Climate Change Impacts in Hawaii: Emerging Law and Policy

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ORMP Goals (Perspectives):
1) Connect the Land & Sea;
2) Preserve Our Ocean Heritage; and
3) Promote Collaboration & Stewardship
The 800-Pound Shark along the Shoreline: Gaps in Law and Policy to Protect Threatened Existing Development

Jim Buika, Coastal Resource Planner, Maui County
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What Gives Hawaii its sense of place?
Existing Problem that requires Legal and Policy Solutions Today

• Problem: Threatened existing development

• Condos, roads, and critical infrastructure, built 30-to-50 years ago, were built too close to the ocean and are now falling into the ocean.

• We do not have adequate solutions in our tool kit to protect threatened development while preserving the coastal zone.

• Without new laws and policies in place to provide for additional mitigation tools, Hawaii will lose its sense of place.

• Our coastal environment is being negatively impacted by our requirements to protect failing development & infrastructure.
400-foot seawall planned for threatened condominiums in West Maui. Currently, this solution is our only cost-effective option for property owners and governments.
Existing development becomes further threatened even when old seawalls are undermined and fail.
Recent Emergency Permit: Kahana Sunset AOAO
Life Safety and Potential Structural Collapse
Recent Emergency Permit: Kahana Sunset AOAO

Life Safety and Potential Structural Collapse
Maui has lost more than four miles of sandy beach in past century — report

By LEE IMADA, News Editor

HONOLULU — Eighty-five percent of sandy beachfront has eroded and 4.2 miles has been lost on Maui in the past century, according to a U.S. Geological Survey and University of Hawaii report released this week.

Those percentages were the highest in the report covering 150 miles of sandy shoreline or “essentially every beach” on Maui, Oahu and Kauai.

“The entire Kihei coast is eroding, except for a handful of places where sand is being trapped by walls,” said Charles Fletcher, associate dean of the University of Hawaii School of Ocean and Earth Science and Technology and lead author of the report “National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands.”

The “spires of the French Frigate Shoals” will be the inevitable fate of the Hawaiian Islands in millions of years and sea level rise is a natural factor in erosion, the report said. But the erosion is not all natural, and seawalls are among the leading man-made culprits.

In Kihei, which the report said lost 1.2 miles of beaches from 1900 to 2007, Fletcher noted how seawalls sprang up one after another along the Halama Street area near Kalama Park as residents attempted to protect their shorefronts. Erosion rolled north and beaches were lost.

“If you have a beefy seawall, it will protect the land.

See BEACHFRONT on the next page
1200-foot revetment completed to protect threatened coastal highway in West Maui. Another 1200-foot revetment is planned for completion along same road.

Over the next several years, Maui will add another mile of sea walls to our shoreline.
1200-Foot Revetment Planned to Protect Wastewater Treatment Plant in Maui

Project Site

KEY
- Existing Revetment at WWRF Retention Pond
- Retention Pond
- Operations Building
- Tanks Area
- Headworks Building

Source: Moffatt and Nichol
1200-Foot Revetment Planned to Protect Wastewater Treatment Plant in Maui
Our Current Tool Kit:
Cost-effective Protection of Threatened Structures

1. Emergency Protection with temporary sand bags (geotubes)

2. Rock revetment with Variance under Shoreline Rules (& State permits)

3. Seawall with Variance under Shoreline Rules (& State Permits)
Result of these limited Protective Solutions:

Loss of beaches with ongoing cumulative impacts to shoreline.
Expanding Our Current Tool Kit:

Laws and Policies to Create Additional Cost-effective Options:

1. Interagency policy to expedite & test offshore interventions such as groins, breakwaters, and reef balls as alternatives to seawalls & revetments

Offshore interventions can be permitted but are not cost effective for property owners & governments

Reef balls as submerged breakwaters for erosion control   www.reefball.org
Honolulu Natatorium in the News...5/1/13

Using groins to create a beach...

What we need is streamlined permitting of groins and offshore structures to create a cost-effective solution... and add to our tool kit.
Expanding Our Current Tool Kit: Laws and Policies to Create Additional Cost-effective Options

Beach Nourishment

State Bill to subsidize beach nourishment as a preferred, cost-effective alternative to hardening shorelines (similar to solar panel rebates)
Beach Nourishment

If We Do...

- Expensive
- Sand Source
- Environmental Impacts
- Water Quality
- Stability

If We Don’t...

- Shoreline Hardening
- Storm Damage
- Ecosystem Damage
- Shoreline Access
- Tourism/economy
Proactive Takeaway: Protecting & Restoring Dunes Protects Existing Development

Seasonal beach profile adjustments

- Normal beach profile
  - Dunes
  - Beach

- Adjustment for large waves
  - Dunes and beach release sand
  - Sand moves offshore

- Recovery
  - New dunes
  - Coastal dunes and beach store sand until next large wave event
  - Sand moves onshore

Large waves, which tend to occur seasonally in Hawaii, cause a beach to temporarily change its profile.
Expanding Our Current Tool Kit: Laws and Policies to Create Additional Cost-effective Options:

**Law to Protect our Existing Limited Sand Sources**

1. Preserve existing known sand sources for beach nourishment.

2. Research legal avenues to restrict deportation of ancient sand dune deposits. Stop sand deportation ASAP.

3. Develop Ordinance to require beneficial uses of excavated sand from major public and private developments.
Conclusion: Expand Our Current Tool Kit with Laws and Policies to Create Additional Cost-effective Options

Create an interagency policy to research, expedite, and test offshore interventions as solutions to protect development, to include groins, breakwaters, and reef balls.

Implement new State legislation to subsidize Beach Nourishment for public and private projects.

Preserve existing known sand sources for Beach Nourishment. Provide local ordinances to stop deportation of ancient sand dunes.

Restrict use of excavated sand only for public good.

Create and fund a program to identify offshore sand deposits for future excavation.
Mahalo Nui Loa

KAMA‘OLE III
DUNE
WALKOVER

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DUNE RESTORATION

Kamaole II Beach Park
March 7, 2011
DUNE RESTORATION