

# Plan for the low cost maintenance with a new system for Japanese road Bridges

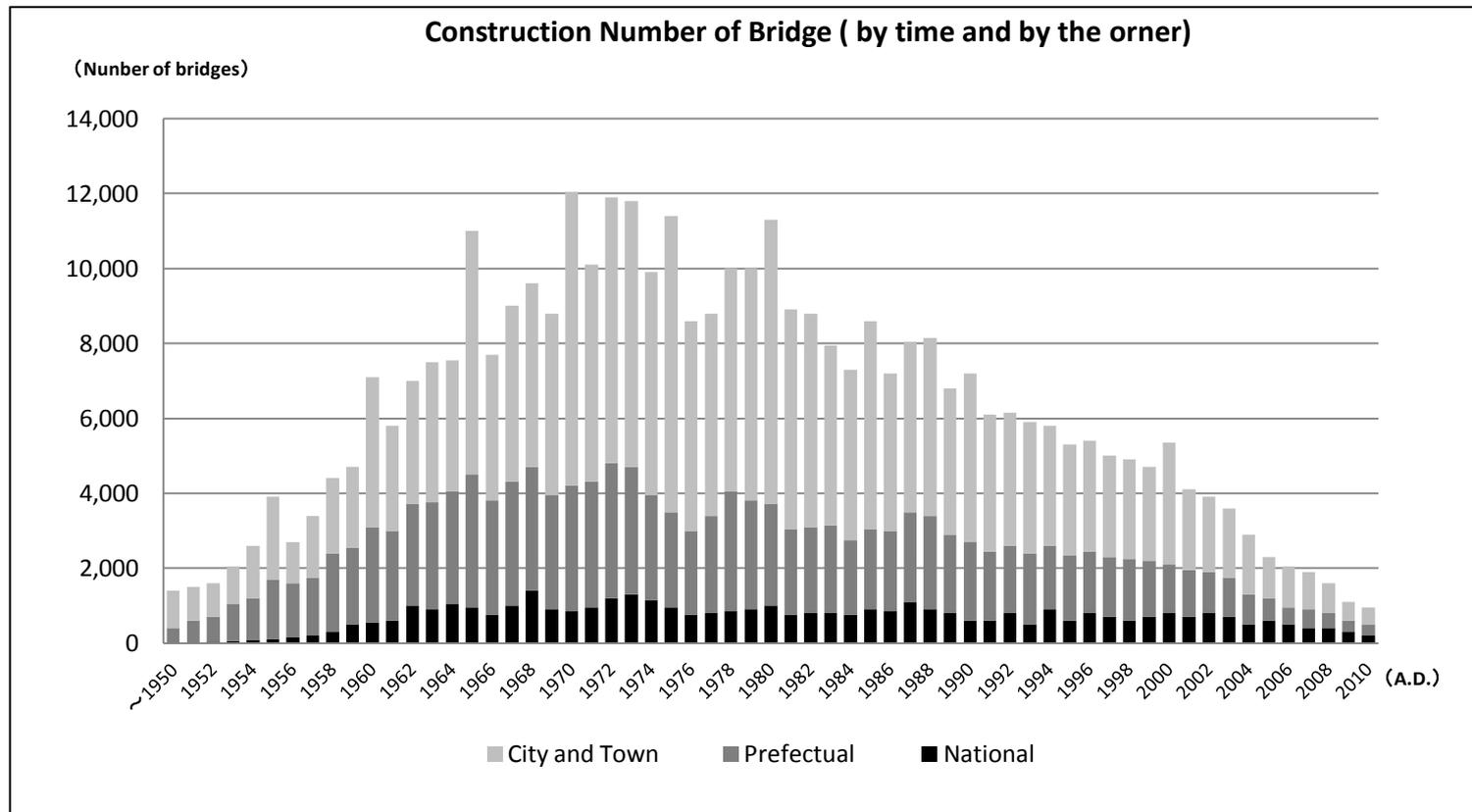
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Japan Construction Information Center  
(JACIC)

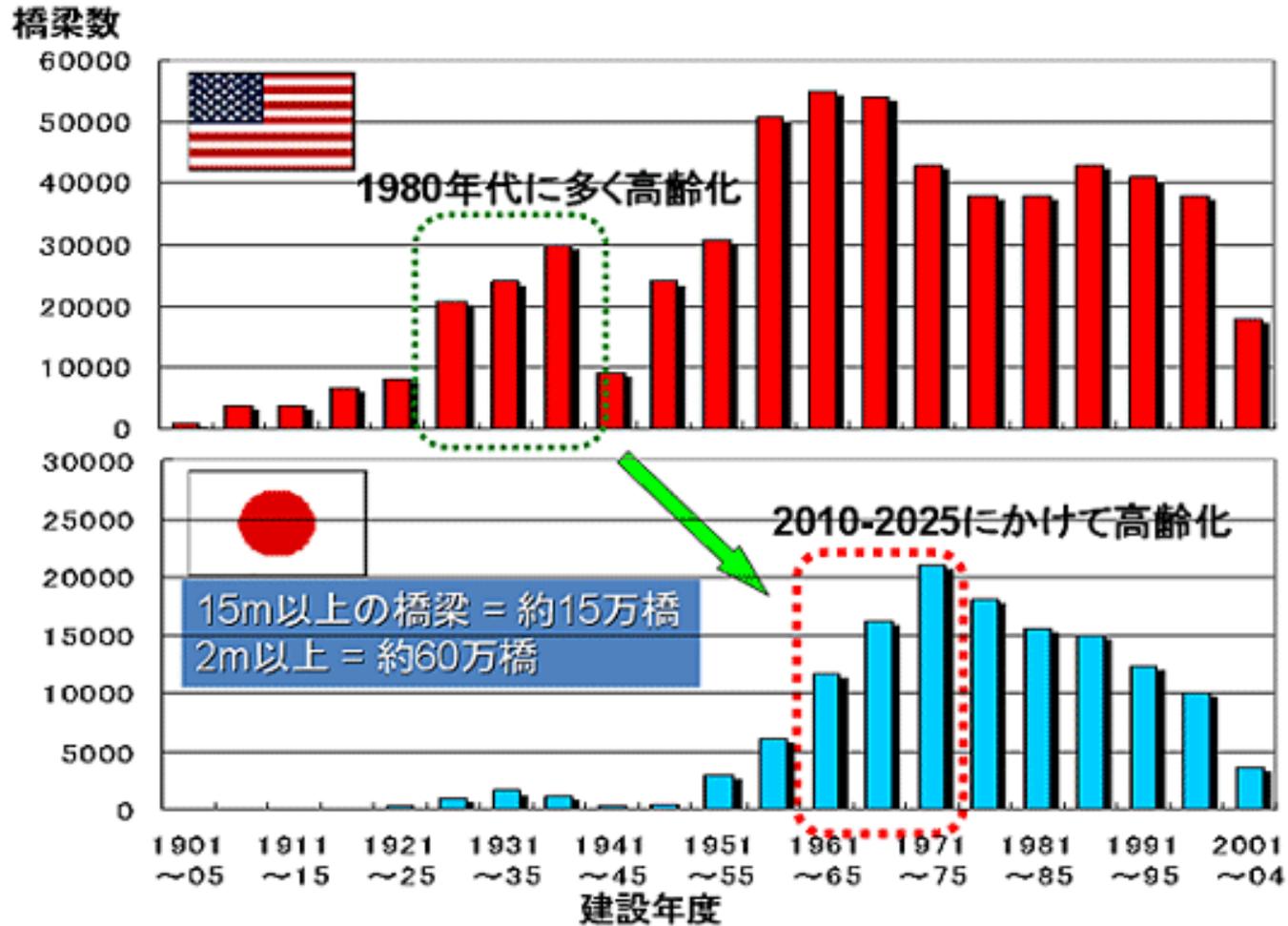
# 1. The Status of Japanese Road Bridges

In JAPAN there are over 700 thousand road bridges (2m long over) and many of them were constructed from 1966 to 1980, that was Japanese high-developing age.



The black portion belong to the national government and other above is belong to the local government and others.

Then many of these bridges will be old, over 50 years old.

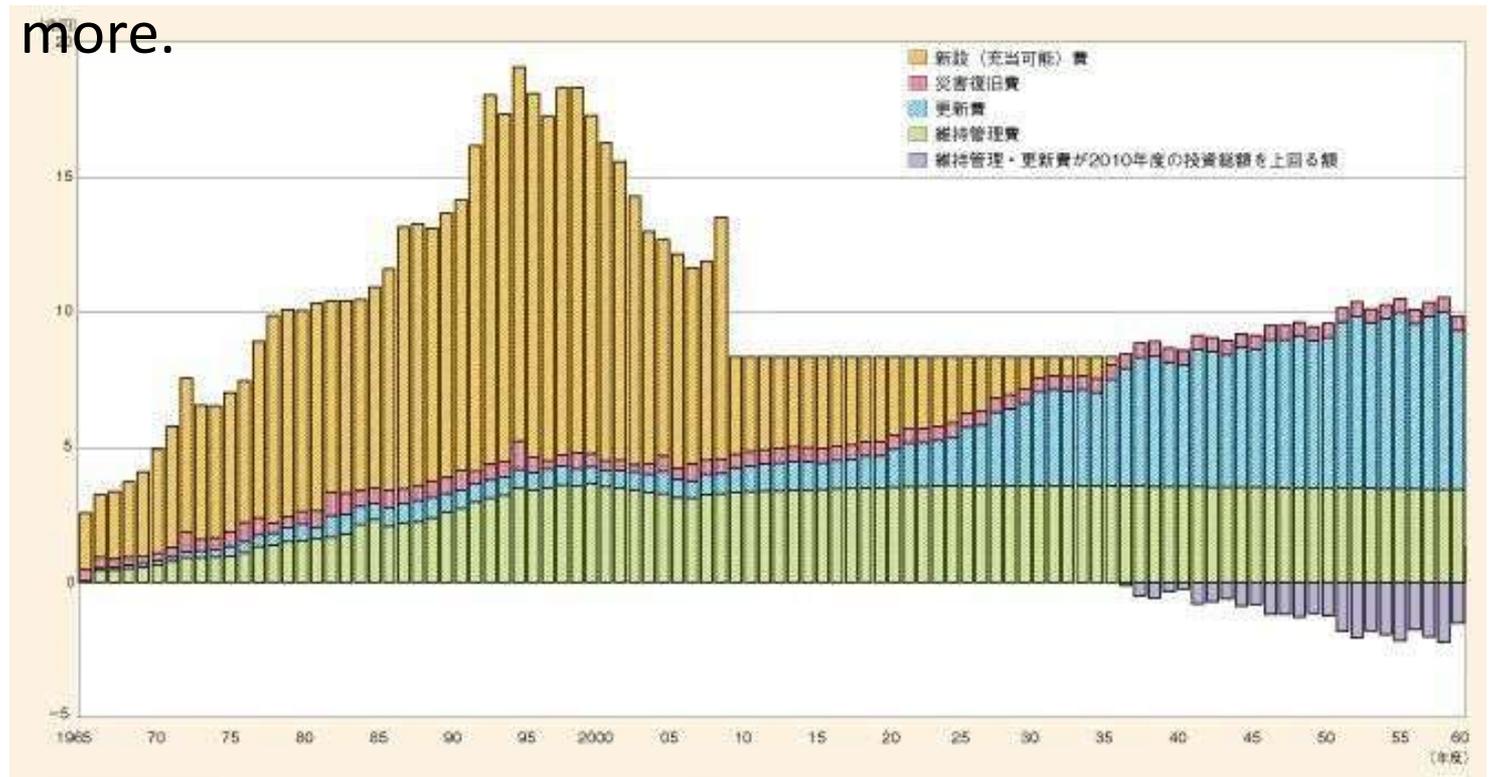


How about the future budget ?

This picture shows the result and forecast of the future construction budget. It has already reached the ceiling and no more up maybe.

And

This blue portion ( for renewal ) will increase to large expenditure more and more.



Yellow portion is of new construction works.

There are large number of bridge to be need maintenance but the budget will not be sufficient.

And so

The cost for the maintenance for old bridges will be big problem for the future JAPAN.

1980年代の「荒廃するアメリカ」



マイアナス橋の落橋  
(1983年)



We are afraid of the same condition as of 80' America 'Ruin America'' like photos.

On the other hand

## 2. Status of Japanese local governments duties for the Bridge maintenance

The local governments have large duty, heavy load for the inspection task for bridges like this.



This task is now out-sourced to the private companies because of few local government officers.

For example of **Kochi** prefecture

(It is a small local area whose population is about 1 million)

under 15m 1560 bridges

over 15m 860 bridges

**total 2,420**

This prefectural government checks all bridges in 3 years on the local rule.

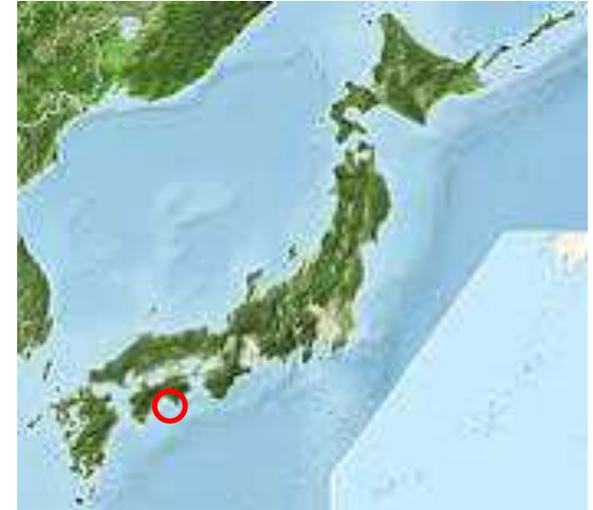
And so the duty of every year

is about 800 bridges to be inspected.

Out-sourcing cost is about 500 US\$ / bridge in average

$500\text{US\$} \times 800 = 400,000 \text{ US\$ a year.}$

The cost is only of inspection, without the mending cost. The amount increases.



The total budget will not increase, but the local government has too much task then.  
How will we keep the local bridges ?

### 3. One solution

My idea is that we won't be care of  
15m long or less Bridges.

15m is the border on the statics investigation in JAPAN  
The number of Bridges over 15m long is about **170 thousands**.

It is about a third number of all bridges.

In Kochi prefectural government, the cost of examination or inspection every year is 400 thousand US\$. If the number of inspection task would be 1/3, the examination cost would be reduced to 140 thousand US\$.

If the cost would be 1/3, the expenditure would be about 260 thousand off in one area.

And if we won't care of less 15m long bridges, it would be **70 million US\$** money saving in all Japan.

15m is how long ?



This is about 30 m long bridge



20m long Bridge





15m long Bridge

There is no joint of steel.  
Only one material H-beam  
span.



My idea is 'Maintenance Free' for the bridges under 15m-long.

I think there is no need that the local government would provide the perfect service for the citizen's transportation.

Some time the bridge would be out of order and the citizen could not use.

Only sometimes they would go to check seeing and direct or signal another road, for detour.

The local government have to nothing until the citizen would inform to them the bridge is out of order.

But I think it's OK because of Japanese few budget in near future.

If the people won't complaint for those government behavior, the local government could reduce their budget. It will be a matter of the government service level.



## 4. Easy to replace of 15m length Bridge

More over I think 15m long works means to be easy to reconstruct. Short length bridges' workability is very good for the re-construction.



If the construction bridge is less 15 m long, there will need only one crane with maybe 21ton ability.

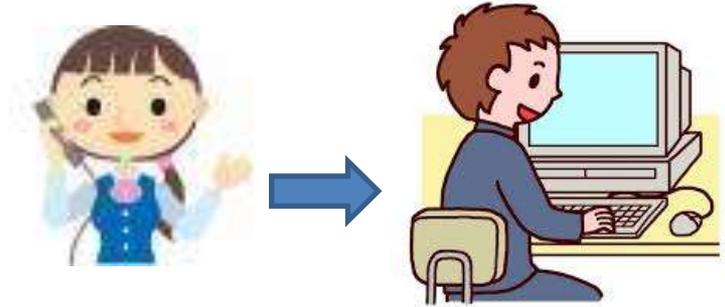
But this rule way needs 2 conditions, one is local people' support.

## 5. Japanese people's mind and IT support.

When Japanese people would find an out-of-order bridge, their would mostly call and inform to the local government office.

**It's Japanese people's feature or even virtue.**

Many people might send a photo of the bad place together with the above information because most of Japanese have and use such a smart phone,easily



Local citizen

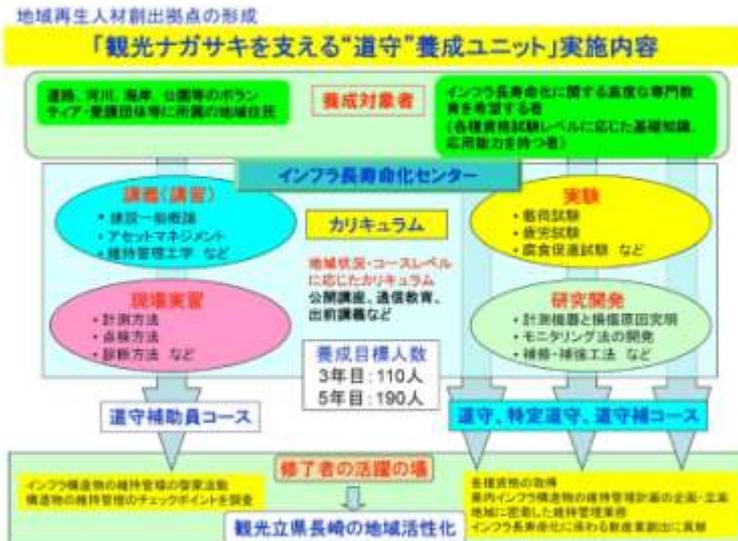
Local government office



Example in some local area of JAPAN

Actually

In **Nagoya** area and **Nagasaki** area, the university are trying the new system to develop a Maintenance systems to add the citizen helps already.



I think this people's behavior would be very useful to keep the bridges in near Japan.

If so,

we Japanese engineers have to just make the support systems when 15m- long rule would be approved over.

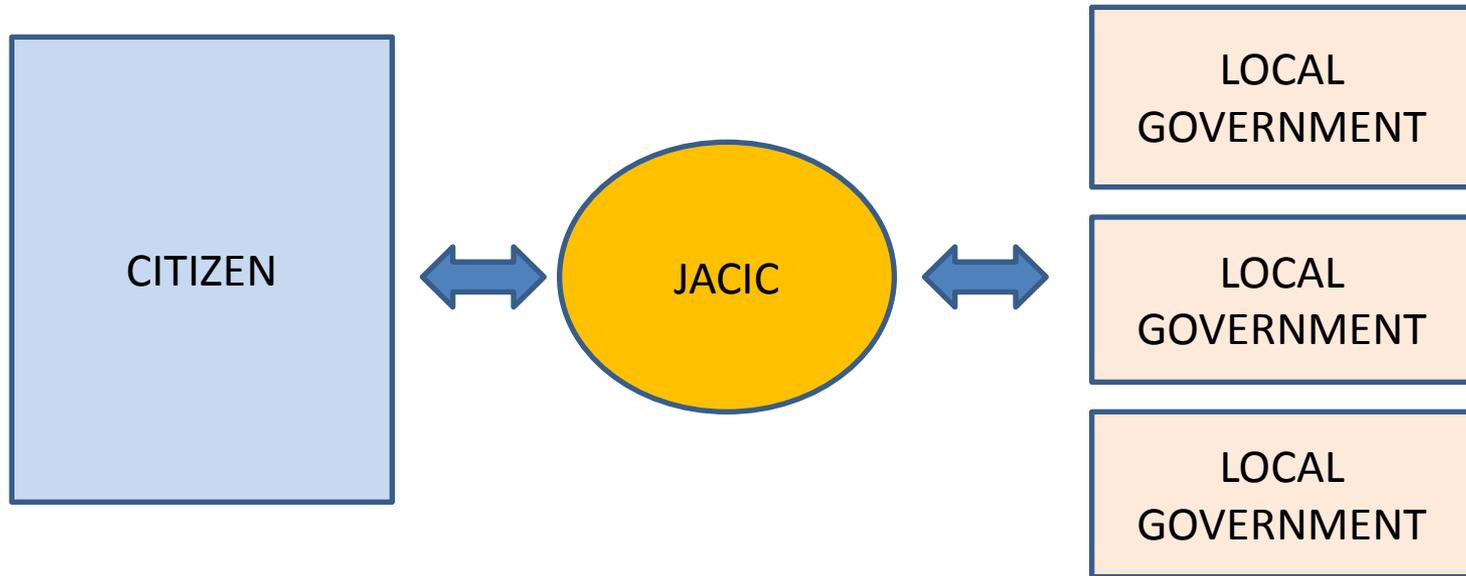
This map is a sample of GSI system which the public facility are presented on it by GPI system.

It is very easy to joint these mapping information and smart phone information system now.



## 6. Role of my organization JACIC

My organization JACIC is a kind of NPO.



Citizen and government officer could not develop the system by themselves only . IT expert would be necessary at that time.

Local government could complete this system together with JACIC.

**Conclusion;**

If my 15m-long rule would be approved, my organization could provide the IT system very easily. And the budget for road bridges' maintenance could be reduced.

質問が2つあった。何れも米国人ではない。

1. システムを動かすためには市民のトレーニングが必要である。JACICはそのトレーニングまで引き受けるのか？

「ノー、システムの構築と標準化のみである」

2. メンテをしないと非常な危険になる可能性がある。そのリスクをどう考えるか？

「ひとつの橋がだめでも、う回路は簡単に見つかる。」