Description of practice/tool**

Ondol is a room floor heating system where fire in the furnace of a kitchen passes under the room's floor to keep it warm. This is a unique and traditional heating method of Korea. The principle of the Ondol is the use and transfer of heat. A fairly high chimney on the other side of the furnace facilitates the flow of the heat. The heat warms the wide stone-plates laid under the room's floor, and the heated stone-plates raise the room temperature. As the heat passes at the same time through several parallel ducts divided in the beginning and then combined at the end to be connected to the chimney, the system has uniform temperature distribution. And since the wide stone-plates are usually pretty thick, the plates do not cool quickly and thus provide heat steadily and for a fairly long time.

Ondol has several advantages in terms of climate change adaptation. In most cases, the fire furnace has a cooking caldron over it. This structure takes advantage of the heat generated to cook is not wasted but used to heat the room, which shows a good example of dual functions of Ondol. It is a cost-efficient heating system in installation and maintenance. Another advantage of Ondol is the efficient use of space and that cleaning is not required without producing any noise.

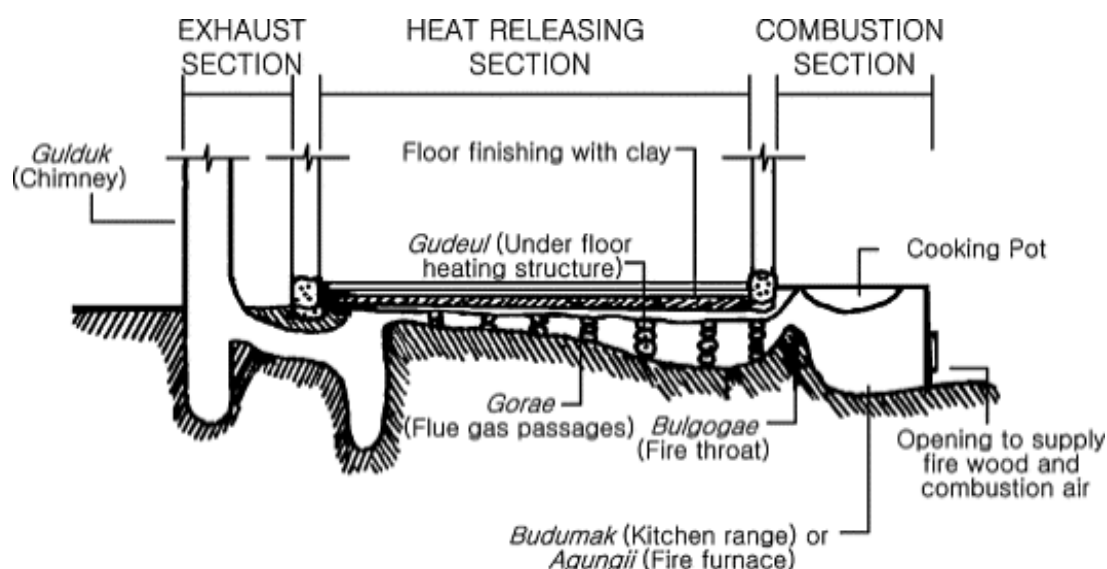


Figure 1. The structure of traditional Ondol (before the 1950s)

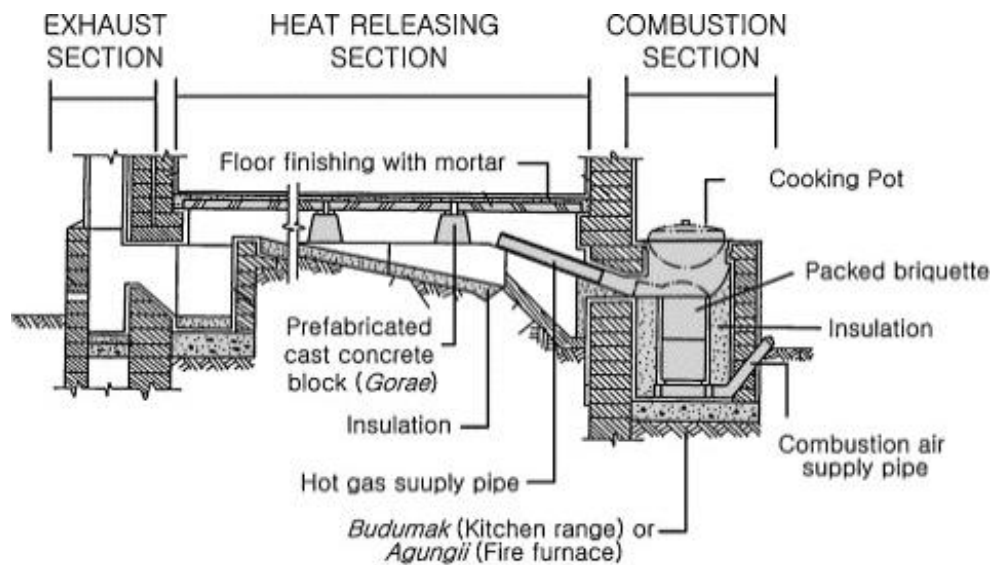


Figure 2. The structure of modified anthracite coal Ondol (from the early 1950s to the late 1970s)

Region

- Asia-Pacific

Country

Korea

Sector

- Transport, infrastructure and human settlements

Name of implementing institution/s

Not a specific institution/institutions.

Although modern days Korean apartment buildings are using the electrically-heated water to run through the pipes under the room, traditional Korean houses still use this Ondol system.

Further information

Kim, B. A., Lee, J. L. 2003. A Study of the Ondol (Gudul, Floor Heating System) and Kitchen Space in the Traditional Houses on Jeju Island, Korea. International Journal of Human Ecology. 4(1): 15-23.

Yeo, M. S., Yang, I. H., Kim, K. W. 2003. Historical changes and recent energy saving potential of residential heating in Korea. Energy and Buildings. 35(7): 715-727.

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