GANG – KHSWA

The Traditional Practice of Glacier Grafting

The Traditional Knowledge and Practice of Glacier Grafting in Gilgit-Baltistan, Pakistan, is a living intangible cultural heritage element, consisting of indigenous knowledge systems, technical skills, communal labor practices, oral traditions, and ritual observances through which mountain communities intentionally create, enhance, and maintain small artificial ice bodies for seasonal water storage.

Glacier grafting involves the deliberate diversion of spring or meltwater during winter through narrow, stone-lined channels to shaded, high-altitude sites, where water is allowed to freeze gradually in layers. Over time, these controlled processes result in the formation of durable ice masses capable of surviving into spring and early summer, when meltwater is critically needed for irrigation and domestic use.

Beyond its technical dimensions, glacier grafting represents a culturally embedded system of environmental stewardship, reflecting generations of accumulated knowledge about climate patterns, topography, hydrology, and seasonal cycles. The practice is inseparable from the social organization, belief systems, and identity of the communities that sustain it.

The element is practiced by indigenous communities residing in the high-altitude valleys of Gilgit-Baltistan, encompassing a diverse range of participants. Small-scale farmers and herders actively contribute through their day-to-day engagement with the land and livestock. Elders, recognized as custodians of specialized knowledge, guide and preserve traditional practices, while skilled practitioners are responsible for the technical execution of the techniques.
Additionally, youth and children participate as learners, ensuring the transmission of knowledge and skills to future generations.

Participation is collective and voluntary, guided by customary norms rather than formal institutions. Roles and responsibilities are assigned through community consensus, reinforcing social cohesion and mutual dependence.
Glacier grafting is practiced in environmentally fragile, high-mountain regions characterized by long winters, short agricultural seasons, limited natural water storage, and increasing climate variability.

The practice is closely adapted to local landscapes, with site selection reflecting intimate knowledge of sun exposure, wind patterns, and natural insulation provided by the terrain. Variations exist across valleys, reflecting localized environmental conditions and cultural expressions.

The origins of glacier grafting are preserved through oral history, legends, and place-based narratives. Elders recount that the practice emerged as a community response to water scarcity and environmental uncertainty. Over generations, techniques were refined and embedded within cultural traditions, rituals, and seasonal cycles.

Despite environmental and social change, glacier grafting has continued as a living tradition, adapting to new challenges while maintaining its core cultural principles.

The element encompasses site selection based on micro-climatic understanding, traditional channel construction techniques, controlled freezing methods, seasonal monitoring and maintenance, as well as rituals, prayers, and symbolic observances. The knowledge is experiential and contextspecific, relying on direct participation rather than written instruction for its transmission.

The practice faces several threats, including climate change affecting freeze-thaw cycles, youth migration reducing knowledge transfer, modern infrastructure projects that marginalize indigenous systems, and limited documentation and institutional recognition.

Existing safeguarding measures include the continued practice of the element within the community, oral transmission of knowledge, and seasonal communal participation.

Proposed measures for safeguarding include community-led documentation, integration of knowledge into local education, support for youth apprenticeships, ethical collaboration with scientific institutions, and inclusion in national inventories of intangible cultural heritage.

The inter government al committee for the safe guarding of the intangible cultural heritage inscribed the glacier grafting on the urgent safe guarding list as the nomination file met all the required selection criteria as fellow

Definition of intangible cultural heritage	The intangible cultural heritage of glacier grafting in Gilgit-Baltistan, Pakistan, encompasses the traditional knowledge, skills, and community practices through which local communities create and manage artificial glaciers to store water for the dry season. This heritage includes technical expertise in water diversion and controlled freezing, collective labor practices, oral traditions, and ritual observances associated with the process. It is a living practice that embodies the communities' environmental knowledge, social cohesion, and cultural identity, transmitted across generations through participation and storytelling.
State of viability	Gilgit-Baltistan's glacier grafting tradition is currently vulnerable yet still living. While the practice continues in some high-altitude communities and remains an important source of seasonal water, its transmission depends largely on elder practitioners, with fewer young people actively learning the skills. Climate change, outmigration, modernization, and limited formal recognition threaten its continuity. Without targeted safeguarding measures and communityled initiatives, the long-term survival of this traditional knowledge and practice is at risk.
State of viability	Efforts should focus on preserving both the technical knowledge and the cultural practices associated with the tradition. Key measures include documenting the methods, rituals, and oral histories with community consent; supporting intergenerational transmission through youth participation; and integrating traditional knowledge with scientific guidance for sustainable water management.
Community Participation	Glacier grafting involves villagers working together to construct and maintain artificial glaciers, with elders teaching younger members. This collective effort preserves technical skills, reinforces cultural identity, and ensures seasonal water availability for the community.
Inventory	The practice should be systematically documented, including techniques of ice formation, water channel construction, seasonal schedules, associated rituals, and oral knowledge.