From Madagascar to Alaska: When Technical Feasibility Is Not Enough

Indigenous Knowledge and the Design of Social Impact Mitigation

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In Alaska, resource projects unfold on lands and waters that sustain subsistence ways of life, where a single resource, such as the beach grass Yup'ik and Unangax̂ weavers gather for baskets, can carry economic, cultural, spiritual and intergenerational significance. Technical studies can show what is physically possible to restore; they cannot show what a community will accept in its place. Lisa Dean, formerly of Rio Tinto, and North Star Group (NSG), which has advised Rio Tinto, present a case from Madagascar that shows how to close that gap.

In the early 2000s, QIT Madagascar Minerals (QMM), a Rio Tinto subsidiary, prepared to mine ilmenite from coastal sand deposits near Fort Dauphin in southeastern Madagascar. Dredging would disturb the dunes, wetlands and forests on which surrounding communities depended, and mined sands would later be reprofiled and affected species re-established.

QMM's impact assessment paired ecological research with locally grounded social research. A team of Malagasy anthropologists native to the region, supported by the University of Quebec, brought language, cultural fluency and local knowledge to the work, revealing not only which resources people used, but what those resources meant. The assessment treated that knowledge as evidence capable of shaping both how impact was defined and how mitigation was designed.

One wetland reed, mahampy, exposed the limits of technical feasibility alone. Women wove it into mats, baskets, household and agricultural implements, and burial shrouds. In the Malagasy deep south, the first shroud placed around the deceased is a sacred ancestral object and an enduring symbol of identity and respect. For families who could not afford costlier alternatives, mahampy was the material within reach.
Ecological research showed that mahampy could be cultivated, but not whether cultivated reed would be culturally acceptable. Women questioned whether a God-given resource would keep its essential qualities once cultivated. Over three successive harvests, they observed the cultivation, gathered the reed, and tested its strength, resilience and suitability for traditional uses. They judged it equivalent to the natural resource, consented to its use as mitigation, and valued having it closer to their communities.

Ms. Dean and NSG bring this example forward as a tested model for Alaska. Key lessons include:

- **Technical feasibility is not acceptability.** Restoration science shows what can be rebuilt; affected communities determine whether it is an adequate replacement.
- **Meaning is evidence.** Locally grounded research can reveal the cultural and spiritual significance that subsistence evaluations under ANILCA and NEPA, which document use and abundance, often miss.
- **Communities should help design and test mitigation.** Their direct involvement builds credible consent and catches problems that data alone will not.
- **Early understanding reduces non-technical risk.** Learning what matters before mitigation is set supports more durable agreements with Tribes, Alaska Native corporations and local communities.