Climate-Induced Community Relocations: *Resilience and Adaptation of Alaska Native communities*

Northern Research Forum/EPSON

Akureyri, Iceland

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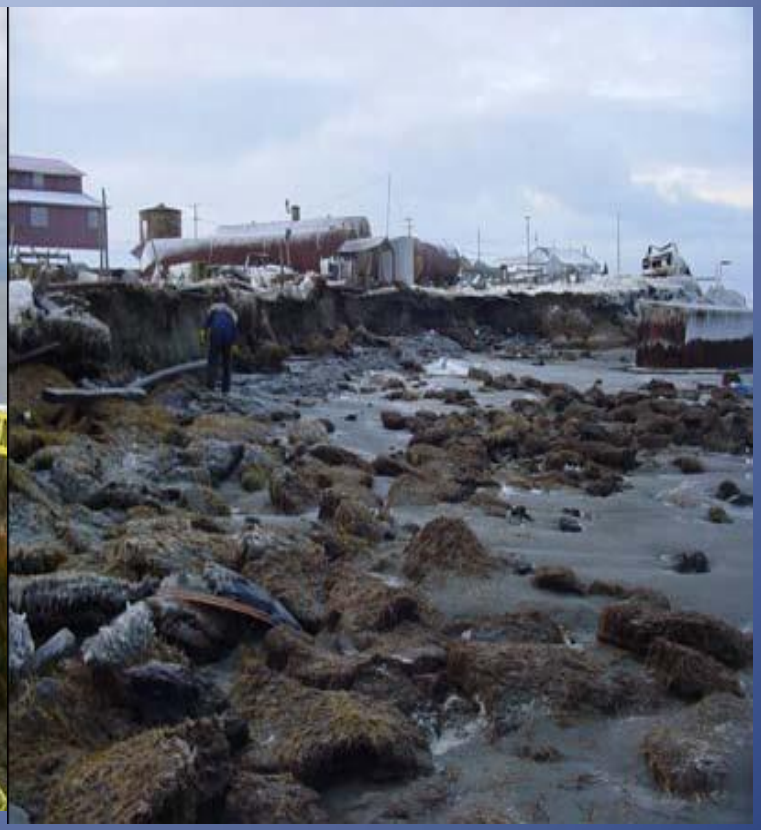
Climate Change in Alaska



Temperatures have increased an average of 3.5 Celsius during winter since 1975. Permafrost is melting. Record minimum levels of Arctic sea ice since 2007. Delayed freezing of Bering and Chukchi Seas. Loss of ice leaves coastline unprotected from storm surges. Accelerated rates of erosion.

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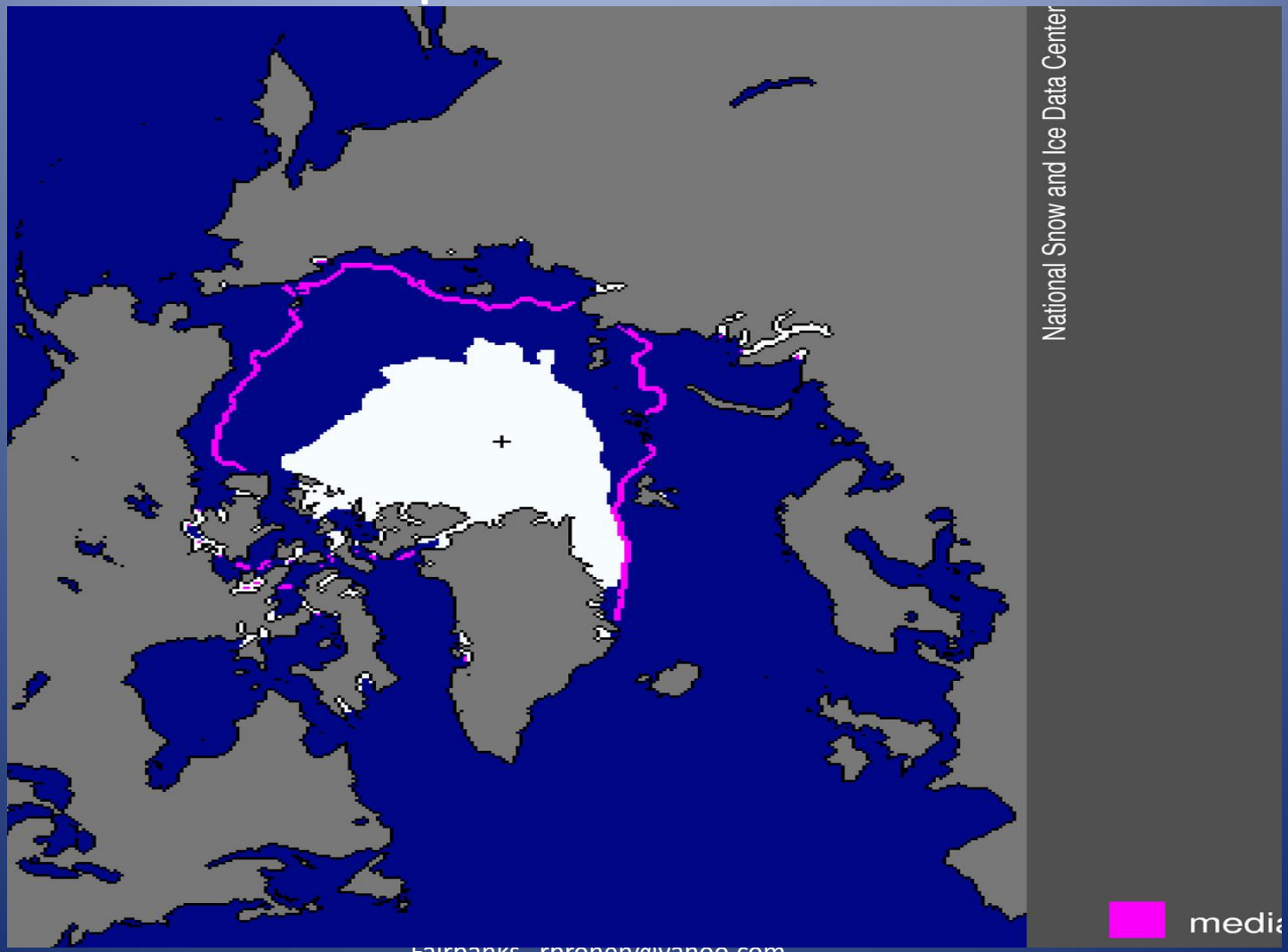
Arctic Sea Ice Extent
September 2012



Photos: Frank Myoumick-Kawerak

2003 US Government Accountability Office (GAO) found 3 communities seeking to relocate in Alaska and 184 other communities are being affected by flooding and erosion

2009 US GAO report found 31 imminently threatened and 12 seeking to relocate.

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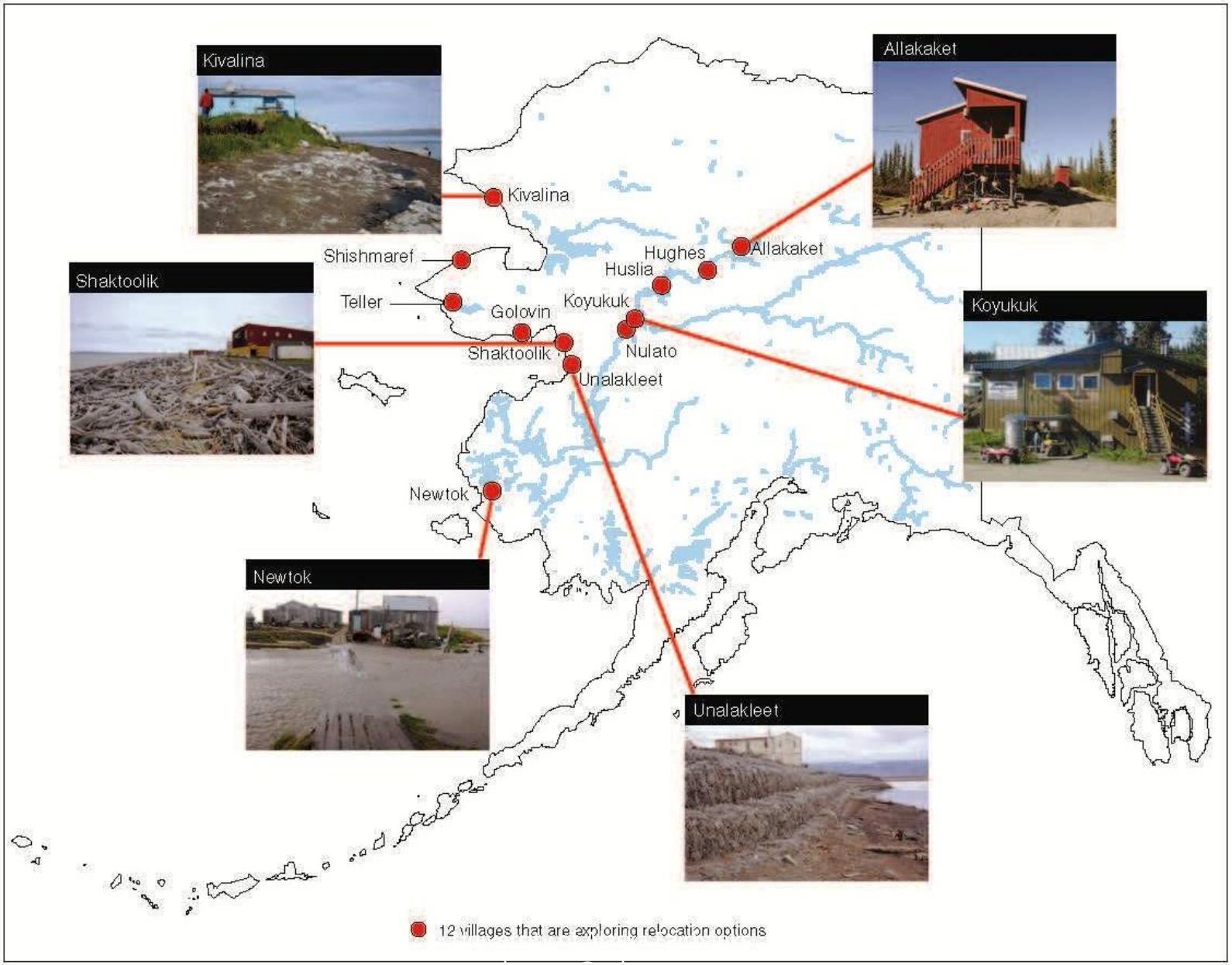
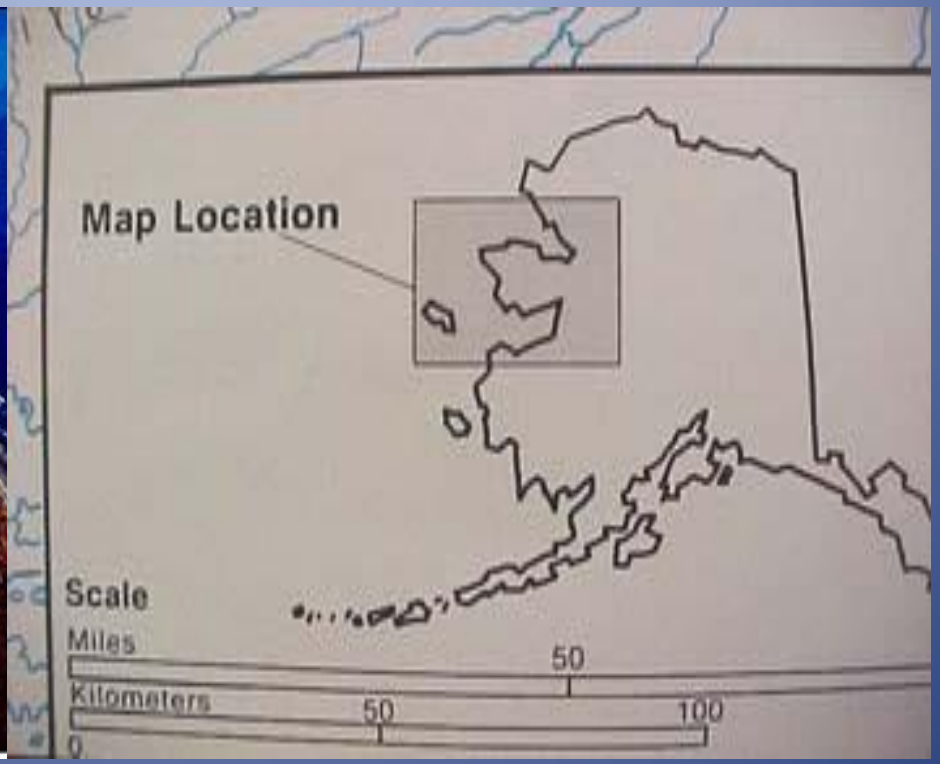
Figure 5: Locations of 12 Alaska Native Villages That Are Exploring Relocation Options



Sources: GAO (analysis); Pitney Bowes Business Insight (map).

SHISHMAREF



State flood disasters in 2001, 2004 and 2005.
Government spent $16 million on erosion control.
2002 Native Village of Shishmaref voted to relocate and chose a relocation site but state and federal government agencies do not believe it is a good location – still looking for a relocation site.

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KIVALINA

Between 2002 and 2007, six extreme weather events accelerated the rate of erosion. Three disaster declarations. The most recent extreme event was a hurricane-strength storm, which occurred in November 2011. August 2012 disaster declaration, permafrost thaw affecting potable water.

Community voted three times to relocate and chose a relocation site

NEWTOK

- **On-going biophysical change**
- **Erosion Control – Tried and Failed**
  - **$ 1.5 million dollars spent 1983-1989**
- **Six extreme weather events**
  - **1989-2006**

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SOCIAL-ECOLOGICAL CRISIS

- Public Health Crisis
  - 29% of children have lower respiratory tract infection

  Loss of major infrastructure
  - Barge landing
  - Lack of potable water
  - Housing shortage
  - Lack of sanitary sewage system

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NEWTOK TRADITIONAL COUNCIL

Documented erosion since 1983

Identified 6 potential relocation sites and evaluated habitability

Community voted 3 times to relocate

Acquired land for relocation in 2003.

NEWTOK'S RELOCATION CHALLENGES

- **Newtok Planning Group**
  - **Ad hoc**
  - **25 different federal, state, tribal and non-profit agencies**
  - **No mandate to relocate; no statutory guidance to relocate and no relocation funding**
- **Agencies lack technical, financial and organizational capacity to relocate communities**
- **Statutory barriers**
  - **Difficult to get funding to build school unless at least 10 children enrolled**

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ADAPTIVE GOVERNANCE RESPONSE BASED IN HUMAN RIGHTS

Relocation Policy Framework

- * must be based in human rights
- * Communities must decide to relocate
- * Relocation occurs if it is the only way to protect

Dynamic adaptive governance response

- Disaster relief
- Hazard mitigation
- On-going socio-ecological assessments
- Relocation

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SOCIAL-ECOLOGICAL SIGNALS

- Repetitive loss of structure;
- Imminent danger to community residents;
- Community has no further ability to mitigate through flood protection, erosion control;
- Number of evacuation incidents;
- Socio-economic indicators/public health impacts; and
- Scientific information regarding predicted sea level rise, decreased Arctic sea ice, erosion

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Recommendations

- **Climigration – term to describe climate-induced permanent community relocation caused by the combination of extreme weather events and slow-ongoing environmental processes**
- **Develop Relocation Institutional Framework;**
- **PENINSULA PRINCIPLES: human rights principles to guide climate-induced community relocation**

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