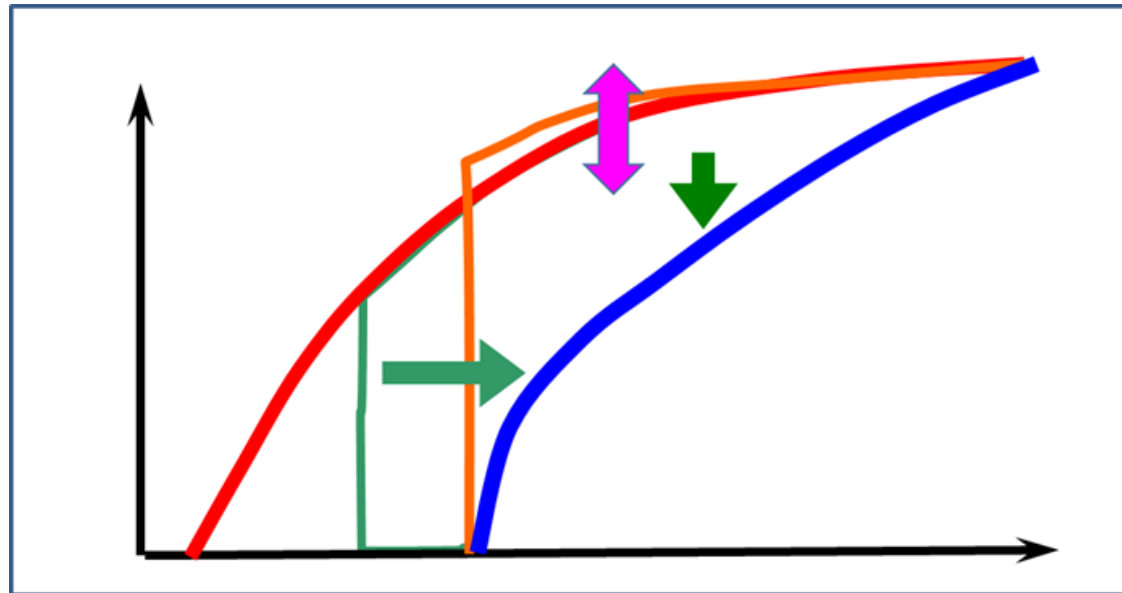




How to Understand and Monitor Flood Risk Reduction in locality under the Global Climate Change

Feb. 1, 2017



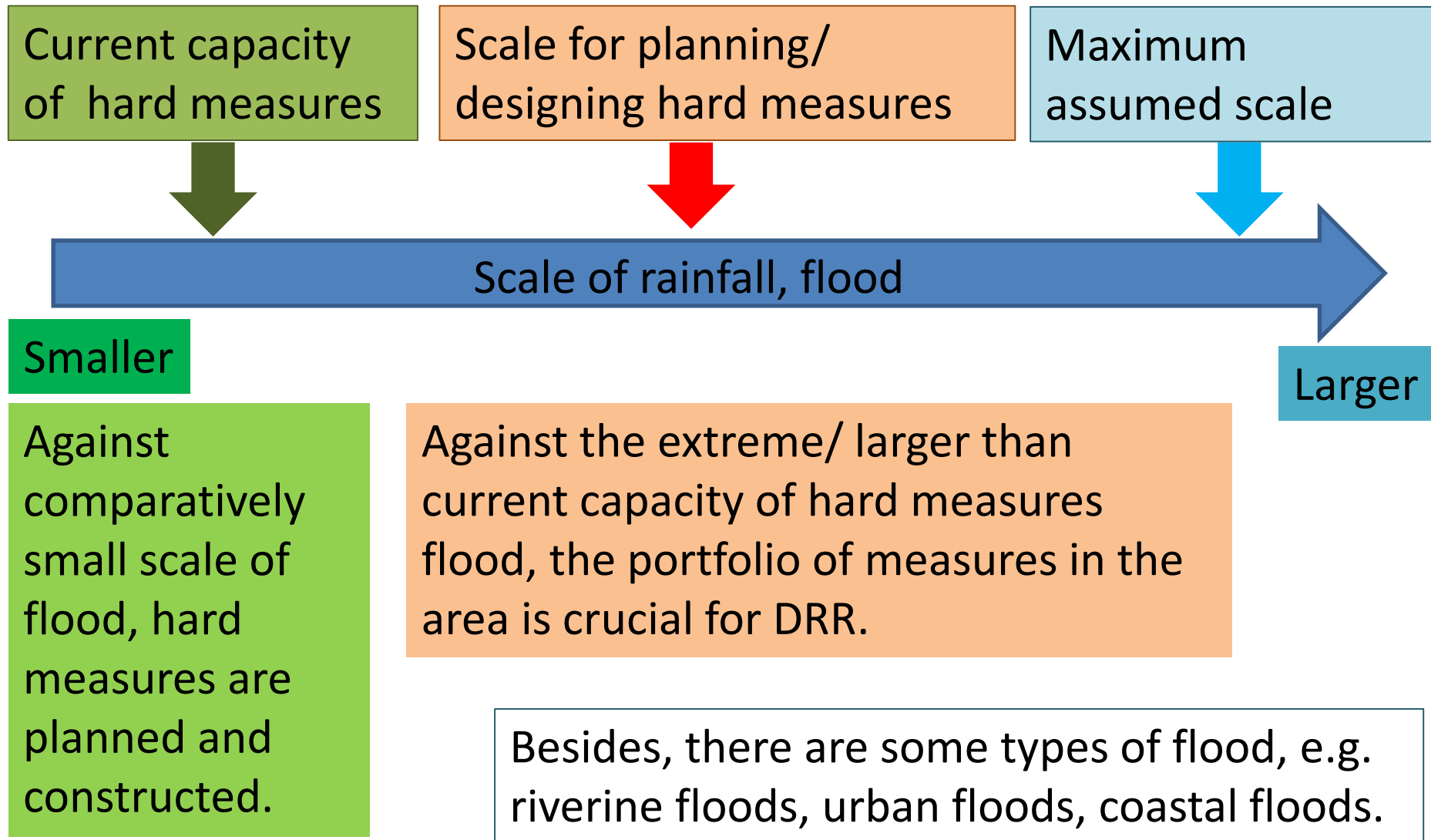
Osamu Itagaki

JICA Expert, Policy Advisor on DRRM, OCD

Summary

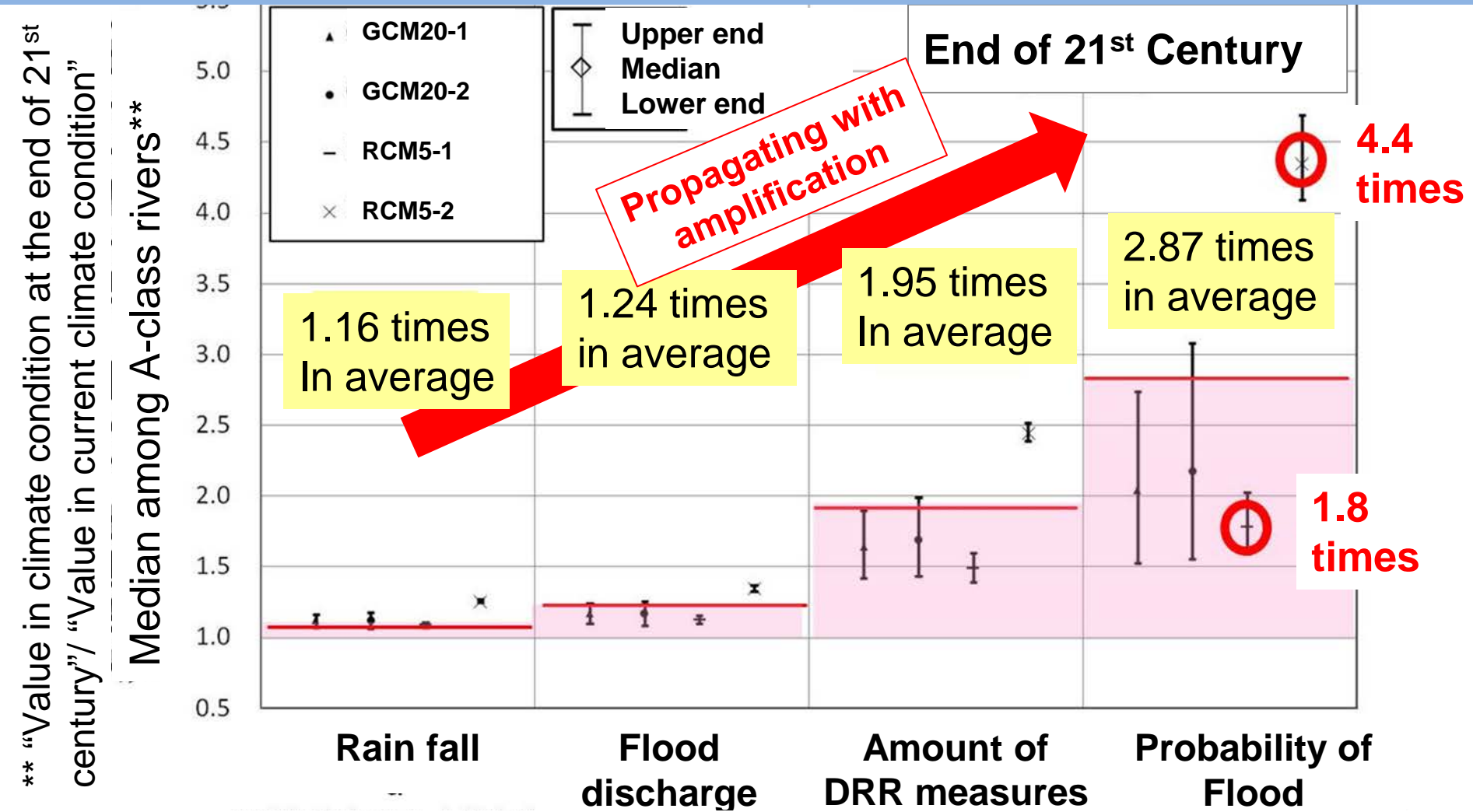
- JICA Expert suggests a new concept/ technique for promoting understanding and monitoring DRR in locality with considering the challenges in the DRRM sectors in the Philippines under the Global Climate Change.
- The concept/ technique has been developed based on the concept/ technique having been elaborated by Climate Change Adaptation Research Group, National Institute for Land and Infrastructure Management (NILIM), Ministry of Land, Infrastructure, Transport, and Tourism (MLIT), Government of Japan.
- The concept/ technique is appropriate for integrating a portfolio of DRR measures by multiple stakeholders, and for accommodating the unavoidable wide range of uncertainty pertaining to the estimation of the probabilistic distribution of hazard under the Global Climate Change.

1. Framework of DRR and CCA against floods*



* Prepared by JICA Expert considering the report on the framework of climate change adaptation in water related disasters submitted by Council for Social Infrastructure, MLIT, 2015.

2. Example of estimation of flood risk in Japan under GCC*

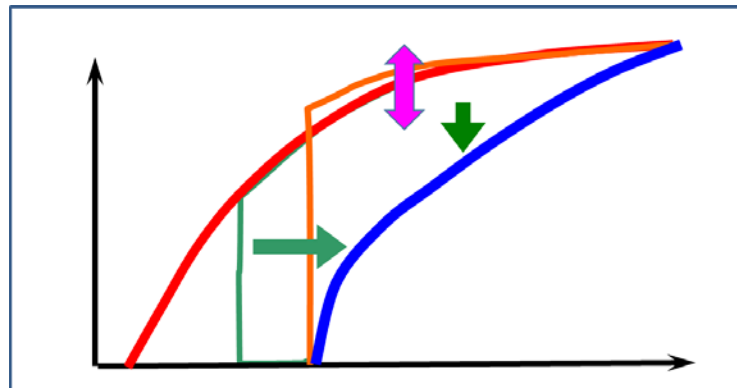


* By Kakushin Project, NILIM conducted the analysis based on the result of climate simulations by MRI Japan. Current: 1979~2003, End of 21st Century: 2075~2099. 4 Red lines are averages of Median estimates among A-class rivers for 4 models.

* NILIM (2013) and retouched by JICA Expert

3. Suggestions

Nationwide systematic mechanism using “Set of Hazard Maps with multiple scales of predominant Disaster” and “Disaster Risk Graph” (tentative name) should be introduced as appropriate for concretely realizing DRR to reduce economic damage from a long term point of view through “Mainstreaming DRR” and “Build Back Better” under the GCC.

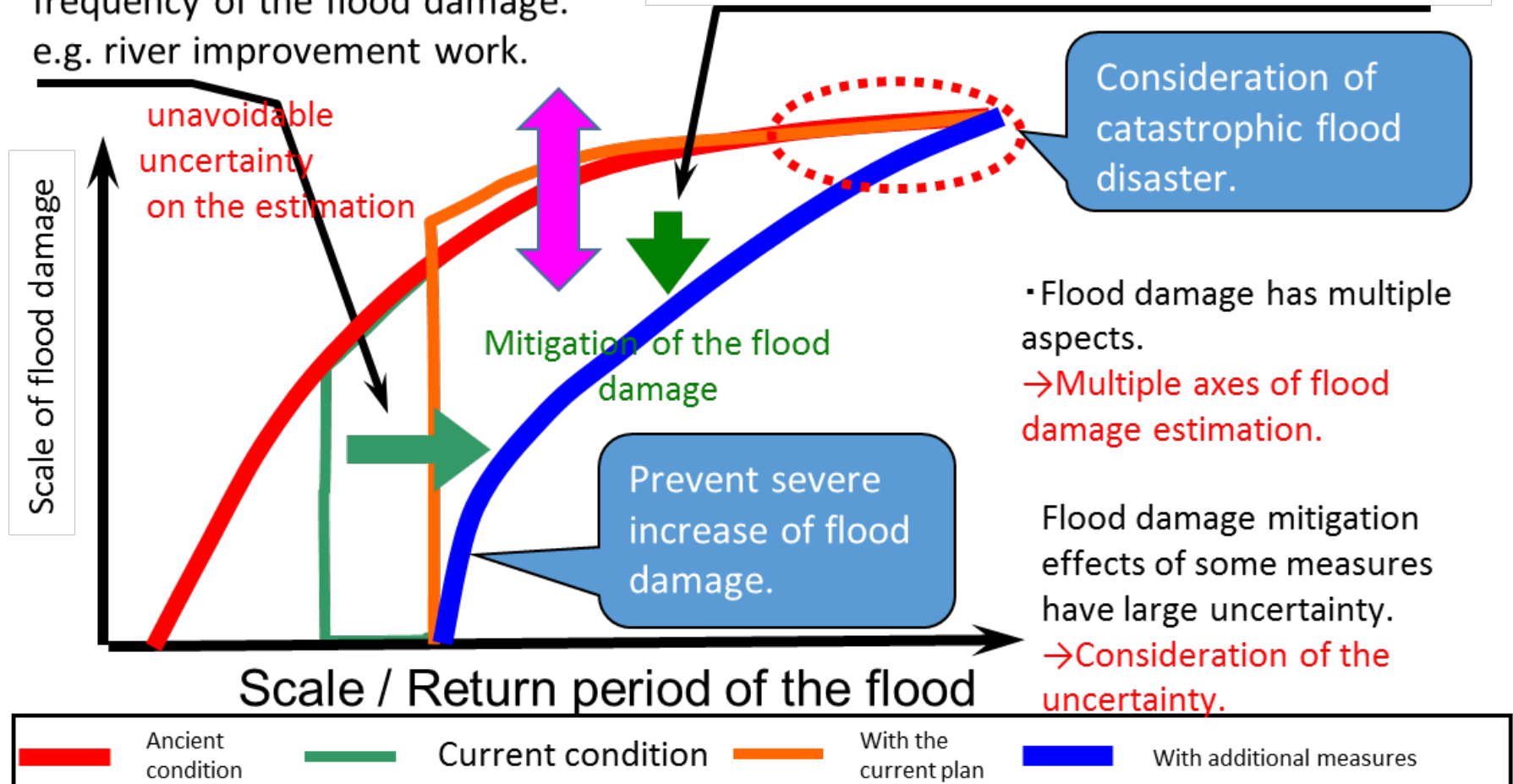


Introduction of Disaster Risk Graph* in each area

Example on flood

Effect of measures to lower the frequency of the flood damage. e.g. river improvement work.

Effect of measures to mitigate the damage caused by flood events. e.g. high standard levee, land use regulation in the flood risk area.



• Flood damage has multiple aspects.

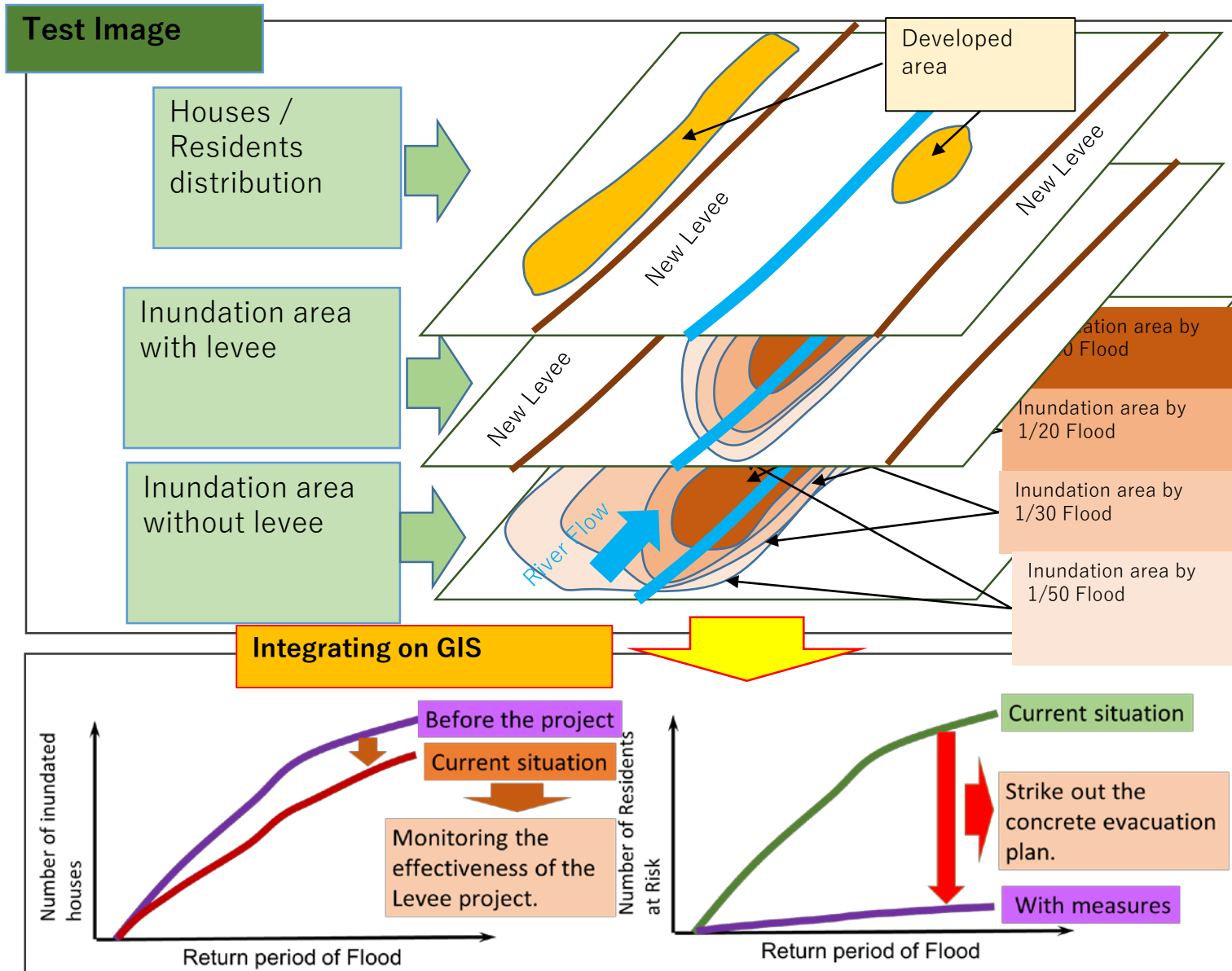
→ Multiple axes of flood damage estimation.

Flood damage mitigation effects of some measures have large uncertainty.

→ Consideration of the uncertainty.

* Tentative naming in English. From the research results of NILIM, MLIT, Japan. e.g. http://www.nilim.go.jp/lab/kikou-site/data/info_data/2015_takenaka1.pdf

Image of application of new concept/ technique for a river improvement project in the Philippines



Thank you for your kind attention.
I welcome your questions and comments.

itagaki.osamu@friends.jica.go.jp

A1. How to draw the DRG with limited available data (1)

(1) Collect the available data (e.g. Hazard Maps) in the target area.

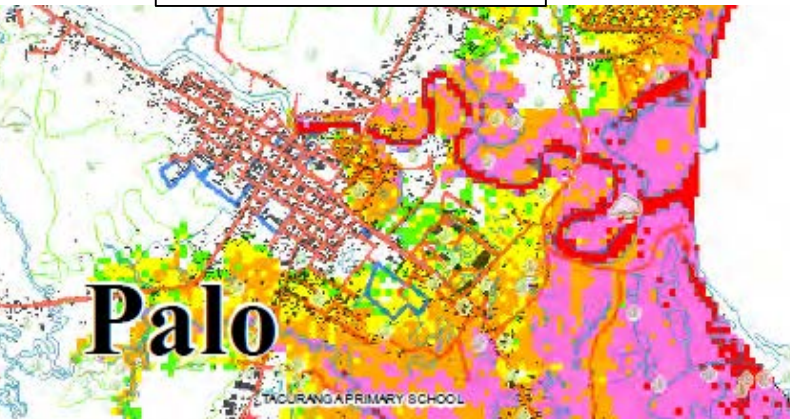
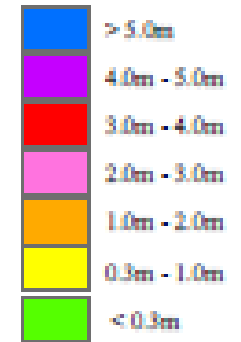


Yolanda
(>100 yr)

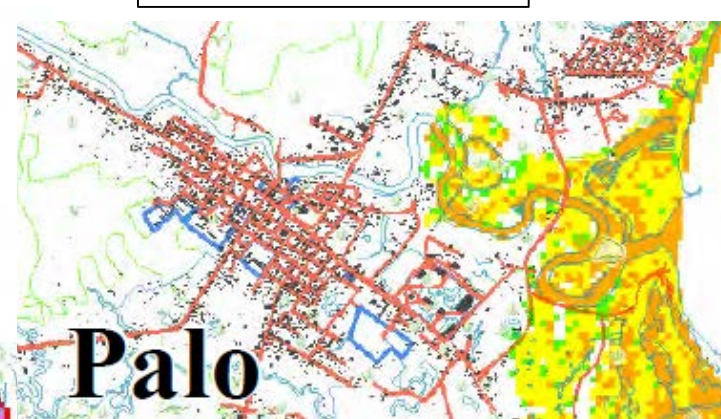


30 yr. return
period

Inundation Depth (m)



50 yr. return
period

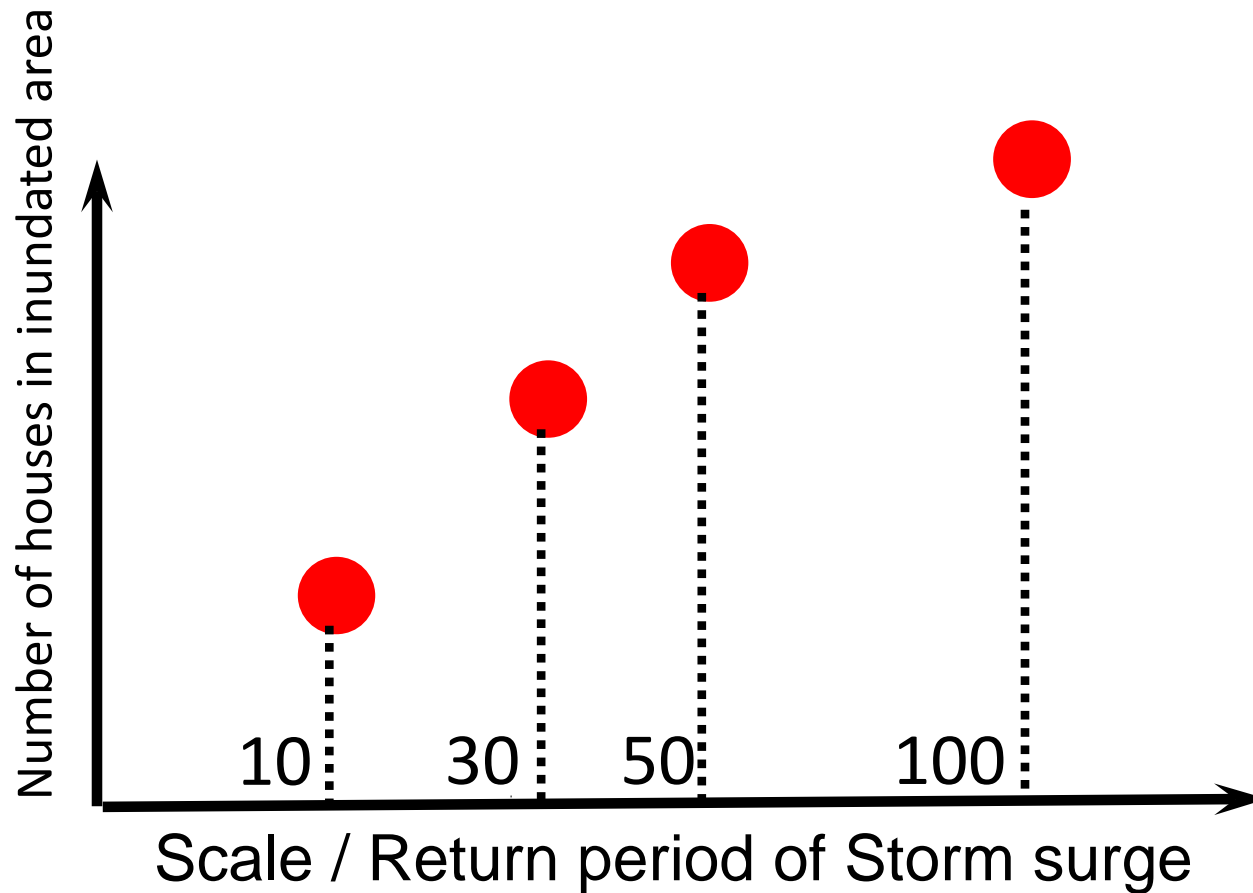


10 yr. return
period

***Example
on
Storm
Surge**

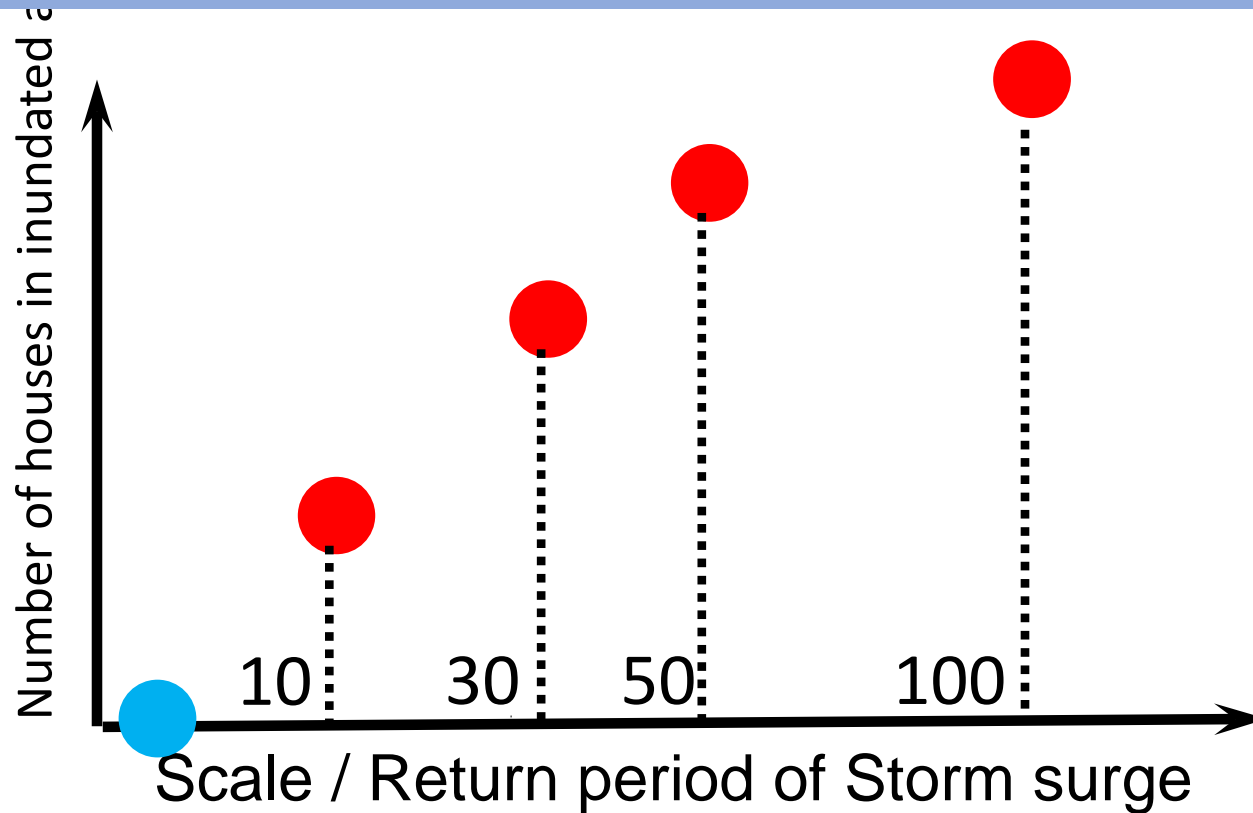
A1. How to draw the DRG with limited available data (2)

(2) Count the number of houses in the inundation area on each Hazard Map.



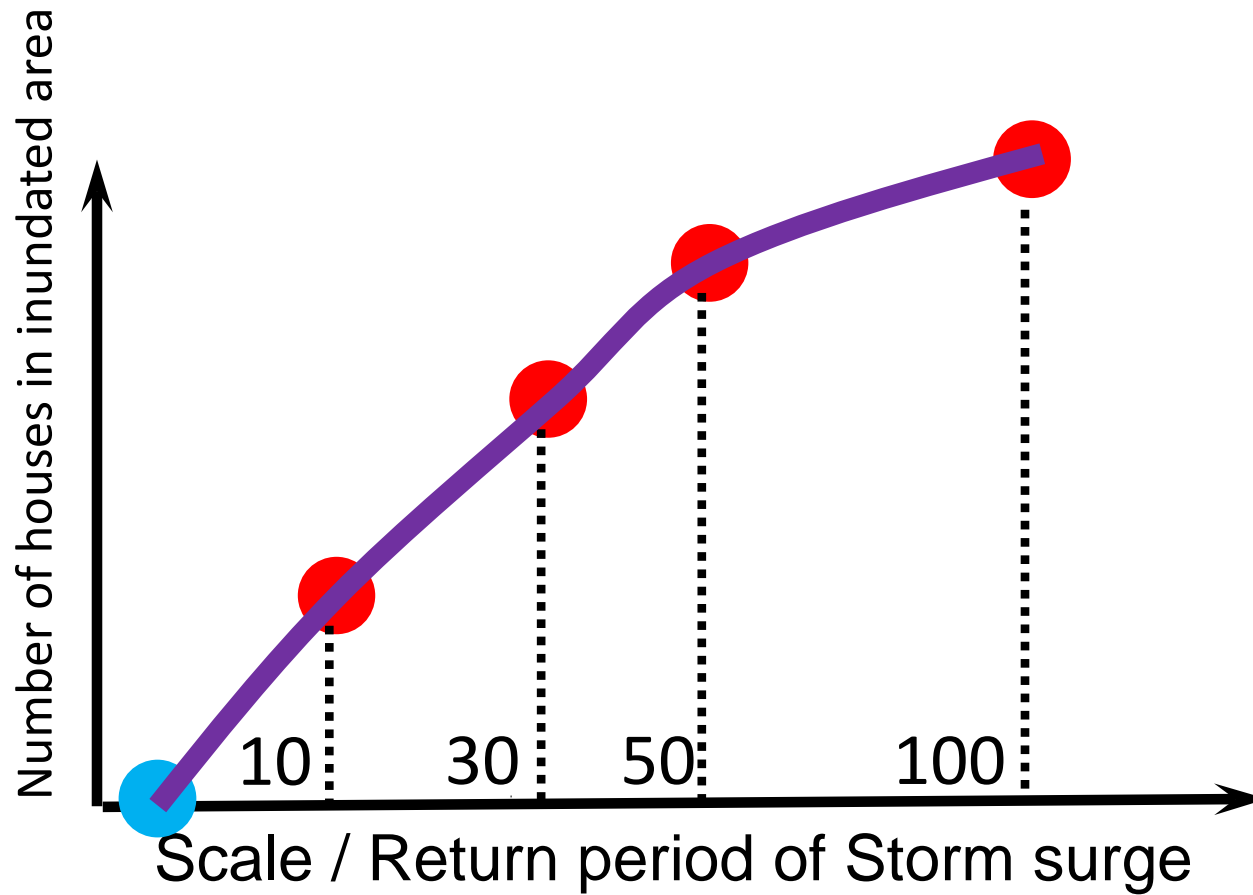
A1. How to draw the DRG with limited available data (3)

(3) Judge the intersection with the horizontal axes depending on past experiences or by engineering judgement.



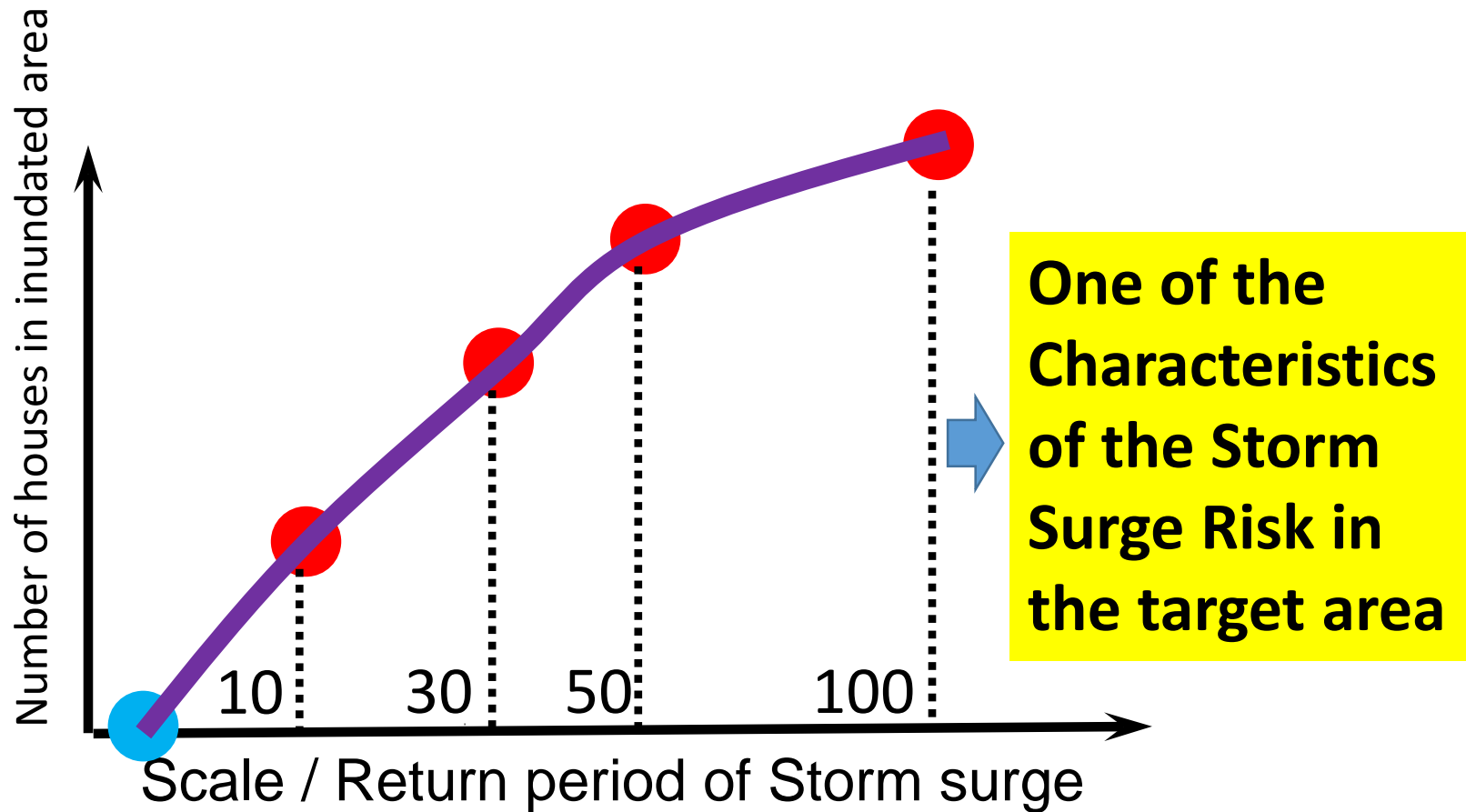
A1. How to draw the DRG with limited available data (4)

(4) Draw the curve connecting the points.



A1. How to draw the DRG with limited available data (5)

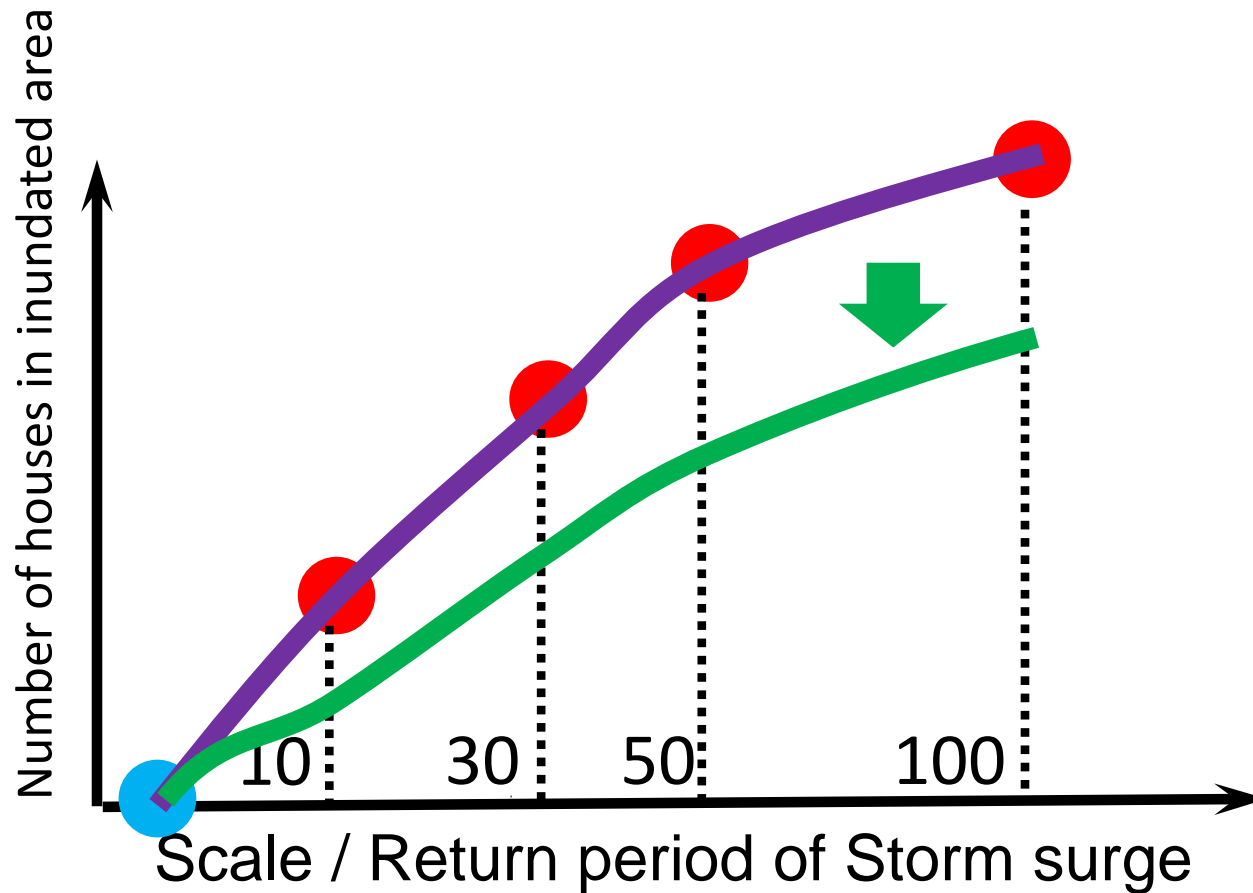
(5) Clearly explain the limit of the DRG below the graph.



*** This graph is tentatively drawn by ... depending on limited available data.**

A2. How the DRG be shifted (1)

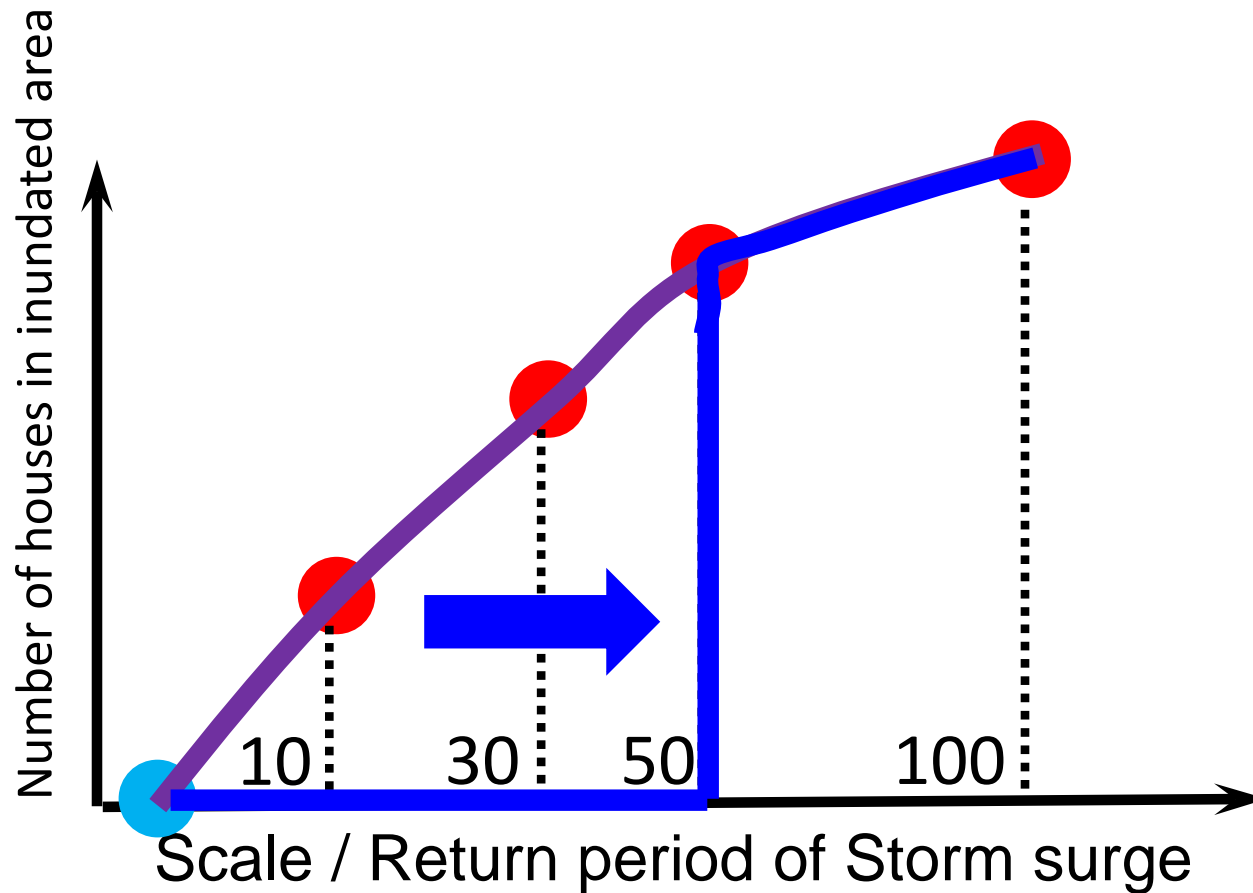
(1) After some relocation projects completed



* This graph is tentatively drawn by ... depending on limited available data.

A2. How the DRG be shifted (2)

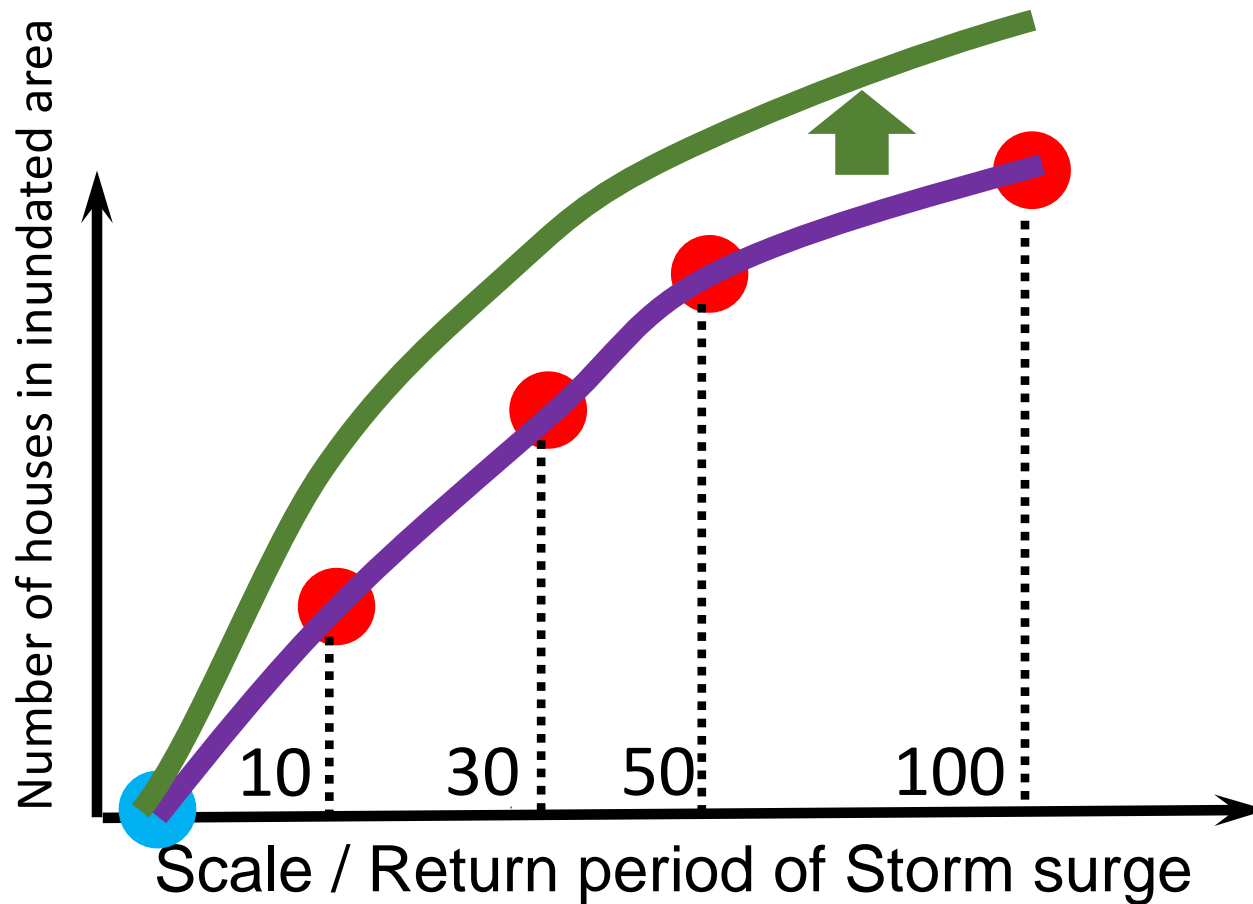
(2) After a new coastal embankment construction project completed



* This graph is tentatively drawn by ... depending on limited available data.

A2. How the DRG be shifted (3)

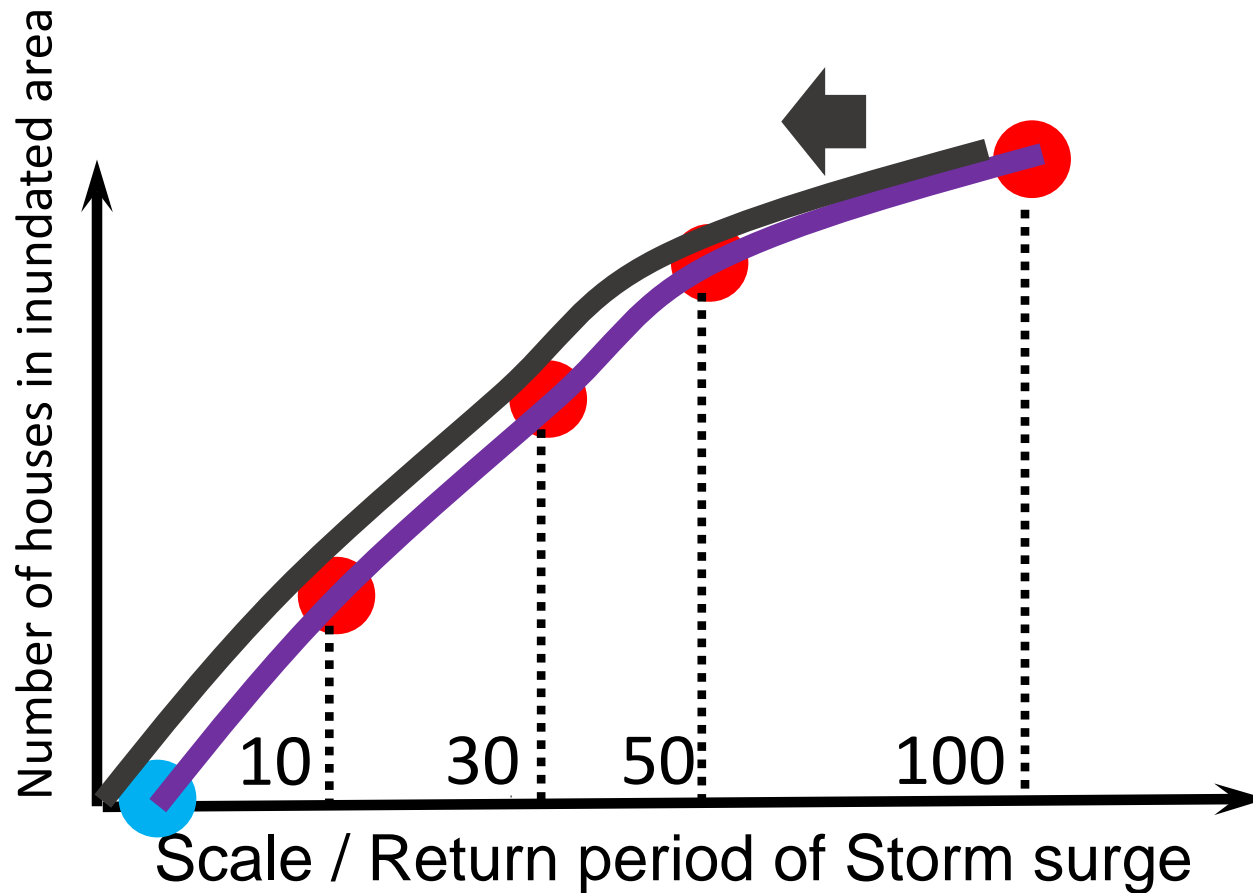
(3) If the number of houses in high risk areas increased



* This graph is tentatively drawn by ... depending on limited available data.

A2. How the DRG be shifted (4)

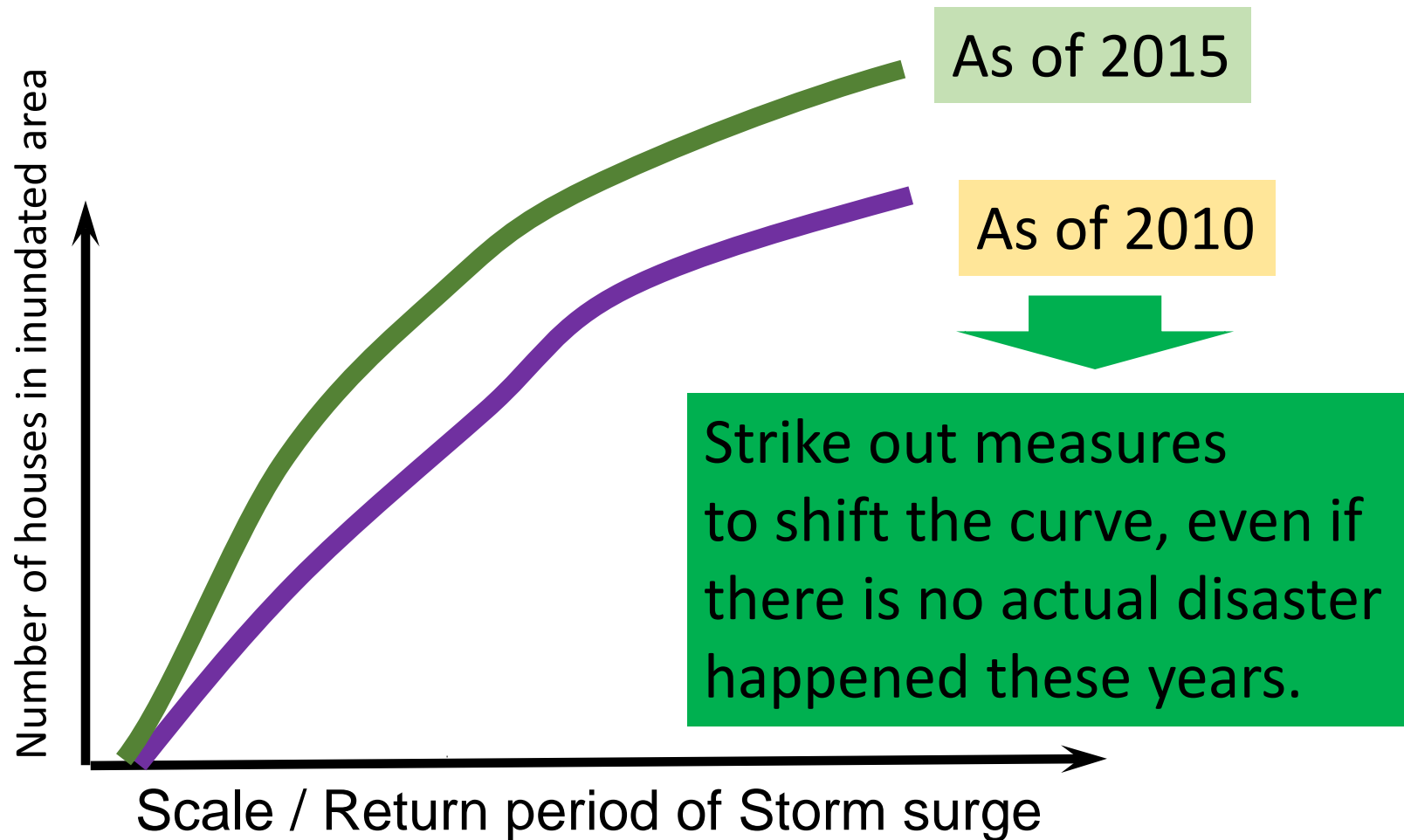
(4) If the effect of climate change is assessed and considered



* This graph is tentatively drawn by ... depending on limited available data.

A3. How to use the DRG (1)

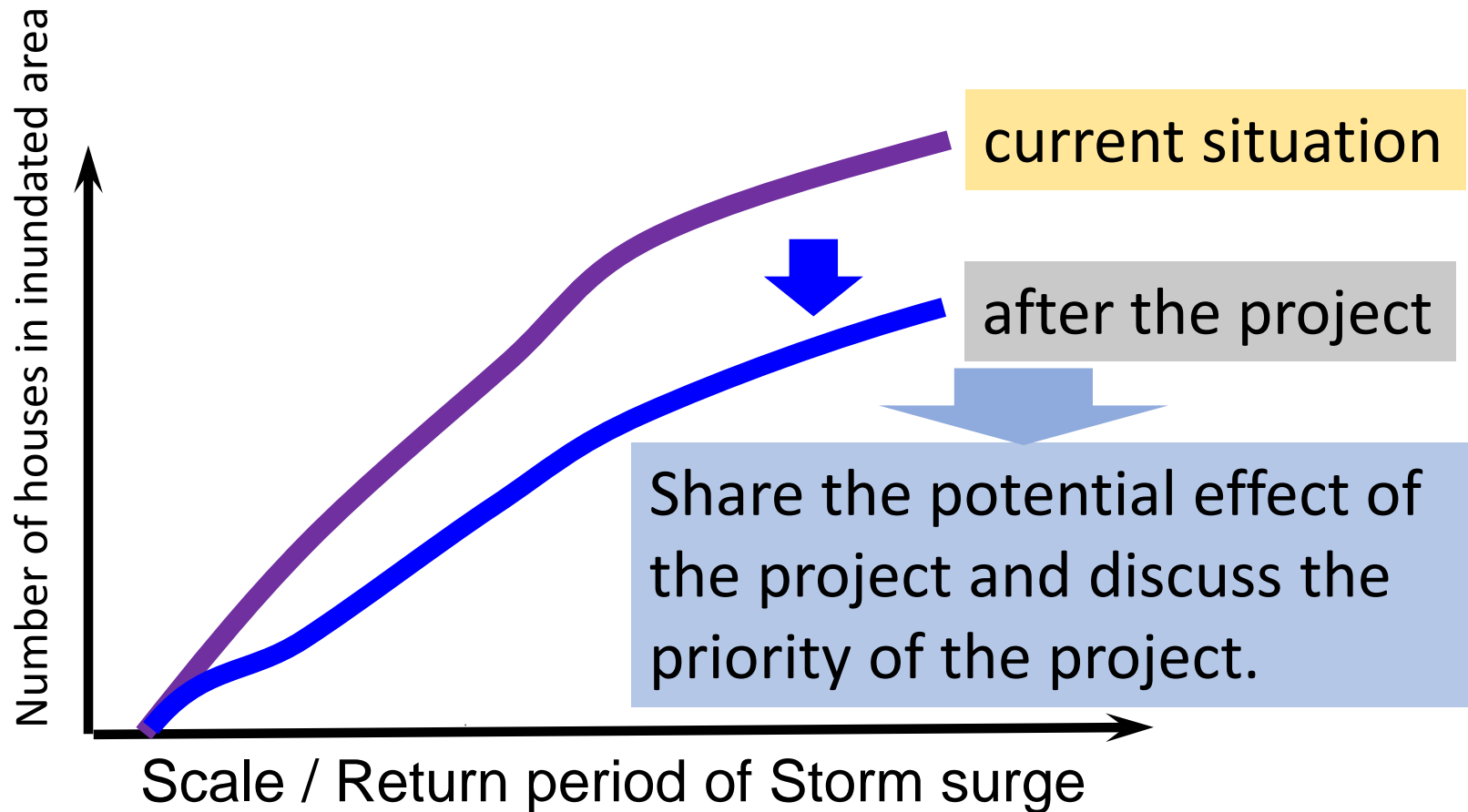
(1) To monitor the Disaster Risk in the target area.



* This graph is tentatively drawn by ... depending on limited available data.

A3. How to use the DRG (2)

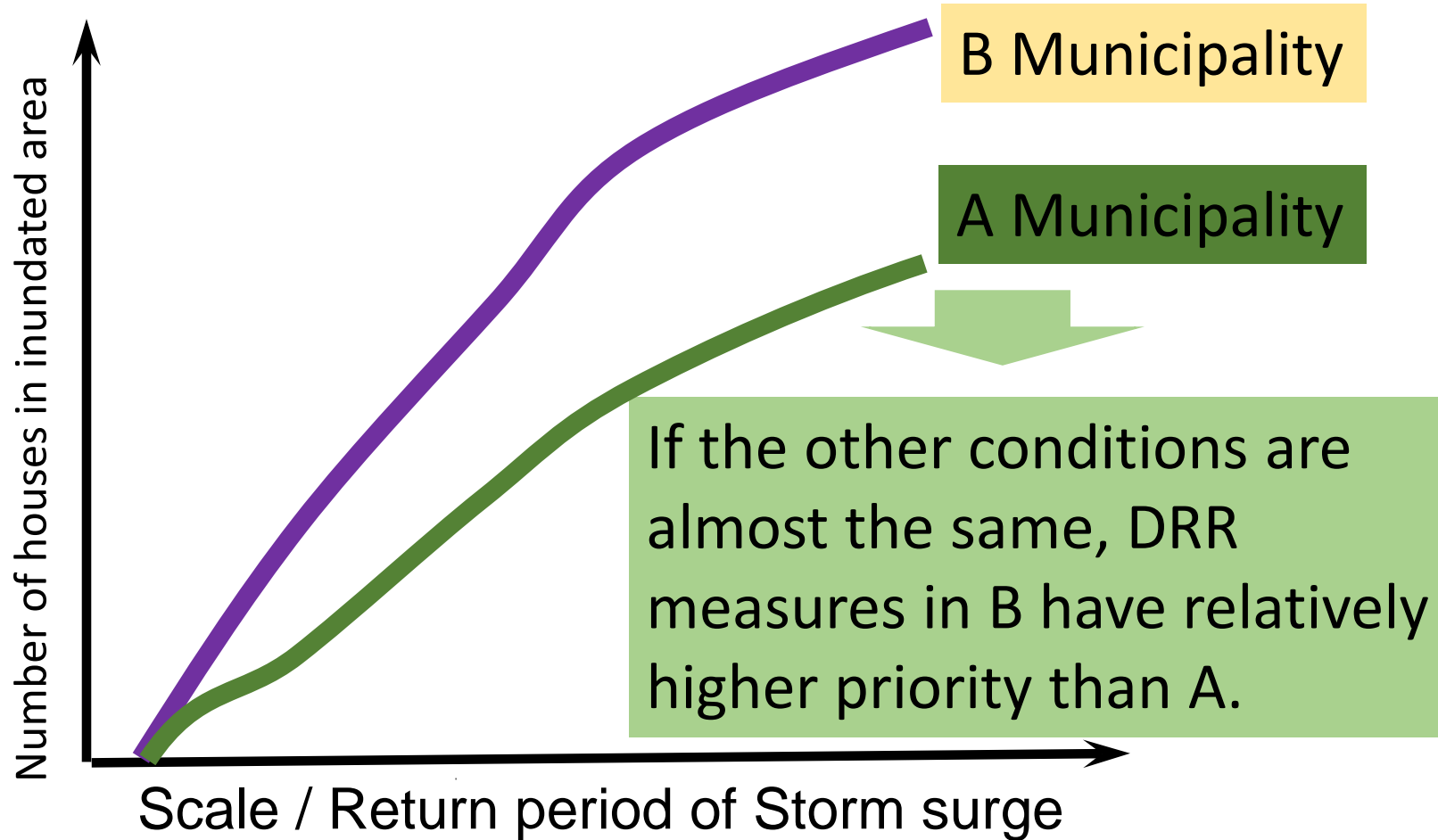
(2) To share the effect of DRR by a proposed project.



* This graph is tentatively drawn by ... depending on limited available data.

A3. How to use the DRG (3)

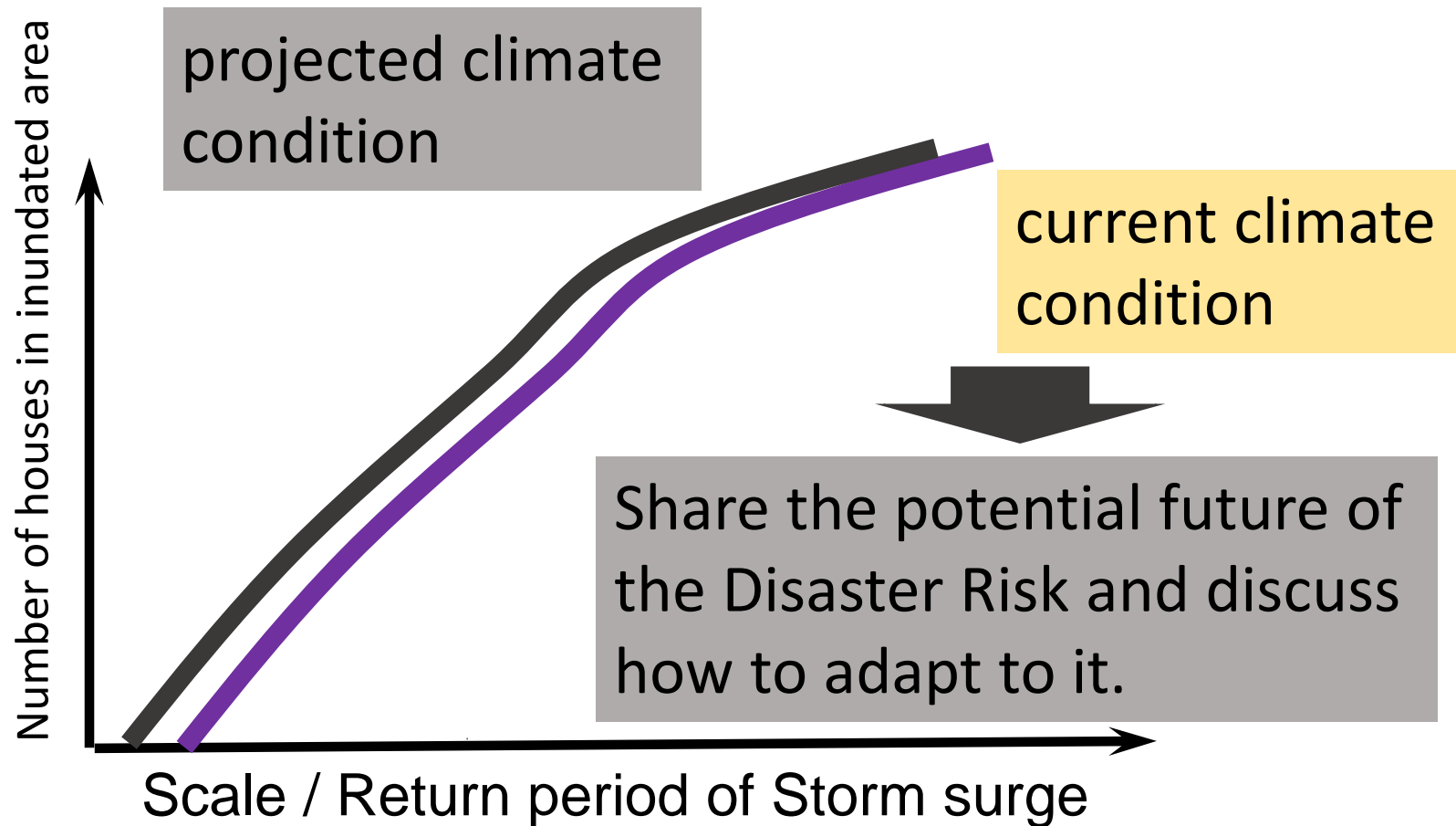
(3) To discuss the priority of the DRR measures.



* This graph is tentatively drawn by ... depending on limited available data.

A3. How to use the DRG (4)

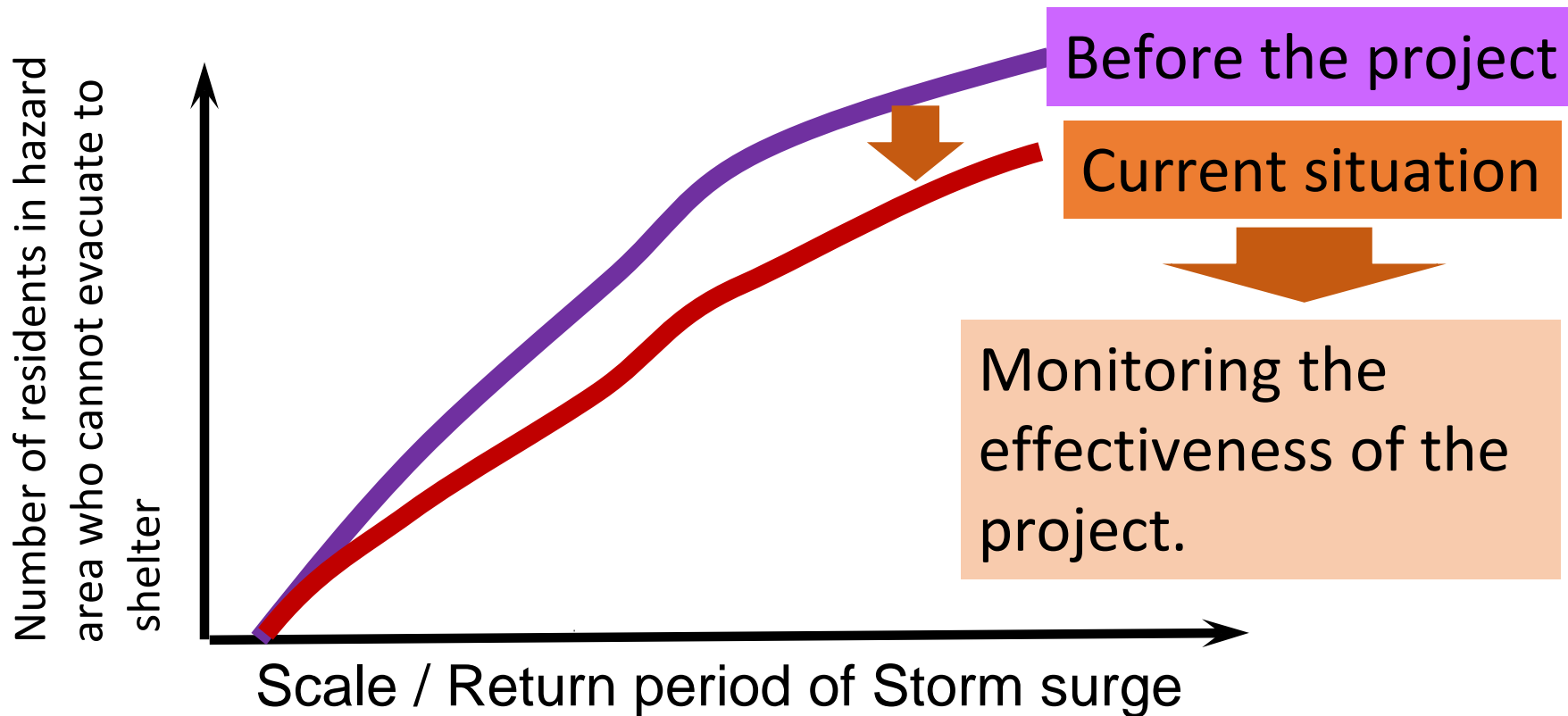
(4) To discuss the adaptation measures against GCC.



* This graph is tentatively drawn by ... depending on limited available data.

A3. How to use the DRG (5)

(5) To monitor the effectiveness of ongoing/completed projects. e.g. monitoring the effectiveness of ongoing evacuation shelter project



* This graph is tentatively drawn by ... depending on limited available data.