Design and Bankability

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The strongest solutions come from those who know their communities best: the residents.

Most important detail is that there will be ICE CREAM! https://t.co/WnueurzmEl
Creating a Blueprint for Resilience that Harnesses Bay Area Innovation
'Worldwide, water is the connecting challenge, the number one global risk and the opportunity for transformative and sustainable impact and comprehensive cultural change.'

Henk Ovink Special Envoy for International Water Affairs for the Kingdom of the Netherlands Sherpa to the UN High Level Panel on Water

Water for Resilient Cities Leverage Asia
One Resilient Semarang
Design helps build an understanding, a conversation, support and stewardship
ROUND 1: MODELS OF PROTECTION OPTIONS
Participants of the workshops were able to sketch collectively ideas about a free-flowing creek and affordable work and live areas.

At the end of the sticker map activity, each student group presented to the rest of the participants their vision for the area, helping spark even more great ideas in the larger group.
The city’s coastal protection efforts are focused in creating polders in the lowland areas. This requires continuous treatment and pumping of water out into the sea, actions presumably costly and difficult to manage. Upaya perlindungan pesisir berfokus pada pembangunan sistem polder di daerah dataran rendah yang membutuhkan upaya pemompaan air dan perawatan secara terus-menerus, yang secara relatif mahal dan sulit untuk dikelola.
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Current estimations regarding the financial impact of climate adaptation do not take into account land subsidence or city growth in the risk areas. What would the cost of no action be if these are properly calculated? Diagram ini menunjukkan estimasi dampak finansial dari perubahan iklim, tanpa menghitung dampak penurunan tanah dan pertumbuhan kota. Bagaimana dampaknya jika kedua faktor terakhir dihitung?

Source: Sulistini et al. Potential Economic Losses Due to Tidal Inundation and Flood at Semarang City, Forum Geografi, Vol. 29, No. 2, December 2014: 112 - 118
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28 TRILLION IDR
(1.9 BILLION USD)

6.3 TRILLION IDR
(0.4 BILLION USD)

Source: Suharni et al, Potential Economic Losses Due to Tidal Inundation and Flood at Semarang City, Forum Geografi, Vol. 28, No. 2, December 2014: 112 - 118
FINANCIAL IMPACT 2030
DAMPAK FINANSIAL 2030

Source: Subhini et al, Potential Economic Losses Due to Tidal Inundation and Flood at Semarang City,
Forum Geografi, Vol. 28, No. 2, December 2014: 112 - 118

water(shed) as leverage
one resilient semarang

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Design helps build an understanding, a conversation, support and stewardship.

Design helps to develop multiple benefits.
RESILIENCY INFRASTRUCTURE + PEOPLE!
HARBOR BERM!
HARBOR MIDDLE SCHOOL AND REVERSE AQUARIUM
Design helps build an understanding, a conversation, support and stewardship

Design helps to develop multiple benefits

Design helps to link projects in an integrated program (while maintaining projects with independent utility and, as a consequence, independent funding streams)
This cycle is exacerbated by the economic shifts in Central Java and the accelerated growth of industry and population, and therefore the expansion of urban infrastructure. Siklus kerentanan ini diperparah dengan adanya pergeseran ekonomi di Jawa Tengah, percepatan pertumbuhan industri dan penduduk, serta perluasan infrastruktur perkotaan.
CURRENT CYCLE OF VULNERABILITY
SIKLUS KERENTANAN SAAT INI

A SHIFTING ECONOMY

NEED FOR RESILIENT MULTI-PURPOSE INFRASTRUCTURE

WATER ACCESS

GROUNDWATER EXTRACTION

AQUIFER DEPLETION

SUBSIDENCE & LANDSLIDES

FLOOD RISK

VULNERABLE COMMUNITIES

INVESTMENT ALONG THE COAST AND UPLAND

EXPANSION OF INFRASTRUCTURE

INDUSTRIAL GROWTH

POPULATION GROWTH
A CHANGING CLIMATE
PERUBAHAN IKLIM

A SHIFTING ECONOMY

GROUNDWATER EXTRACTION
AQUIFER DEPLETION
WATER ACCESS
SUBSIDENCE & LANDSLIDES
VULNERABLE COMMUNITIES
FLOOD RISK

A CHANGING CLIMATE

SEA LEVEL RISING
MORE INTENSE AND FREQUENT STORMS

The effects of current practices and the shifting economy are magnified by the changing climate, further increasing its impact to the most vulnerable communities and the city’s biggest economic assets. Dampak dari praktik-praktik yang ada saat ini diperbesar oleh fenomena perubahan iklim, meningkatkan dampaknya bagi masyarakat yang paling rentan dan aset ekonomi kota.
EXISTING INITIATIVES INISIATIF YANG ADA

1. Mangrove Yoga
2. Flood Early Warning System (FESW)
3. Getug Toll Road overpass - Semarang Phase
4. Integrated Coastal Management Zone
5. Kampung Sahabat
6. Zurich Flood Resilience Program
7. Drinking Water Supply System Masterplan
   / Perencanaan Sektor Air Minum (RISAM)
8. Drainage Masterplan of Semarang
   / Perencanaan Masterplan Drainase Kota Semarang
9. Pola Rencana Sumber Daya Air
10. Volume planning and rainwater harvesting
    / Perencanaan penambahan dan peningkatan
11. Land arrangement models Subakso
12. Sanitation credit Kramat
    / Kredit Sanitasi Kramat
13. Simulation
14. Integrated Water Resources And Flood Management Project For Semarang
15. Bantul-Kalan Trowo - Normalization
16. Bantul-Kalan Keran - Normalization
17. Flood Bantul-Kalan Bantul
18. Jatilawang Dam
19. Water Semarang Drinking Water Supply System
20. PPG: Pengembangan Pemanfaatan Air Panas Bumi (P2AP) Semarang
21. Folder Kali Semarang
22. Folder Brantas Times
23. Folder Kalpataru
24. Folder Banjar
25. Folder Bulukembar
26. Folder Jambatan Banjir
27. Website COWF
28. Progam Penyediaan Air Minum dan Sanitasi Berbasis Warga (PAM-SINAS)
29. Building with Nature
30. Sawah Warga Belakang Nangkaawii

water(shed) as leverage

one resilient semarang
<table>
<thead>
<tr>
<th>No.</th>
<th>Project Name</th>
<th>COASTAL EROSION</th>
<th>TIDAL INUNDATION</th>
<th>FLUVIAL FLOOD</th>
<th>PLUVIAL FLOOD</th>
<th>WATER SUPPLY</th>
<th>LAND SUBSIDENCE</th>
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<th>DROUGHT</th>
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<td>28</td>
<td>PAMS/MAS / Community-based water provision and sanitation program</td>
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</table>
We studied, mapped and analyzed the city’s goals and aspirations to understand what is the current vision for the city of Semarang. Kami mempelajari, memetakan, dan menganalisis visi dan aspirasi kota untuk memahami apa arah pembangunan Kota Semarang.
<table>
<thead>
<tr>
<th>MISSION</th>
<th>STRATEGY</th>
</tr>
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</table>
| MISSION 1 | Peningkatan inovasi dan kualitas pendidikan  
Peningkatan kualitas pelayanan kesehatan  
Pengembangan budaya lokal  
Perluasan kesejahteraan kerja  
Penentuan kebijakan daerah bagi warga nusantara  
Peningkatan perlindungan sosial  
Peningkatan peran serta masyarakat dalam pembangunan |
| MISSION 2 | Reformasi birokrasi  
Peningkatan kualitas dan transparansi pelayanan publik  
Peningkatan peran masyarakat dalam mengetahui kebijakan dan keberlanjutan |
| MISSION 3 | Peningkatan pengelolaan tata guna tanah  
Peningkatan kualitas infrastruktur kota  
Peningkatan kualitas lingkungan hidup  
Peningkatan kualitas sarana prasarana perumahan  
Peningkatan ketahanan bencana |
| MISSION 4 | Peningkatan kesejahteraan berinvestasi  
Peningkatan jaringan distribusi produk  
Peningkatan pengelolaan daya saing perusahaan  
Peningkatan keterlibatan parpol  
Pengembangan ekonomi lokal  
Pengembangan dan pengembangan industri kecil Menengah (IKM) dan UMKM |

### WATER
- Peningkatan air minum
- Pemeliharaan dan pengelolaan air limbah

### PENGELOLAAN AIR MINUM
- Peningkatan air minum
- Pemeliharaan dan pengelolaan air limbah

### PENGENDALIAN BANJIR
- Pemeliharaan dan pengelolaan air limbah
- Peningkatan air minum

### PEMELEHARAN SUMBER DAYA AIR
- Peningkatan air minum
- Pemeliharaan dan pengelolaan air limbah

### PENINGKATAN KUALITAS PENGOLAYAN AIR LIMBAH
- Peningkatan air minum
- Pemeliharaan dan pengelolaan air limbah

### CITY
- Pertumbuhan ekonomi
- Kemiskinan dan lapangan pekerjaan
- Ruang terbuka hijau
- Peningkatan kualitas pendidikan dan kesehatan
- Peningkatan prasarana perumahan
- Ketangguhan bencana
- Penerbitan dan sistem birokrasi
- Transportasi yang terintegrasi

**Transport as leverage**

**One resilient semarang**
ONGOING ENGINEERING
<table>
<thead>
<tr>
<th>TODAY</th>
<th>SHORT TERM</th>
<th>MEDIUM TERM</th>
<th>LONG TERM</th>
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<tbody>
<tr>
<td>ASSETS</td>
<td>ACTIONS</td>
<td>OPPORTUNITY SITES</td>
<td>PROJECTS</td>
</tr>
</tbody>
</table>

**Waste Water**
- Recycle Water

**Storm Water**
- Islais Cherry Grove
- Floodplain Restoration

**Ecology**
- Islais Creek
- 3rd Street Bridge Pilot
- Tidal Marsh Pilot
- Narrow Cargo Way
- Trail from Potrero to Islais
- Narrow Cargo Way

**Coastal**
- 3rd Street Bridge Pilot
- Tidal Marsh Pilot

**Connectivity**
- Bayview Line
- Safe Urban Grid Pilot

**Jobs/Economy**
- Innovation Dock Pilot
- Food District Pilot

**Implementation Pathways**

RESILIENT BY DESIGN - BAY AREA CHALLENGE

BIG ONE + SHERWOOD
## State and Federal Sources and Strategies

<table>
<thead>
<tr>
<th>PROGRAM / POLICY NAME</th>
<th>PURPOSE</th>
<th>STRATEGIES</th>
<th>APPLICABILITY</th>
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</thead>
<tbody>
<tr>
<td>Proprietary</td>
<td>Projects should focus on comprehensive and sustained protection of water resources. Projects should be based on a comprehensive plan that includes: 1. Identification of critical water bodies and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
<td>Funds are available for comprehensive, sustainable, and innovative projects that address critical water body protection and restoration.</td>
<td>Strong Match</td>
</tr>
<tr>
<td>CA State Coastal Conservancy Grants</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
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<td>Strong Match</td>
</tr>
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<td>Climate Ready Program</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
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<td>Strong Match</td>
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<td>Natural Resources</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
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</tr>
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<td>Habitat Mitigation Grant Program</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
<td>Funds are available for comprehensive, sustainable, and innovative projects that address critical coastal resource conservation and restoration.</td>
<td>Strong Match</td>
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<td>Pre-Disaster Mitigation Program</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
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<td>Strong Match</td>
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<td>Land and Water Conservation Fund</td>
<td>Funds are available for projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
<td>Funds are available for comprehensive, sustainable, and innovative projects that address critical coastal resource conservation and restoration.</td>
<td>Strong Match</td>
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<td>Climate Adaptation and Resilience Program</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
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<td>New Market Tax Credits</td>
<td>Projects should focus on projects that promote the conservation of coastal resources, including wetlands, coastal grasslands, and estuaries. Projects should be based on a comprehensive plan that includes: 1. Identification of critical coastal resources and their associated riparian areas and wetlands; 2. Evaluation of the existing natural conditions and the potential for significant impacts from human activities, including climate change; 3. Development of a long-term management plan that addresses identified needs.</td>
<td>Funds are available for comprehensive, sustainable, and innovative projects that address critical coastal resource conservation and restoration.</td>
<td>Strong Match</td>
</tr>
</tbody>
</table>

## Regional Sources and Strategy

<table>
<thead>
<tr>
<th>PROGRAM / POLICY NAME</th>
<th>PURPOSE</th>
<th>STRATEGIES</th>
<th>APPLICABILITY</th>
</tr>
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<td>Measure AA</td>
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## Funding Strategies

- **PILOT PROJECTS**
  - **Pilot Project Proposal Guide**
    - **Lead Agency**
    - **Other Enabling Agencies**
  - **Potential Funding Sources and Strategies**
    - Measure AA, CA Dept of Parks and Recreation, and Water Conservation League
    - State Parks and Natural Resources Agency
    - Environmental Protection Agency
    - Coastal Commission
    - Coastal Conservancy
    - Coastalslope
    - Natural Resources
    - Department of Fish and Wildlife
    - Department of Parks and Recreation
    - California Coastal Conservancy
    - Coastal Conservancy
    - Coastal Commission
Design helps build an understanding, a conversation, support and stewardship

Design helps to develop multiple benefits

Design helps to link projects in an integrated program (while maintaining projects with independent utility and, as a consequence, independent funding streams)

Design helps to ground-truth strategies and de-risk project implementation