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ORIENTATION
# Orientation: Research Approach

## Literature Review
- Academic studies
- Government reports
- Industry publications

## Expert Interviews
- Existing tools
- New tools
- Capacity building
- Who can lead?

## Feedback + Follow-up /Outreach Analysis
- TAC
- Additional expert input/ research gaps
- Case study development
Orientation: Activity Life Cycle

Planning + Regional Coordination  
Predevelopment

Development + Construction

Operations + Maintenance  
Monitoring + Evaluation

Ongoing Community Engagement
## Orientation: Terms

<table>
<thead>
<tr>
<th><strong>Funding</strong></th>
<th>An income source that provides money on a one-time or limited time basis (e.g., a grant) or over time (e.g., taxes, fees).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financing</strong></td>
<td>A source of money that must eventually be paid back (e.g., a loan).</td>
</tr>
</tbody>
</table>
Challenges
Global phenomenon, local impacts
Evolving understanding
Varying risks & resources for response

- Limited existing funds, barriers to new funds
- High level of existing critical infrastructure needs
Combined Challenges

- Information
  - Understanding of climate risk continually evolving
  - Unproven performance of climate risk management strategies
- Institutional
  - Risk isn’t “baked in”
- Planning
  - Limited capacity
  - Competing priorities
  - Conflicting guidance
- Implementation
  - Inflexible use of funds
  - Access to federal funds in question
  - No panacea

Climate change

Climate adaptation + resilience in CA

Projects in CA
## Tools: Funding + Financing

### Existing Funding
- assessments
- fees + tolls
- insurance surcharges
- taxes: parcel, Mello-Roos
- projected funds: tax increment financing
- private capital, e.g., up-front project design/build, retrofits
- grants

### Existing Financing
- bonds: municipal bonds, private bonds, “green” bonds
- loans: bridge and long-term

### New Funding
- N/A

### New Financing
- social impact bonds: pay-for-success
- insurance-linked securities:
  - catastrophe bonds
  - resilience bonds
Tools: Feasibility Considerations

Adapted from City and County of San Francisco Seawall Finance Work Group
Tools: “Innovative” Funding + Financing

Funding

Many proposed “innovative” tools + approaches are **not new sources of funding** but instead are **redeployment of existing funding sources based on evolving objectives + rules**.

Financing

Novel financing tools that show **long term promise** have **clear value propositions**.

Most novel tools are **unproven, lack data needed to implement**, and are **not feasible in the near term**.
Tools: Strategies to Address Challenges

Challenge

• Limited funds
• Competing needs and priorities
• Restricted use of funds

Response

Optimize use of existing funds

• **Pool resources** in all stages of planning, development, ongoing implementation
  • Assists with capacity challenges
  • Aligns scale of solutions with scale of climate impacts

• **Consider new technology/approaches**, especially those that bring **cobenefits**
  • Green infrastructure
## Tools: Strategies to Address Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Limited funds</td>
<td>Demonstrate + communicate need for action</td>
</tr>
<tr>
<td>• Access to federal funds in question</td>
<td>- Articulate risks + benefits, including via cost of inaction analyses</td>
</tr>
</tbody>
</table>

- Identify additional sources of funding beyond those in common use now

- **Identify** projects/programs that may provide savings or returns
  - Can contribute to their own funding + create additional financing opportunities
## Tools: Strategies to Address Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>• Restricted use of funds</td>
<td>Consider <strong>whether and how to reduce or change restrictions</strong>, and/or <strong>create new solutions</strong> to fill gaps in funding + financing</td>
</tr>
<tr>
<td>• No panacea</td>
<td>• Solutions will vary by:</td>
</tr>
<tr>
<td>• Access to federal funds in question</td>
<td>• Scale of problem</td>
</tr>
<tr>
<td></td>
<td>• Issue area</td>
</tr>
<tr>
<td></td>
<td>• Political environment</td>
</tr>
<tr>
<td></td>
<td>• Local capacity</td>
</tr>
</tbody>
</table>
Tools: No Panacea

Total Combined Implementation Cost $351.5M (A)

- HWRP Implementation Cost $133.2M (B)
  - *HWRP First Cost $62.7M (D)
    - Federal $47.0M (CG Funds HWRP)
    - Non-Fed (SCC) $15.7M
  - **Oakland Project Cost $27.9M (E)
    - Federal $20.9M (CG Funds Oak 50’)
    - Non-Fed (Port) $7.0M
  - ***Other Navigation Projects $42.6M (F) (Trans Cost Differential)
    - Federal $36.7M (O&M Funds Nav Projs)
    - Non-Fed (Ports) $5.9M

- BMKV Implementation Cost $218.3M (C)
  - *BMK First Cost $159.0M (G)
    - Federal $119.2M (CG Funds HWRP/BMK)
    - Non-Fed (SCC) $39.8M
  - ***Other Navigation Projects $59.2M (H) (Trans Cost Differential)
    - Federal $51.0M (O&M Funds Nav Projs)
    - Non-Fed (Ports) $8.2M

KEY
- *Typical Funding Sources
- **Atypical Funding Sources
- ***Atypical Funding Sources
ACTORS
A Tale of Two Jurisdictions: Place A

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Public overall believes climate change is a credible risk</td>
<td>▪ Coordinated multi-year capital planning</td>
</tr>
<tr>
<td>▪ Significant financial resources in community</td>
<td>▪ Budgets linked to policy priorities</td>
</tr>
<tr>
<td>▪ Dedicated institution and staff to help coordinate resilience planning across agencies</td>
<td>▪ Projects maximize co-benefits</td>
</tr>
<tr>
<td></td>
<td>▪ Strong financial fundamentals – can leverage and service debt</td>
</tr>
</tbody>
</table>
A Tale of Two Jurisdictions: Place B

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
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</thead>
<tbody>
<tr>
<td>▪ No overall consensus over whether climate change is a credible risk</td>
<td>▪ Capacity limits pursuit of grants, but community has greater reliance on grants for funding</td>
</tr>
<tr>
<td>▪ Limited financial resources</td>
<td>▪ Tying community priorities into use of grant funds generates more support for projects/programs</td>
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<tr>
<td>▪ No dedicated institution/staff for resilience + adaptation actions</td>
<td>▪ Regulation leads to investment</td>
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No overall consensus over whether climate change is a credible risk

Limited financial resources

No dedicated institution/staff for resilience + adaptation actions

Capacity limits pursuit of grants, but community has greater reliance on grants for funding

Tying community priorities into use of grant funds generates more support for projects/programs

Regulation leads to investment
AECOM

Actors: Who Should Lead?

Planning + Regional Coordination
Public agencies: Utilities, trans., special districts

Development + Construction
Public, public/private, private sector

Operations + Maintenance
Technical administrator

Predevelopment
NGOs (e.g. CDFIs), public agencies

Monitoring + Evaluation
Public oversight bodies; academic institutions and researchers

Ongoing Community Engagement
NGOs (e.g. CDCs), Community Advisory Boards
Actors: Considerations for Leading

- Social equity concerns if implemented privately
- No financial gain
- Lifespan is a challenge for private sector

- Private sector delivery has cost advantage
  - Service provision can be evaluated

- Private sector will experience future losses if no action taken
  - Public debt ceiling/credit rating makes borrowing expensive
Actors: What Can Be Done

- Develop clear standards for risk + regulate it
- Go beyond plan + assess: plan to act w/ investment strategy
- Align + scale resources

- Build/maintain community trust
- Support existing capacity building programs
- Pursue pilots/approaches
- Develop standardized success metrics

- Develop / share information on risk + risk management
- Integrate risk into behavior presently + predictably
- Continue to invest

economics @AECOM
invest in transformation
DISCUSSION
Key Questions to Discuss: Challenges

- Is paying for resilience and adaptation projects fundamentally different than paying for other kinds of projects?
- Which types of resilience and adaptation projects are hardest to fund?
- Beyond legal constraints, what issues do people see as a challenge in funding resilience projects?
Key Questions to Discuss: Tools

- How can tools/resources be matched against needs in light of legal constraints in California?
- How can resilience/adaptation measures be incorporated into projects that have already received funding or that receive ongoing funding sources?
Key Questions to Discuss: Actors

- Are the breadth of community concerns and needs reflected in funding priorities?
- How can the public sector anticipate an increasing private sector appetite for knowledge about climate risk and use of that knowledge?
- What structures can cross sector partnerships use to improve resilience and secure co-benefits?
THANK YOU

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