USACE Civil Works Infrastructure Investment Trends: Glide-Path to Benign Neglect?

National Waterways Conference Legislative Summit

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The Bottom Line:

- **USACE’s Civil Works mission provides a key foundational component of the Nation’s public infrastructure that facilitates economic growth, quality of life, environmental health and national security for the American people!**

- CW infrastructure is deteriorating (declining engineering condition).

- CW infrastructure is underperforming (declining service performance).

- U.S. is under-investing in its public works infrastructure overall.

- U.S. lags other developed nations in its maintenance of prior public infrastructure investments.

- We stand to squander the international competitive advantage provided by the Nation’s public works due to our inattention to the needs of aging infrastructure, shifting demand, climate change, and underinvestment.

- At risk is U.S.’s economic prosperity, quality of life & environmental health.

- **USACE CW infrastructure is on unsustainable glide-path of benign neglect.**

  Devolving from a paradigm of “preventing failure”, to one of “fixing after failure”, and towards even “failing to fix!”
The Value of Past Investments

An illustration of the relationship between services yielded by ecosystems, infrastructure, and the economic activities they support.

The value of natural and constructed systems was viewed as being greater than the sum of their intertwined parts, not only for the present generations, but also for those that would follow.

### USACE CW’s Economic Benefits & Revenues to the Treasury 2010

Each dollar spent on the USACE Civil Works program generated ~ $9.00 in economic benefits and $2.70 in revenues to the U.S. Treasury.

<table>
<thead>
<tr>
<th>Program</th>
<th>NED Benefits (Billions of Dollars)</th>
<th>Net NED Benefits (Billions of Dollars)</th>
<th>U.S. Treasury Revenues (Billions of Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood Risk Management</td>
<td>$23.1</td>
<td>$22.5</td>
<td>$7.3</td>
</tr>
<tr>
<td>Coastal Navigation</td>
<td>$8.7</td>
<td>$7.9</td>
<td>$3.3</td>
</tr>
<tr>
<td>Inland Navigation</td>
<td>$7.6</td>
<td>$7.0</td>
<td>$1.9</td>
</tr>
<tr>
<td>Water Supply</td>
<td>$6.5</td>
<td>$6.5</td>
<td>$0.1</td>
</tr>
<tr>
<td>Hydropower</td>
<td>$2.2</td>
<td>$2.0</td>
<td>$1.1</td>
</tr>
<tr>
<td>Recreation</td>
<td>$3.3</td>
<td>$3.0</td>
<td>$1.1</td>
</tr>
<tr>
<td>Leases and Sales</td>
<td></td>
<td></td>
<td>$0.1</td>
</tr>
<tr>
<td><strong>Total Annual NED</strong></td>
<td><strong>$51.4</strong></td>
<td><strong>$48.9</strong></td>
<td><strong>$14.8</strong></td>
</tr>
</tbody>
</table>

**Notes:**
1. Net NED Benefits represent total NED benefits minus the costs of operations, maintenance, expenses, the USACE Regulatory program, FUSRAP, oversight by ASA(CW) and other USACE Civil Works programs.
2. The Benefits and Revenues numbers are not additive.
Mandatory Spending Crowds Out Everything Else

Total Spending 1970: 19 percent GDP
Total Spending 2012: 22 percent of GDP
Total Spending 2050: 29 percent of GDP

SOURCE: Data from the Congressional Budget Office, Updated Budget Projections: Fiscal Years 2013 to 2023, May 2013; the Congressional Budget Office, The Long-Term Budget Outlook, September 2013; Office of Management and Budget, Budget of the United States Government, Fiscal Year 2014, April 2013; and Bureau of Economic Analysis.

NOTE: Projections are based on CBO’s extended baseline scenario. GDP is based on estimates following July 2013 revision. Mandatory programs include Social Security, major federal health programs, other entitlement programs and offsetting receipts.
Value to the Nation

US Army Corps of Engineers Civil Works Budget in 2012
- $8.2 Billion (~0.2% 2012 Discretionary Outlays)*
- $48.8 Billion per year in realized NED benefits (~0.3% GDP)

* 2012 outlays includes supplemental funding
Historical Investments by USACE Functional Category
1928 to 2011

~$70.00 per person in the US!
~$56.00 per person in the US!
~$18.00 per person in the US!
~$9.28 per person in the US!

Coasting on Past Investment

2006-2010 Spending includes post Katrina & ARRA Supplemental’s
As % of GDP, USACE CW spending has declined from 0.8% (1935) to ~0.035% today.
Today’s spending represents a decline by a factor >20 as % of GDP
Current spending levels will not sustain services levels.
Effects of Constrained Investments – Outages at Hydropower Facilities are Increasing

Since 2000:
• ~50% increase in down time
• Threefold increase in forced outages!
Effects of Constrained Investments – Increasing Engineering Problems with the Nation’s Aging Levees

Issues facing levee systems across the nation.
Effects of Constrained Investments – System Reliability is Suffering as Outages are Increasing at Navigation Locks

Since 2000:
• ~50% increase in unavailability
• Twofold increase in scheduled outages!
Effects of Constrained Investments – Vessel Delays at Our Locks are Increasing

Since 2009:
  • more than a doubling in delays!
  • Roughly 770,000 hours of delays in 2013

These are actual delays experienced by vessels!
Effects of Constrained Investments – USACE Dams are Aging and the Urgency of Dam Safety Actions is Increasing

USACE Dam Safety Action Classifications (DSAC’s)

- 707 dams at 557 projects
- DSAC chart includes all USACE dams except one newly constructed dam that has not been assigned a DSAC value.
- Data source: DSPMT, 16 Oct 2013
Relative Quality of US Infrastructure is Declining

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hong Kong</td>
<td>6.7</td>
</tr>
<tr>
<td>2</td>
<td>Singapore</td>
<td>6.5</td>
</tr>
<tr>
<td>3</td>
<td>Germany</td>
<td>6.4</td>
</tr>
<tr>
<td>4</td>
<td>France</td>
<td>6.3</td>
</tr>
<tr>
<td>5</td>
<td>Switzerland</td>
<td>6.2</td>
</tr>
<tr>
<td>6</td>
<td>United Kingdom</td>
<td>6.2</td>
</tr>
<tr>
<td>7</td>
<td>Netherlands</td>
<td>6.2</td>
</tr>
<tr>
<td>8</td>
<td>United Arab Emirates</td>
<td>6.1</td>
</tr>
<tr>
<td>9</td>
<td>South Korea</td>
<td>5.9</td>
</tr>
<tr>
<td>10</td>
<td>Spain</td>
<td>5.9</td>
</tr>
<tr>
<td>11</td>
<td>Japan</td>
<td>5.9</td>
</tr>
<tr>
<td>12</td>
<td>Luxembourg</td>
<td>5.8</td>
</tr>
<tr>
<td>13</td>
<td>Canada</td>
<td>5.8</td>
</tr>
<tr>
<td>14</td>
<td>United States</td>
<td>5.8</td>
</tr>
<tr>
<td>15</td>
<td>Austria</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Source: World Economic Forum; McKinsey Global Institute analysis

U.S. Port Infrastructure not even among the top 15 in World!
Patterns in Global Spending in Infrastructure

As a fraction of GDP, the U.S. Lags other Developed Nations in Infrastructure Investment


SOURCE: McKinsey Global Institute analysis
Relative Differences in Global Infrastructure Spending – U.S. High GDP, Relatively Low Infrastructure Investment

Comparison of Nations Comprising Top 10 Economies (by GDP, $US 2014)
Year: 2012

Gross capital formation (% of GDP)

GDP per capita (current US$)


BUILDING STRONG®
Gross Fixed Investment (Public & Private Sectors) - United States Relative to Other Nations

US Has Overall Low Investment in Infrastructure! (Ranking equivalent to Greece)
Distribution of US Infrastructure Investment Shortfall by 2020

32% of the shortfall ($372B) involves infrastructure associated with Corps authorities!

- Water
- Ports
- Waterways
- Levees
- Dams
- Power generation

Approximately $200.00 per person per year
(the equivalent of one latte per week)
Historical Investments by USACE Functional Category

~ 1/2 Trillion $’s Total Cumulative CW Construction (low estimate of replacement cost)

Cumulative Investment

Billions of FY 2011 Dollars

Year


Navigation  Flood  Multipurpose  MR&T  Dredging

BUILDING STRONG®
Value of CW Capital Stock is Declining – Now ~ $192 Billion
- Represents the added expenditures necessary to sustain the CW capital stock value at current levels through 2045.

- On average, this amounts to an annual expenditure of nearly $7 billion from 2012 through 2045.
What is at risk?

Potential Impact on “Public Benefits”

- Missed opportunities for:
  - Additional job creation
  - National and regional economic growth
  - Improved intermodal freight transportation logistics & reduced consumer prices
  - Increased exports and imports
  - Reduced flood vulnerability to life & property
  - Improved hydro-electric energy generation
  - Flexible provision of water supply
  - Enhanced fish and wildlife habitat & restored wetlands
  - Sustaining the availability of outdoor recreation

- Reduced contributions to legacy U.S.:
  - Standard of living
  - Economic prosperity
  - Quality of life
  - Environmental health
  - National security and defense

USACE Capital Stock presently yields $48.8 BILLION PER YEAR in realized NED benefits!
What is needed?

U.S. Chamber of Commerce
Estimates of Waterborne Transportation Needs
for 2013-2030

$6.7 Billion
$5.7 Billion
$5.7 Billion
$29.3 Billion
Conclusion

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Transforming Civil Works

Planning Transform’n

Watershed-Informed Budget Development

Methods of Delivery → Delivering on Commitments

Infrastructure Strategy
Planning Modernization

- Determine Federal Interest
- Authorization Backlog
- Follow-on Work
Budget Development

Engaging Stakeholders

Watershed - Informed Budgeting

Smart Investments

Management Controls
Methods of Delivery ➔

Deliver on Commitments

Delivering Value for the Nation: OUTCOMES

- Policy Guidance
- Interagency Collaboration
- Centers of Expertise
- Process Improvement
- Building the Bench
- Federal Support Toolbox
- Technical Competence
- Acquisition Strategies
- Systems Support
Infrastructure Strategy

Asset Management

Replacement Value = $250 B

Life Cycle Management

Kentucky River Lock #2, in service since 1839

- Accelerate Execution
- Pilots
- Obstacles
- Authorities
- Re-Invent Operations
What Can You Do?

- **Tell the Story** - Preach CW Value to Nation
- Leverage Efforts - **Collaborate** with ALL stakeholders and beneficiaries of the Civil Works Program
- Find **consensus** for major initiatives
  - Identify funding to reach outcomes
  - Engage in dialogue
- Be mutually supportive
- Involve & engage end-users
- Seek to **influence decision-makers**
- Help us **transform Civil Works**
- Facilitate a **Watershed-Informed** approach
- Help the Nation **prioritize** efforts, programs, and projects
- Support innovative approaches for **alternative resourcing**
Other Items of Interest

- Waters of the United States Rulemaking
- Water Supply Rulemaking
- Rehabilitation and Inspection Program (PL 84-99) Eligibility Criteria
- WRRDA/WRDA
- FY-15 Budget Hearings
Questions & Discussion
Influence of Infrastructure Investment on GDP and Jobs

Increased investment in infrastructure could yield, by 2020...

- **Addition of:**
  - up to 1.8 Million Jobs!
  - up to $320B to GDP

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**Table:**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Jobs Impact</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>1.1 million</td>
<td>85–100</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1.3 million</td>
<td>25–30</td>
</tr>
<tr>
<td>Services 1</td>
<td>85–95</td>
<td>160,000–190,000</td>
</tr>
<tr>
<td>Trade, transport, and logistics</td>
<td>30–40</td>
<td>100,000–120,000</td>
</tr>
<tr>
<td>Other sectors 2</td>
<td>45–55</td>
<td>25,000–30,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>1.5 million–1.8 million</td>
</tr>
</tbody>
</table>

1. Includes financial, legal, and professional services; management, health care, and education; and leisure and hospitality.
2. Includes real estate; agriculture and forestry; mining; and government.

SOURCE: US Bureau of Economic Analysis; American Society of Civil Engineers; McKinsey Global Institute analysis
Corps CW Missions and its Influence on GDP

Ends versus means...
- Flood risk reduction
- Coastal storm damage reduction
- Navigation and multi-modal transport
- among others...

Each contributes to greater efficiency and reliability of the economic systems that make our livelihoods possible.

Many sectors benefit from services yielded by Corps authorities and associated infrastructure. Roughly half of the GDP activity functions in the shadow of Corps authorities.

How would waterfront industrial complexes, real estate markets, commercial trade, transportation networks, and other sectors of the economy function in the absence of such systems?
Corps CW Mission and its Influence on Jobs

2012 Full and Part Time Employees: Total: 139,741,000

Source: Industry Economic Accounts Directorate, Bureau of Economic Analysis (BEA), U.S. Department of Commerce
Water Infrastructure Spending Trends

Between 1962 to 2010...

While total public funding (in 2012 $’s) of water infrastructure has increased

As a % GDP, spending has decreased

And Federal spending has dropped dramatically as % GDP

Placing an unsustainable burden on state & local funding sources as infrastructure ages.