

# 社会的価値とPPP

Value for society of PPPs

主催：東洋大学

後援：内閣府、総務省、国土交通省

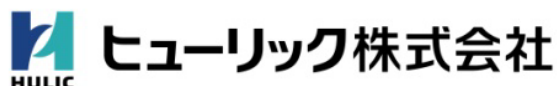
特別後援：



子どもたちに誇れるしごとを。



想いをかたちに 未来へつなぐ



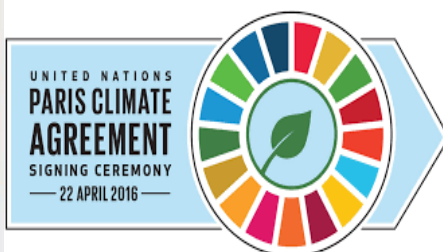


INTERNATIONAL SUSTAINABLE RESILIENCE CENTER  
POWERED BY PUBLIC PRIVATE PARTNERSHIPS

# New Financial Structuring in PfPPP for Disaster Recovery, Resiliency and Environmental Efforts

David A. Dodd, CEcD, CEO  
International Sustainable  
Resilience Center, Inc.

2021 PPP Forum Tokyo  
February 3, 2022



## Complimenting the SDGs—4 Additional 2015 International Disaster Risk-Centric Agreements

Sendai Framework  
for Disaster Risk Reduction  
2015 - 2030

## Risk Drivers and Root Causes

- The following factors are recognized as driving risk:
- Unequal levels of economic development,
- Poverty, inequality, vulnerability, lack of social equity and human security,
- Poorly planned and managed urban & mega-city development / lack of planning & zoning,
- Decline of regulatory eco-system services,
- Weak governance & local capacities,
- Where one lives & risk exposure is determined by income.

## Addis Ababa Action Agenda (AAAA) on Financing for Development

The Action Agenda serves as a guide for actions by governments, international organizations, the business sector, civil society, and philanthropists. It establishes a strong foundation to support implementation of the 2030 Agenda for Sustainable Development.

A comprehensive set of policy actions by Member States, with a package of over 100 concrete measures to finance sustainable development, transform the global economy and achieve the Sustainable Development Goals.

A new global framework for financing sustainable development that aligns all financing flows and policies with economic, social and environmental priorities and ensures that financing is stable and sustainable.

# Financing Resilience is Now Front and Center



- A multitude of financing facilities have been or are being developed
  - The Adaptation and Resilience Investors Collaborative
    - Standardizing and tracking resilience investments including PPPs
  - Resilience Innovation Partners
    - Utilizing PPP between governments, development banks, and insurance industry
  - ISRC Resilience Securitization Initiative
    - Combining development bank funds with ESG/Impact Investing in PPPs via resilience bonds
  - Development Finance Institutions
    - World Bank Finance for Adaptation Fund
    - ADB Asia Development Fund

## Example of 4P Financing--Public Private Philanthropic Partnerships for Resilience

- Example: New Orleans Iconic Art-Deco “Big Charity” Public Hospital
- Massive 1.2mm sq. ft. public hospital--flooded, condemned
- Federal and State governments could not afford the added investment needed to produce resilient facilities, specifically a new super-resilient emergency facility
- Of the 1,170 deaths from Katrina, estimated **520** were in acute medical care prior to the storm
- Construction of new, 450-bed facility with extremely resilient emergency care facility-\$1.1b
- Non-profit health foundation partnered in building, operation

Source	Funding	Operation
Federal	\$642m	Public Health
State	\$279m	State University Medical School
Private	\$143m	Management



# PPP for Affordable Resilient Housing



After a south Texas storm, a PPP developed a way to provide temporary-to-permanent shelters, with the goal of increasing resilient, affordable home ownership. PPP was three NGOs and the State Housing Authority

A “core unit” for temporary shelter, made of locally pre-assembled components, is put in place in less than 30 days, resilient to withstand hurricane-force winds. Survivors meanwhile are taught financing and owning

The core is donated and used as collateral to finance conversion into a permanent home that families can purchase or rent, using a case management system (Average Cost: US\$82,000)

## Summary-The Enormous Cost of Not Investing in Resilience

- “With the total of last year’s disasters costing nearly the same as Denmark’s gross domestic product, we cannot simply react to disasters anymore, but embrace a world proactively built to mitigate and withstand the changes in our climate ....without the assurances of evidence-based research to guide the design, creation, and impact of new infrastructure, there is little hope for a sustainable future anywhere.”
  - “Staggering Costs: The Economics of Sustainable Infrastructure” by Michelle Wyman, Executive Director, U.S. National Council for Science and the Environment
- A relatively small investment resilience may produce significant returns for PPP developers, operators, financiers, insurers, and most importantly, PEOPLE.
- ISRC stands ready to assist in facilitating infrastructure and programmatic PPPs that increase resilience such as flood protection and fire suppression systems
- ISRC can also provide guidance and technical expertise to integrate resilience and sustainability in any and all PPP projects worldwide
- Unless we act **NOW**, the effects of climate change will continue to cause untold pain and suffering. The message is simple: **ADAPT OR PERISH.**

For More Information, Please Feel  
Free to Contact Me:

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Thank you for listening!



# Building back better with *Envision*®—a leading framework for improving the sustainability and resiliency of infrastructure

*Melissa Peneycad, Managing Director  
Institute for Sustainable Infrastructure*

February 2022  
PPP Forum



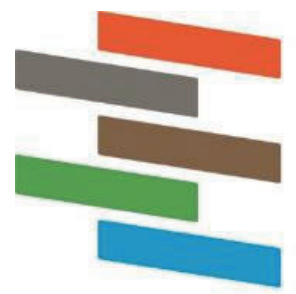
## About the Institute for Sustainable Infrastructure (ISI)

**Non-profit education and research organization  
headquartered in Washington, DC**

**Founded in 2010 by:**

- American Public Works Association (APWA)
- American Council of Engineering Companies (ACEC)
- American Society of Civil Engineers (ASCE)

**Created to develop, manage & administer a sustainable infrastructure framework and rating system (known as *Envision*®)**



ENVISION™



# Our partners

**Research partner:** Harvard University's Zofnass Program for Sustainable Infrastructure



## In-country partners:

- Canadian Society for Civil Engineering (CSCE)
- ICMQ – non-profit in Italy
- FEMCIC – largest engineering association in Mexico



**Our 200+ members include public agencies and private-sector companies in the architecture, engineering, and construction (a/e/c) industry**



# Federal government priorities

- Climate change
- Resilience
- Equity and social justice
- Environmental protection and biodiversity
- Public health
- Economic recovery

Infrastructure plays a critical role in achieving all these goals – and Envision is a tool to improve performance in all these areas and more.



# Opportunities

- Accountability for government spending
- Understanding and addressing complex tradeoffs
- Prioritization of higher performing projects
- Guidance to embed high-level goals into project delivery
- A standardized national/international approach
- Initiating systemic change within the infrastructure industry

**We need a consistent framework that evaluates tradeoffs, supports higher quality infrastructure, and delivers accountability to communities.**

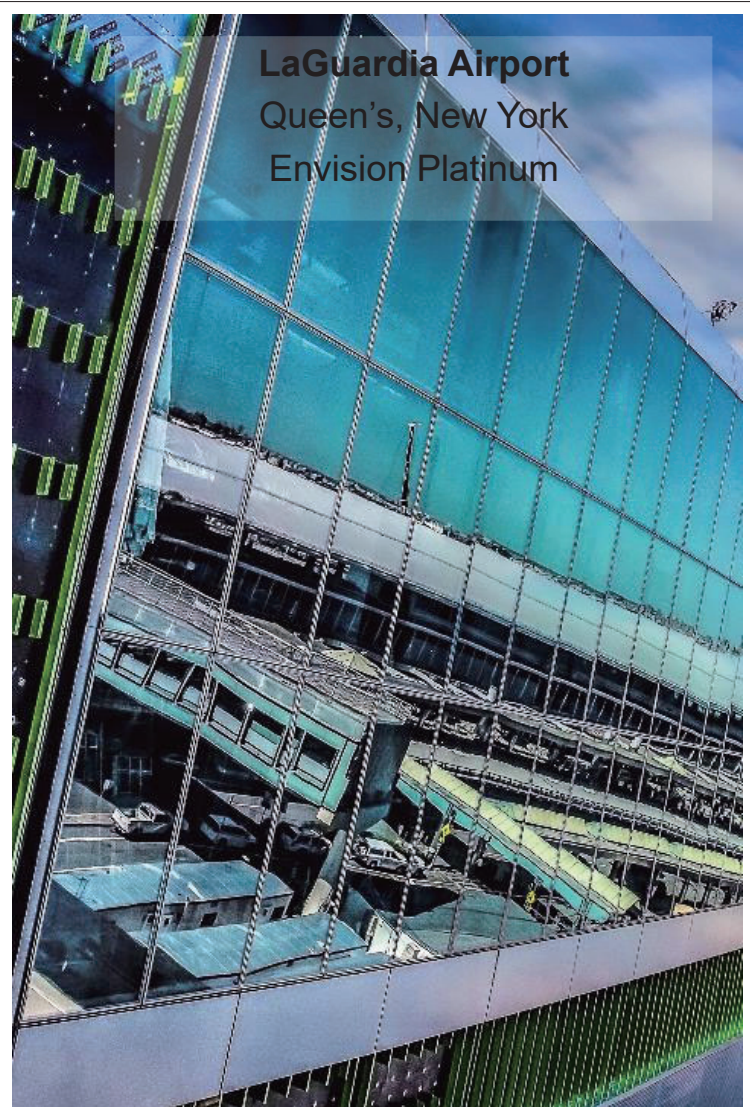
## The Envision® Framework

- A blueprint for better public and private infrastructure of all types
- Enables a thorough examination of the sustainability and resiliency of infrastructure projects
- Provides practical guidance on how to improve performance
- At a 10,000-foot level, Envision asks:
  - ***What is the right project?***
  - ***How do we build the project right?***



# Components of Envision

- Guidance Manual
- Project self-assessment tools
- Professional training & credentialing
- Project verification and awards (based on % of applicable points achieved)
  - Verified (20-29%)
  - Silver (30-39%)
  - Gold (40-49%)
  - Platinum (50%+)



## Types of projects Envision rates



### Energy

- Geothermal
- Hydroelectric
- Nuclear
- Natural Gas
- Oil / Refinery
- Wind
- Solar
- Biomass
- Distribution



### Water

- Potable water distribution
- Water / wastewater treatment
- Capture / storage
- Stormwater
- Flood control
- Nutrient management



### Waste

- Solid waste
- Recycling
- Hazardous waste
- Collection and transfer



### Transportation

- Airports
- Roads / Highways
- Bridges
- Railways
- Public transit
- Ports & Waterways
- Active Transportation



### Landscape

- Public realm
- Parks / Campgrounds
- Ecosystem services
- Natural / Green infrastructure
- Environmental remediation / restoration



### Information

- Telecom
- Internet / Broadband
- Phones
- Data Centers
- Sensors
- Cables

Other sectors and project types that use Envision include: industrial projects (e.g., manufacturing facilities, warehouses, storage facilities), and food/agriculture projects (e.g., aquaculture, breweries, food manufacturing facilities).

# Envision at-a-glance: 64 credits across 5 categories and 14 subcategories



## Quality of Life 14 Credits

### WELLBEING

- QL1.1 Improve Community Quality of Life
- QL1.2 Enhance Public Health & Safety
- QL1.3 Improve Construction Safety
- QL1.4 Minimize Noise & Vibration
- QL1.5 Minimize Light Pollution
- QL1.6 Minimize Construction Impacts

### MOBILITY

- QL2.1 Improve Community Mobility & Access
- QL2.2 Encourage Sustainable Transportation
- QL2.3 Improve Access & Wayfinding

### COMMUNITY

- QL2.1 Advance Equity & Social Justice
- QL2.2 Preserve Historic & Cultural Resources
- QL2.3 Enhance Views & Local Character
- QL2.4 Enhance Public Space & Amenities

QL0.0 Innovate or Exceed Credit Requirements



## Leadership 12 Credits

### COLLABORATION

- LD1.1 Provide Effective Leadership & Commitment
- LD1.2 Foster Collaboration & Teamwork
- LD1.3 Provide for Stakeholder Involvement
- LD1.4 Pursue Byproduct Synergies

### PLANNING

- LD2.1 Establish a Sustainability Management Plan
- LD2.2 Plan for Sustainable Communities
- LD2.3 Plan for Long-Term Monitoring & Maintenance
- LD2.4 Plan for End-of-Life

### ECONOMY

- LD3.1 Stimulate Economic Prosperity & Development
- LD3.2 Develop Local Skills & Capabilities
- LD3.3 Conduct a Life-Cycle Economic Evaluation
- LD0.0 Innovate or Exceed Credit Requirements



## Resource Allocation 14 Credits

### MATERIALS

- RA1.1 Support Sustainable Procurement Practices
- RA1.2 Use Recycled Materials
- RA1.3 Reduce Operational Waste
- RA1.4 Reduce Construction Waste
- RA1.5 Balance Earthwork On Site

### ENERGY

- RA2.1 Reduce Operational Energy Consumption
- RA2.2 Reduce Construction Energy Consumption
- RA2.3 Use Renewable Energy
- RA2.4 Commission & Monitor Energy Systems

### WATER

- RA3.1 Preserve Water Resources
- RA3.2 Reduce Operational Water Consumption
- RA3.3 Reduce Construction Water Consumption
- RA3.4 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements



## Natural World 14 Credits

### SITING

- NW1.1 Preserve Sites of High Ecological Value
- NW1.2 Provide Wetland & Surface Water Buffers
- NW1.3 Preserve Prime Farmland
- NW1.4 Preserve Undeveloped Land

### CONSERVATION

- NW2.1 Reclaim Brownfields
- NW2.2 Manage Stormwater
- NW2.3 Reduce Pesticide & Fertilizer Impacts
- NW2.4 Protect Surface & Groundwater Quality

### ECOLOGY

- NW3.1 Enhance Functional Habitats
- NW3.2 Enhance Wetland & Surface Water Functions
- NW3.3 Maintain Floodplain Functions
- NW3.4 Control Invasive Species
- NW3.5 Protect Soil Health

NW0.0 Innovate or Exceed Credit Requirements



## Climate and Resilience 10 Credits

### EMISSIONS

- CR1.1 Reduce Net Embodied Carbon
- CR1.2 Reduce Greenhouse Gas Emissions
- CR1.3 Reduce Air Pollutant Emissions

### RESILIENCE

- CR2.1 Avoid Unsuitable Development
- CR2.2 Assess Climate Change Vulnerability
- CR2.3 Evaluate Risk & Resilience
- CR2.4 Establish Resilience Goals and Strategies
- CR2.5 Maximize Resilience
- CR2.6 Improve Infrastructure Integration

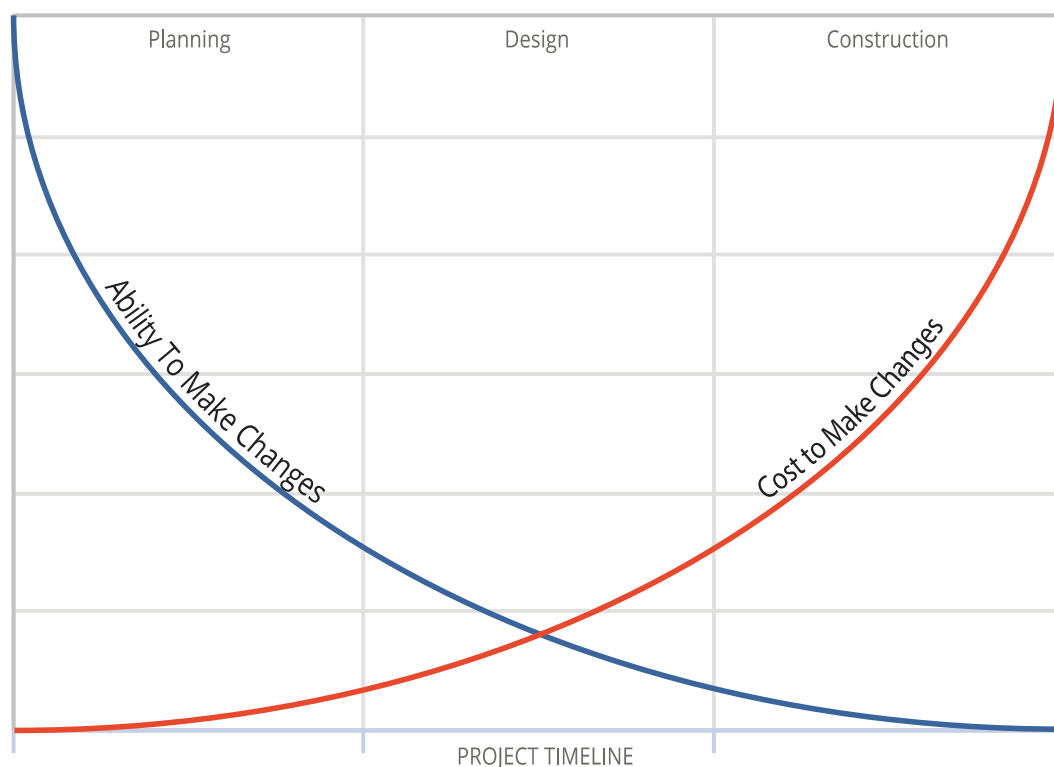
CR0.0 Innovate or Exceed Credit Requirements



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Infrastructure

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## Project timeline: making the most of opportunities

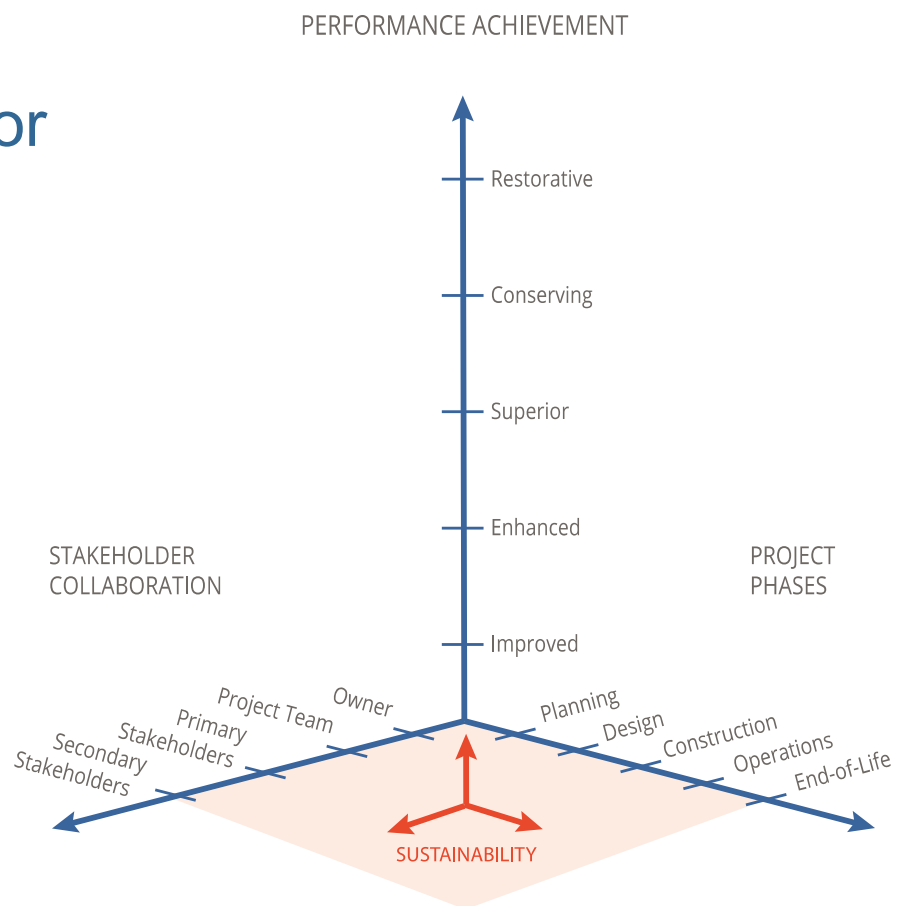


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# Expanding opportunities for performance improvement



## Common language

- Encourages multidisciplinary teamwork and collaboration
- Promotes meaningful stakeholder engagement
- Provides common language for collaboration and communication

**Gordie Howe International Bridge**  
Detroit, MI, USA & Windsor, ON, Canada  
Envision Platinum



**Samuel de Champlain Bridge Corridor**  
Montreal, Canada  
Envision Platinum



# Credit close up

**1** **2** **3**

**4** **5**

**6** **7**

**8** **9**

**QUALITY OF LIFE: WELLBEING**  
**QL1.1 Improve Community Quality of Life**

**26 POINTS**

**INTENT**  
Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.

**METRIC**  
Measures taken to assess community needs and improve quality of life while minimizing negative impacts.

**LEVELS OF ACHIEVEMENT**

IMPROVED A+B	ENHANCED A+B+C+D	SUPERIOR A+B+C+D+E	CONSERVING A+B+C+D+E+F	RESTORATIVE A+B+C+D+E+F+G
(2) Community Considerations	(3) Community Linkages	(4) Broad Community Alignment	(5) Holistic Assessment & Collaboration	(6) Promoting The Future

(A) The project team identifies and takes into account community needs, goals, and issues. For example, the project team has located and released the most recent community planning information and assessed relevant community needs, goals, and/or issues.

(B) The project needs or supports community needs and/or goals.

(C) The project assesses the social impacts it will have on the host and affected communities' quality of life.

(D) The affected communities are meaningfully engaged in identifying how the project supports community needs and/or goals.

(E) Based on the social assessment, potential negative impacts on the host or nearby affected communities are mitigated following a hierarchy that prioritizes avoidance, minimization, restoration, and offsetting.

(F) Community satisfaction is demonstrated by feedback from the stakeholder engagement process verifying actions taken in criteria A, B, C, and D.

(G) The project proactively addresses trends in changing social, economic, and/or environmental conditions within the community in order to ensure a high quality of life over the long-term.

**DESCRIPTION**  
This credit addresses the extent to which a project contributes to the quality of life of the host and affected communities. As this can be subjective, the credit criteria address how well the project team has identified, assessed, and incorporated community needs, goals, and issues into the project. Relevant community plans are assumed to be a viable expression of those needs, goals, objectives, and aspirations. In a real sense, they are the community's desired quality of life.

Unfortunately, infrastructure projects are often perceived as having negative impacts on communities. This "not in my back yard" (NIMBY) mentality can be addressed through active engagement and clear project alignment of projects with community needs, goals, and issues. Community support and engagement are critical to ensure the appropriate and effective investment of resources in infrastructure. Project teams and owners should consider how aligning the project with community goals reduces the risk of community conflicts that disrupt project delivery and increase cost.

**PERFORMANCE IMPROVEMENT**  
**Improved:** The project team can demonstrate an understanding of the community needs, goals, and issues, and communicate how the project meets or supports those goals.

**Enhanced:** Communication and interactions with community stakeholders are essential to reaffirm and improve the project objectives. The project team works closely with community stakeholders to identify and assess potential social impacts. Social impacts include the intended and unintended social consequences, both positive and negative, of infrastructure projects and any social changes triggered by those projects.

Superior infrastructure projects often include difficult trade-offs involving positive and negative impacts, and a project designed to benefit one community may have adverse effects on others. In addition, the needs of a community may conflict with their expressed goals. Because positive impacts in all dimensions of performance may not be possible, the credit seeks a net positive impact. Importantly, the project benefits and impacts should be equitably distributed throughout the host and affected communities.

**Conserving:** Community satisfaction is the metric for quality of life. It should be evident that the community truly understands the full impact (positive and negative) of the project and is satisfied that it addresses their needs and goals while appropriately mitigating negative impacts. Documentation of community endorsement should be as broad as possible and specific to the requested documentation.

**Restorative:** The project team proactively identifies situations where long-term trends in socioeconomic or environmental conditions may undermine existing community aspirations and addresses them in the project.

**Applicability:** It is likely that as projects have the ability to align project objectives with community needs and goals, identified through active engagement, in order to achieve broad community satisfaction. It would therefore be difficult to demonstrate that the credit is not relevant applicable to a project seeking an Envision award.

**EVALUATION CRITERIA AND DOCUMENTATION GUIDANCE**

**A. Has the project team identified and taken into account community needs, goals, and issues?**  
1. Documentation that the project team has located and released the most recent community planning information and assessed relevant community needs, goals, and/or issues. For example, meeting minutes with key stakeholders, community leaders, and decision makers; letters; and memoranda.

**B. Does the project meet or support the needs and goals of the host and/or affected communities?**  
1. Evidence showing a comparison of the project vision and goals to the needs, goals, and/or issues of the community.

**C. Has the project team assessed the social impacts the project will have on the host and affected communities' quality of life?**  
1. Assessing, identifying and evaluating the positive and negative social impacts of the project on affected communities' quality of life (e.g., social impact assessment). Expectations for the depth and breadth of documentation are commensurate with the scale of the project and its impact on the broader community. Informal assessments are acceptable for small projects, provided that project teams present evidence supporting their conclusions.

**D. Have the affected communities been meaningfully engaged in identifying how the project supports community needs and/or goals?**  
1. Documentation of processes for collecting, evaluating, and incorporating community input into the planning and design process (e.g., meetings, design charrettes, and communications with representatives of affected communities).

**E. Has the project team addressed negative social impacts?**  
1. Evidence showing the extent to which options for mitigating negative impacts were identified and prioritized, and reasonable changes to the project made. Strategies for mitigating negative impacts should follow a hierarchy prioritizing avoidance, minimization, restoration, and offsetting.

**F. Are the affected communities satisfied that the project addresses their needs and goals as well as mitigates negative impacts?**  
1. Acknowledgments and endorsements by the community that the design participation process was helpful and that their input was appropriately assessed and incorporated into project design.  
2. Documentation of input and agreement from key stakeholders, community leaders, and/or decision makers regarding the impact assessment and planned actions (e.g., community satisfaction surveys, interviews with representatives of affected communities, comments and reactions from social media platforms). Specific statements about critical issues or actions taken within the project are better indicators of a true understanding of the project's impacts than general endorsements of the project as a whole. Evidence of community satisfaction and endorsement of plans includes:  
a. Community endorsement of the project team's assessment of their needs or goals per criterion A.  
b. Community endorsement that the project as proposed will address their needs or goals per criterion B.  
c. Documentation that the community understands and accepts potential impacts of the project per criterion C.  
d. Community endorsement of project strategies to mitigate negative impacts per criterion D.

**G. Does the project proactively address long-term social, economic, or environmental changes that impact quality of life?**  
1. Documentation of long-term social, economic, or environmental changes that may impact community goals and needs over time (e.g., aging population, economic transitions, or the degradation of the environment and ecosystem services). Note that social, economic, and environmental shifts are often correlated. The degradation of the environment in a coastal community dependent on tourism and fishing negatively impacts the economy, which can lead to social impacts such as shrinking population. Consequently, the quality of life of the community is put at risk.  
2. Documentation demonstrating how the project will proactively address one or more of these changes/trends.  
3. Documentation demonstrating how the project represents a smart long-term investment for the community's future.

**RELATED ENVISION CREDITS**  
CQ 1.7 Enhance Public Health & Safety  
QL2.3 Improve Access & Wayfinding  
LD2.3 Provide for Stakeholder Involvement  
LD2.2 Plan for Sustainable Communities  
LD3.1 Stimulate Economic Prosperity & Development  
CR2.5 Maximize Resilience

## Highway I-4 Ultimate Improvements Project Central Florida, USA Envision Platinum

## Who uses Envision?

- Projects
- Governments / Agencies
- People







- 125 verified projects since 2013
- >\$131 billion in infrastructure development

Public sector agencies & municipalities are using Envision

- NASA
- Infrastructure Canada
- US Federal and State Level Departments of Transportation
- US Army Corp of Engineers
- Aéroports de Montréal
- Société de transport de Montréal
- Vancouver Fraser Port Authority
- Metro Vancouver
- California High-Speed Rail Authority
- Windsor-Detroit Bridge Authority
- City of Edmonton
- Halifax Port Authority
- City of Red Deer
- City of Westminster
- Miami-Dade County
- St. Petersburg, Florida
- Port Authority of New York & New Jersey
- City of Los Angeles
- LA Metro
- City of Houston
- Port of Portland
- Sound Transit
- + many more...



## People are using Envision

- More than 6,500 people trained in the use of Envision in 20+ countries
- The Envision Sustainability Professional (ENV SP) credential is increasingly recognized globally as an important indicator of sustainability knowledge

# Thank you!

For more information: [www.sustainableinfrastructure.org](http://www.sustainableinfrastructure.org)

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# インフラに関する現状と課題

## Resilience and the expectation for PPP/PFI

国土交通省総合政策局  
社会資本整備政策課 政策企画官  
成田 潤也

**Junya Narita**

Director for Policy Planning

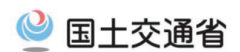
Infrastructure Policy Division, Policy Bureau



Ministry of Land, Infrastructure, Transport and Tourism

我が国が抱える課題

### Issues that Japan is currently facing



防災・減災の必要性

The need for preventing and mitigating disasters



インフラの老朽化

Deteriorating infrastructure



財政制約

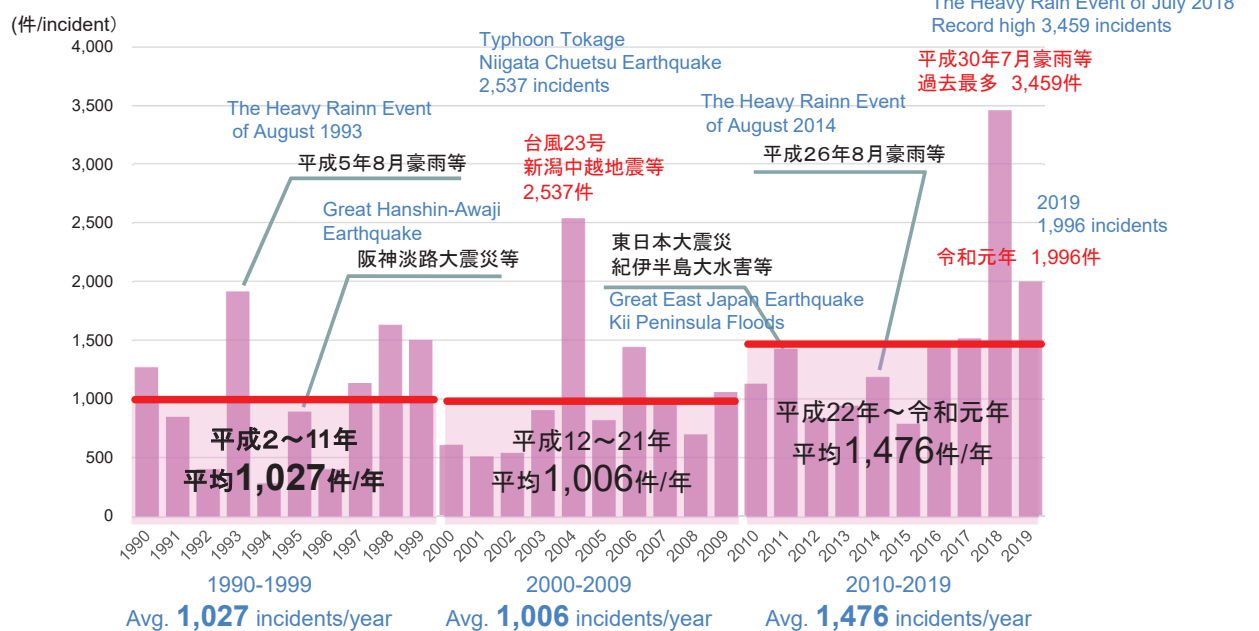
Fiscal Constraints



○土砂災害の発生件数は、1990～2009年では年平均約1,000件であるが、2010年以降は約1,500件と約1.5倍に増加。2018年は過去最多の3,459件を記録した。

The number of sediment disasters occurred at an average annual rate of about 1,000 in 1990-2009, but increased about 1.5 times from 2010 to around 1,500. In 2018, there was a record high of 3,459.

## 《土砂災害の発生件数の変化》 Number of Sediment Disasters

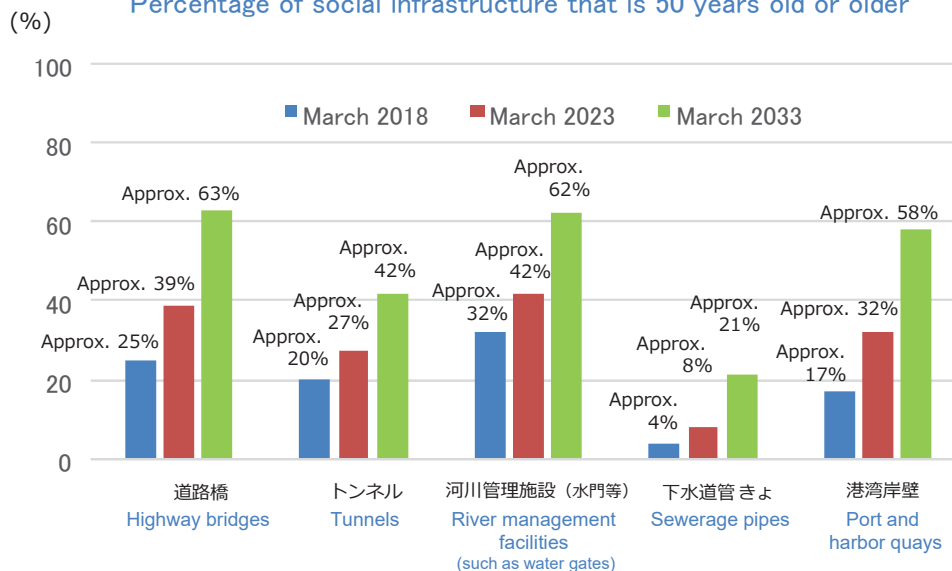


○我が国では、高度成長期以降に整備したインフラについて、建設後50年以上経過する施設の割合が加速度的に高くなる。

Of all the infrastructure that was built after the rapid growth period of the nation's economy, the proportion of those facilities that will reach 50 years of age or older will expand at an accelerating pace.

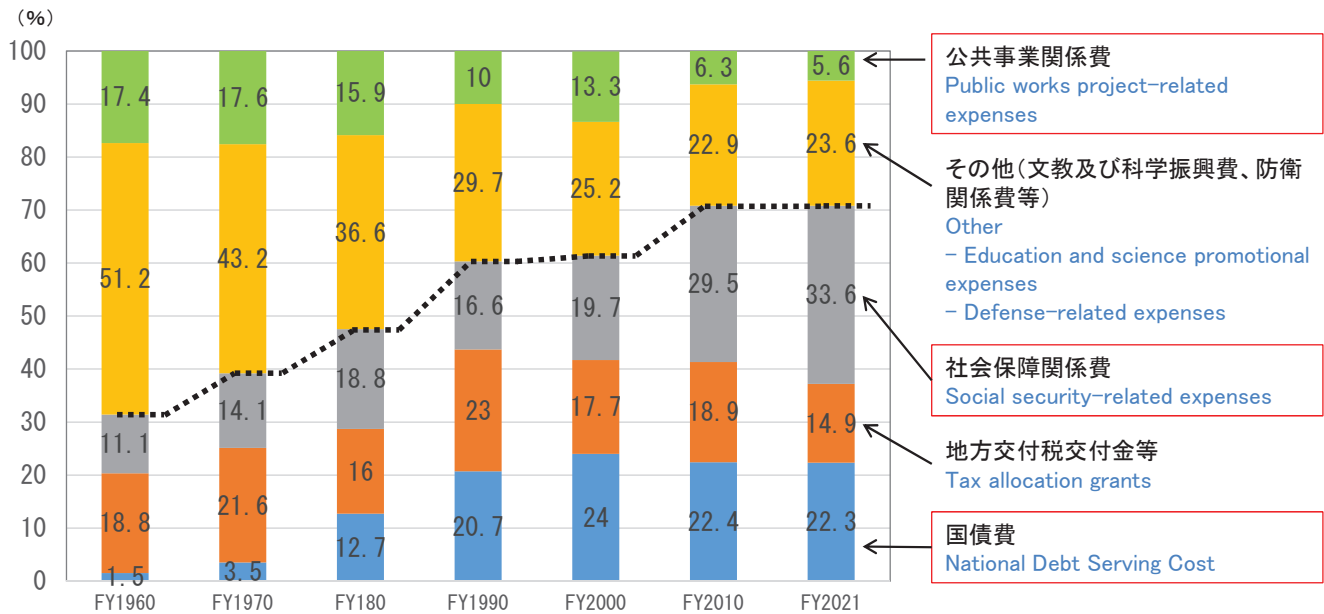
## 《建設後50年以上経過する社会資本の割合》

### Percentage of social infrastructure that is 50 years old or older



一般会計歳出に占める国債費の割合は公債発行の累増により高くなってきている。また、社会保障関係費も高くなってきており、他の政策的な支出を圧迫している。

The share of National Debt Serving cost and Social Security-related expenses increased significantly, placing pressure on other policy related expenditures.



※平成22年度までは決算、令和3年度は予算による

(財務省HP「令和3年度予算のポイント」より国土交通省作成)

## 「予防保全」を通じた維持管理コストの削減

## Reduction of maintenance costs through preventive maintenance

○「事後保全」から、「予防保全」へ転換し、持続的・効率的なインフラメンテナンスを実現。

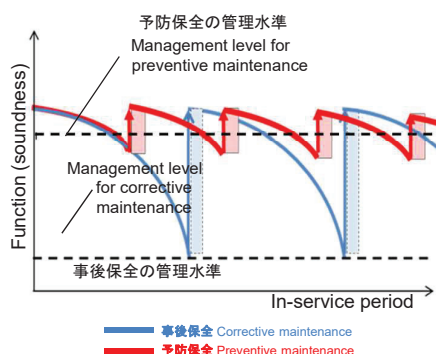
It is necessary to switch from corrective to preventive maintenance for achieving a sustainable maintenance cycle.

用語の定義 Definition of terminology

予防保全 Preventive maintenance	施設の損傷が軽微な段階で予防的な修繕等により機能保持を図る Measures such as repair are taken before problems occur with facility function or performance.
事後保全 Corrective maintenance	施設の損傷が拡大した段階で大規模な修繕等により機能回復を図る Measures such as repair are taken after problems occur with facility function or performance.

### 【事後保全と予防保全のサイクル】

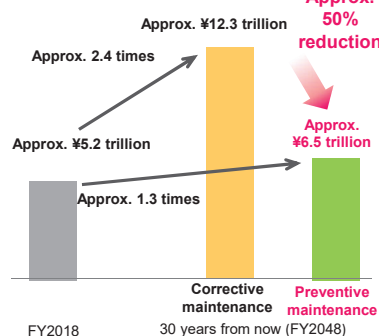
[Corrective/Preventive maintenance cycles]



### 【将来の維持管理・更新費用の推計結果 (2018年11月30日公表)】

[Results of estimating future maintenance and renewal costs]

30年後 (2048年度) の見通し  
Forecast for 30 years from now (FY2048)



30年後 (2048年度) の見通し (累計)  
Forecast for 30 years from now (FY2048) (Total)

	Total for 30 years (FY2019-2048)
事後保全 Corrective maintenance	約280兆円 Approx. ¥280 trillion
予防保全 Preventive maintenance	約190兆円 Approx. ¥190 trillion

Approx. 30% reduction



## National Plans relating to Infrastructure (1)

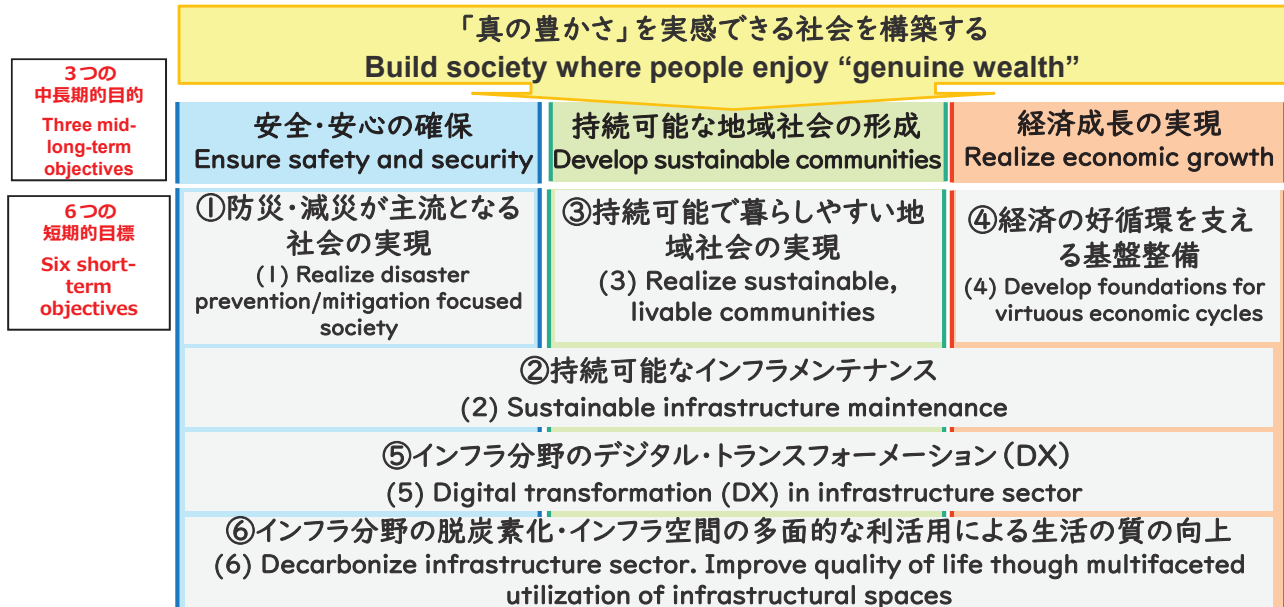
## ○第5次社会資本整備重点計画 the 5th Priority Plan for Infrastructure Development

- ✓ 社会資本整備重点計画は、社会資本整備重点計画法（平成15年法律第20号）に基づき、社会資本整備事業を重点的、効果的かつ効率的に推進するために策定する計画。

The Priority Plan is formulated to promote the infrastructure development projects in an intensive, effective and efficient manner in accordance with the “Act on Priority Plan for Infrastructure Development.”

《3つの中長期的目標と6つの短期的目標》

Three mid-long-term objectives and six short-term objectives



## National Plans relating to Infrastructure (2)

## ○インフラ長寿命化基本計画 the Basic Plan for Extending Service Life of Infrastructure

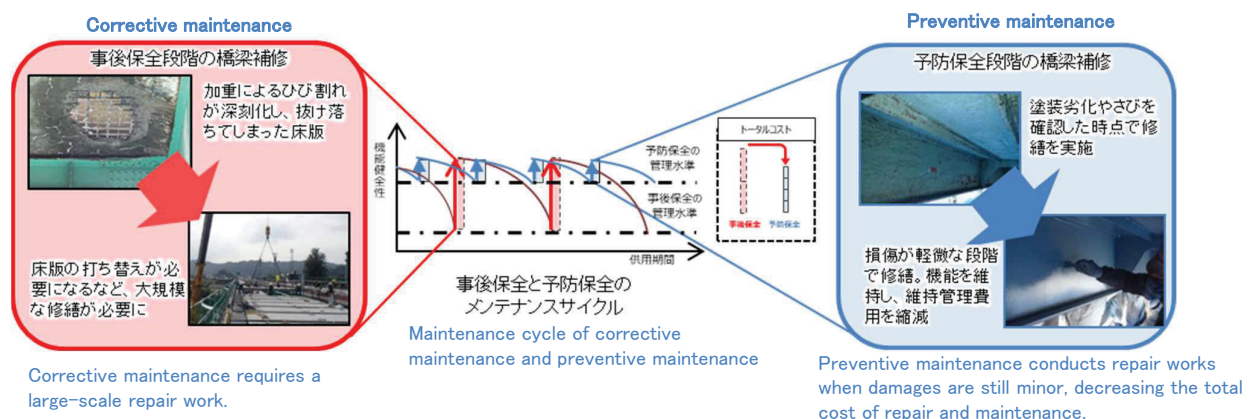
- ✓ 「インフラ長寿命化基本計画」は計画的な維持管理・更新等の方向性を示す基本的な計画。

The Basic Plan for Extending Service Life of Infrastructure is the plan that indicates courses of action for systematic maintenance and replacement, etc.

- ✓ 下位計画の「国土交通省インフラ長寿命化計画（行動計画）」において、**予防保全の考え方**等を導入し、国土交通省分野のインフラの維持管理・更新等を着実に推進するための中長期的な方向性を示している。

**MLIT's Action Plan emphasizes preventative maintenance** to clarify medium to long-term courses of action, in order to thoroughly promote maintenance and replacement of infrastructure under the jurisdiction of the MLIT.

《予防保全の考え方に基づくインフラメンテナンスへの転換》 Promotion of preventive maintenance





## ○防災・減災、国土強靱化のための5か年加速化対策

## Five-Year Acceleration Plan for Disaster Prevention, Disaster Mitigation, and Building National Resilience

- ✓ 以下の各分野について、更なる加速化・深化を図ることとし、令和7年度までの5か年に追加的に必要となる事業規模等を定め、重点的・集中的に対策を講ずるもの。

The Five-Year Acceleration Plan will further accelerate and deepen the following three areas below;

## 《重点的な対策》 Prioritized measures

激甚化する風水害や切迫する大規模地震等への対策	予防保全型インフラメンテナンスへの転換に向けた老朽化対策	国土強靱化に関する施策を効率的に進めるためのデジタル化等の推進
Measures against increasingly severe storm and flood disasters and impending large-scale earthquakes	Measures against aging infrastructure to shift to preventive maintenance of infrastructure	Promotion of digitalization and other measures to efficiently promote policies for national resilience
		
<p>気候変動に伴い激甚化・頻発化する自然災害に対応するため、事前防災対策を推進</p>	<p>大規模地震時の緊急物資輸送機能等の確保のため、社会資本の耐震対策等を推進</p>	<p>緊急または早期に措置すべき社会資本に対する集中的な修繕等の対策を推進</p>
<p>Promotion of Pre-disaster prevention</p>	<p>Promotion of earthquake-resistant measures</p>	<p>Promotion of intensive rehabilitation of infrastructure in need</p>
	<p>国土強靱化事業を円滑化するICTの活用を推進</p>	<p>観測体制強化やスパコン等活用により気象予測を高度化</p>
<p>Promotion of ICT</p>	<p>Advancement of the weather prediction</p>	

## PPP/PFIへの期待

## Expectation for PPP/PFI

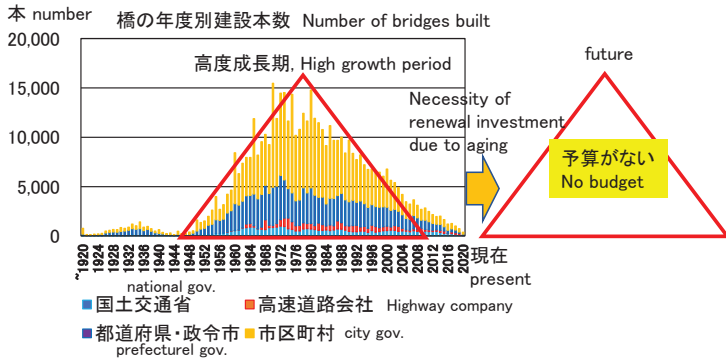
- 自然災害の頻発・激甚化に伴い、インフラへの期待が増加  
The expectation for infrastructure has increased due to the increased and intensified natural disaster.
- 建設後50年以上経過する施設の割合が加速度的に増加  
The proportion of facilities that will reach 50 years of age or older will expand at an accelerating pace.
- 「事後保全」から「予防保全」への転換により、将来の維持管理費・更新費の削減を進めることが必要  
It is necessary to reduce the maintenance and rehabilitation cost by promoting preventive maintenance.
- 一方、国・地方公共団体における公共事業費は抑制傾向  
Public works project-related expenses are limited due to required expenses such as National Debt Serving cost and Social Security-related expenses.
- また、地方公共団体における土木・建設部門の職員数は減少傾向  
Also, the number of technical officer is decreasing.

民間のノウハウや資金の活用への期待

The expectation for the know-how and finance of private sector to solve these issues

# 日本のインフラ老朽化問題 Japan's Infrastructure Aging Problem

Feb. 3<sup>rd</sup>, 2022  
Yuji Nemoto, Toyo University

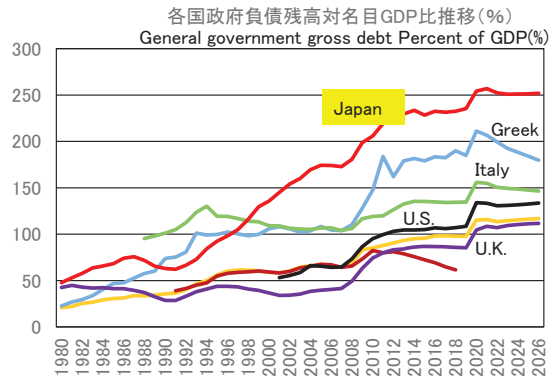


- 他のインフラ、トンネル、水道、学校、公営住宅なども同じ状況にある。
- 高度成長期の集中投資⇒老朽化も集中
- 現在のインフラをすべて同じ量で更新すると今後50年間で646兆円必要である。
- 現在、日本の政府負債残高は名目GDP比250%。他国に比べて非常に悪く、これ以上大幅に負債を増やすことができない。

- Other infrastructure, tunnels, water services, schools, public housing, etc. are in the same situation.
- Concentrated investment during the high-growth period ⇒ Concentrated aging
- If all the current infrastructure is updated with the same amount, 646 trillion yen will be required in the next 50 years.
- Currently, Japan's government debt balance is 250% of nominal GDP. It's very bad compared to other countries, and you can't increase your debt any more.

今後50年間の更新投資金額(累計)  
Renewal investment amount for the next 50 years

公共施設 public buildings	315
道路(舗装) road(pavement)	85
橋 bridges	47
水道 water supply	90
下水道 sewer	60
その他 others	49
合計 amount	646



- **政策の転換**が必要になる。
- 2012年 中央自動車道笹子トンネル天井板崩落事故
- 2013年 インフラ長寿命化基本計画
- 2014年 地方公共団体の公共施設等総合管理計画策定方針公表⇒コスト削減
- **Policy changes** are needed.
- 2012 Chuo Expressway Sasago tunnel ceiling board collapse accident
- 2013 Basic Plan for Extending Infrastructure Life
- 2014 Announcement of guidelines for formulating Comprehensive Management Plans for Public facilities of Local governments/////cost reduction

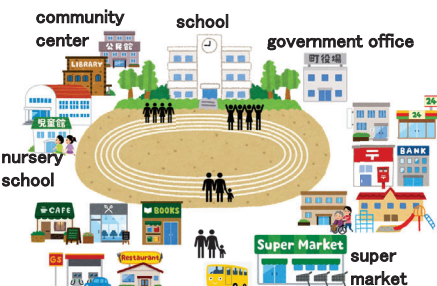
## 日本のインフラ老朽化対策 Measures Against Aging Infrastructure in Japan

現在行われている対策 Current and future measures

量を減らして機能を維持する方法 How to reduce the amount and maintain the function	<ul style="list-style-type: none"> <li>●広域化 wide area: joint ownership with neighboring local governments</li> <li>●ソフト化 softening: privatization, using private facilities</li> <li>●集約化 consolidation</li> <li>●共用化 sharing the same facility with the school and the community</li> <li>●多機能化 multi-functionalization</li> </ul>
費用を減らして機能を維持する方法 How to reduce costs and maintain functionality	<ul style="list-style-type: none"> <li>●予防保全 preventive maintenance</li> <li>●リスク・ベース・マネジメント(RBM) 重要度に応じて管理水準を変える risk based management change the management level according to the importance</li> </ul>
施設やネットワークを使わない方法 How to avoid using facilities and networks	<ul style="list-style-type: none"> <li>●分散処理 distributed processing 例:再生可能エネルギー renewable energy</li> <li>●デリバリー delivery 例:訪問診療 home-visit medical care</li> <li>●バーチャル化 virtualization/using IoT 例:遠隔診療 telemedicine</li> </ul>
サービスの受け手が移動する方法 How service recipients move	<ul style="list-style-type: none"> <li>●移転 relocation</li> </ul>

東洋大学の提案

- 地域に拠点を設けて公共施設を集約する。
  - 道路・橋・水道・下水道は拠点を中心にリスクベース・マネジメントを行う。
  - 多くの人々が拠点に来れば、スーパーなど民間投資も促進される。
- Toyo University's proposal
- Establish a base in the area and consolidate all the public facilities.
  - Road/bridges/water/sewer will be managed on risk-base.
  - Private investment will be promoted if many people come to the base.



赤い点が拠点  
The red dot is the base  
全国各地に設置できる  
Can be installed all over the country

- この拠点は1万人をカバーできる、この拠点を全国に1万箇所設置すると、1億人の人口をカバーできる。99.9%の人口がこの拠点到1時間以内にアクセスできる。
- This base can cover 10,000 people, and if this base is set up at 10,000 locations nationwide, it can cover a population of 100 million people. 99.9% of the population can access a base within an hour.



人口減少の防波堤  
Breakwater of depopulation

省インフラ infrastructure saving  
全部行えば40%費用を削減可能 40% cost reduction possible