



Bosai e riduzione del rischio Pianificare nel pre-disastro

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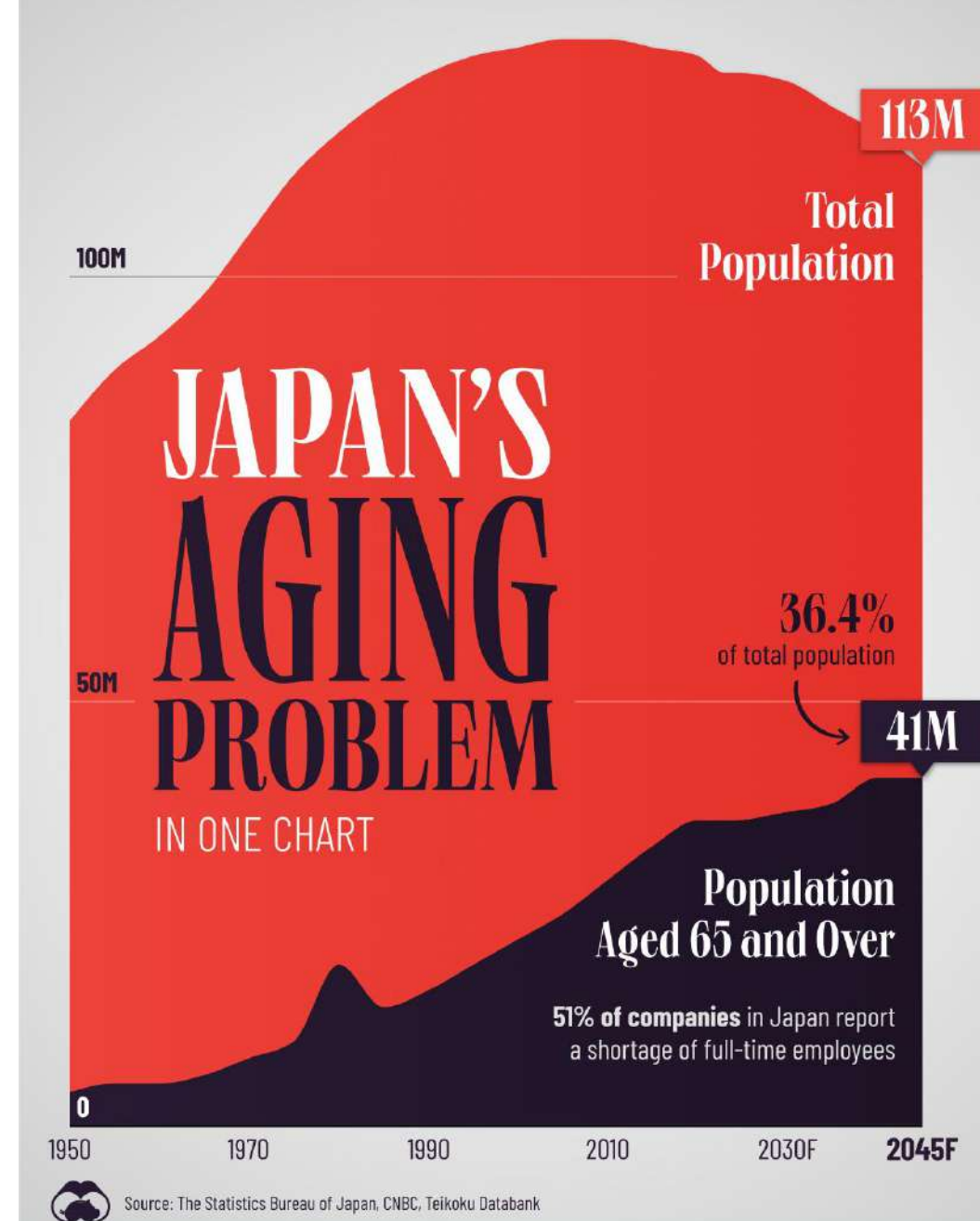
@paolarizzi_2024



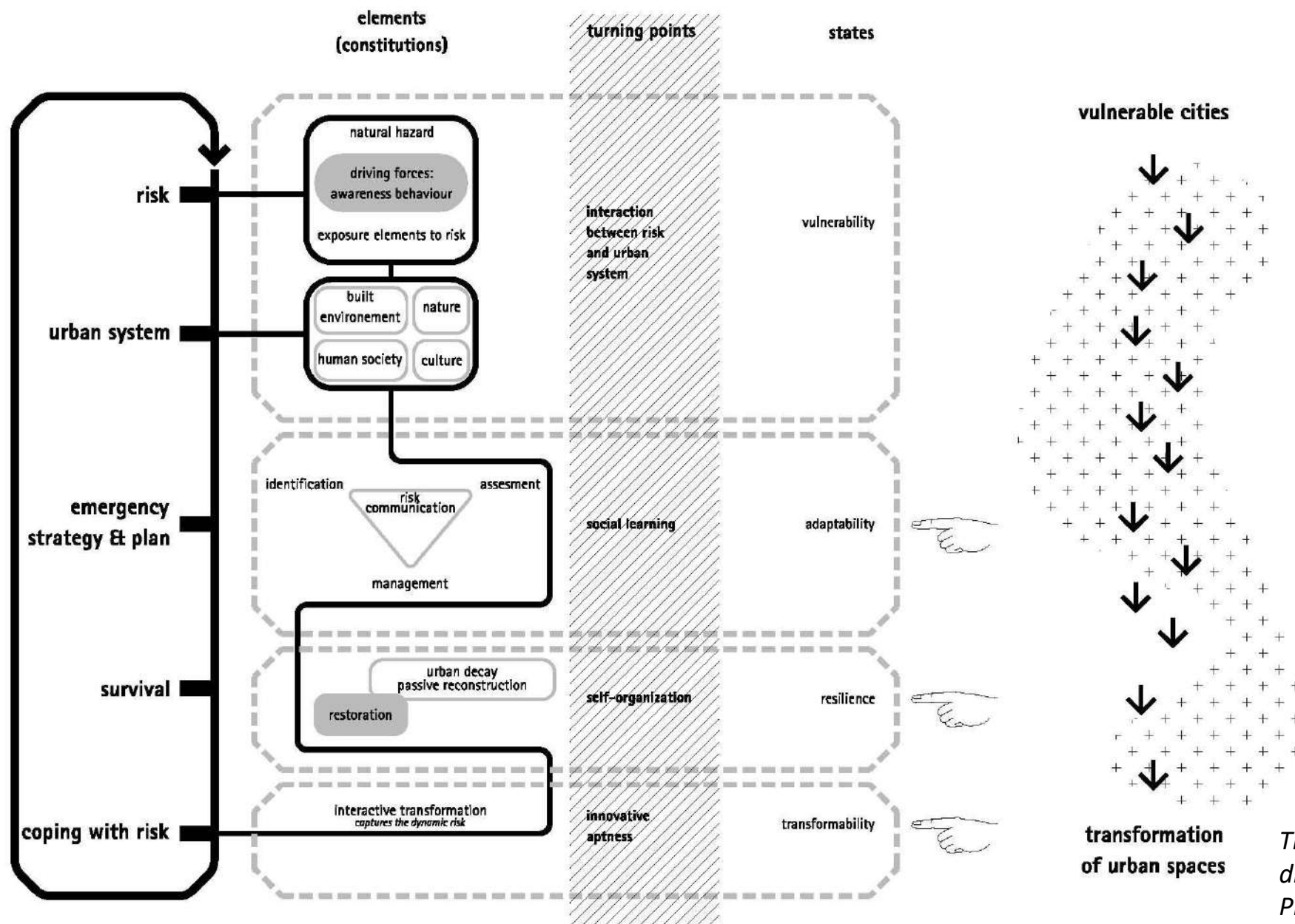
Communities and countries: critical issues

In recent times, Japanese society has gone from an ageing society to a hyper-ageing society (chōkōrei shakai) (Coulmas, 2007).

- The ageing population has also become a major problem because the **dankai no sedai** (the post-war boom generation) has entered retirement en masse since 2007.
- The elderly population (e.g. over 65) jumped from 5 % in 1950 to 23 % in 2010 and is to increase by 30 % by 2015 (MLIT, 2015). Communities with more elderly than 50 % of the population are called marginalised communities 'genkai shūraku' (Ohno, 2008). In 2007, there were 7873 'genkai shūraku' and 247 of these may disappear completely in 2017(MLIT, 2007).







*The conceptual model of urban resilience to disaster.
Promsaka Na Sakronnakron S., Rizzi P., (2015)*



1946

2021

THE NANKAI EARTHQUAKE + TSUNAMI

EARTHQUAKE + TSUNAMI

CASE L1

most positive scenario

CASE L2

worst scenario

epicenter 78 kilometers
south of Shionomisaki

magnitude M. 8.0 JMA
magnitude M.V. 8.4

4 to 6 meters on Tosa Bay
(Kochi Prefecture)

flooding area
1.600 ha

M. 8.4 JMA
M.V. 8.8

0.5-5m 0.5-10m
(residential area)

flooding area
3.300 ha

M. 8.7 JMA
M.V. 9.1

0.5-10m
(residential area)

679
killed

1.836
injured

4.846
destroyed

3.500
killed

5.500
injured

12.000
destroyed

12.000
killed

12.000
injured

52.000
destroyed

RESILIENCE
ELEMENT / KEY
PERFORMANCE

LAND USE
POLICY AND
PLANNING
(POLICY
FORMULATION)

PHYSICAL
CONDITIONS
(POLICY
IMPLEMENTATION)

TECHNICAL
AND
FINANCIAL
AVAILABILITY
(SUPPORTIVE
FACTORS)

STABILITY
(PHYSICAL ELEMENTS
AND KNOW-HOW TO
ENFORCE PHYSICAL
ELEMENTS)

ADAPTABILITY AND
CAPABILITY TO
BOUNCE-BACK
(RESOURCEFULNESS,
FLEXIBILITY,
LEARNING CAPACITY)

TRANSFORMABILITY
(DIVERSITY AND
CREATIVITY)

External experts
have been involved
in urban planning,
and the local staff
value their opinion.

Some critical
facilities such as
schools and hospitals
were relocated to
tsunami safe areas.

The existing coastal
engineering structure
may not be capable
of minimizing
tsunami impacts to
coastal habitats.

Tsunami disaster
special precaution
area has been in
place since 2020.

A subsidy to
promote tsunami
evacuation
facilities utilizing
the vitality of the
city's private sector
has been launched.

The national
government passed
the "Act on
Development of
Areas Resilient to
Tsunami Disasters
in 2011, but it took
about ten years
(March, 2021) for
Kochi to start
designating tsunami
precaution areas.

Local authorities
were reluctant to put
decisive tsunami
zoning in place due
to negative
consequences for
the economy and
land prices.

National legislative
building codes and
hazard reduction
standards are in
place, but almost
half of all existing
buildings in Kochi
were built before the
legislation was
announced and
enforced.

Official websites
providing
information on
physical and
structural
development
activities may not
be recognized by
the public.

Local administra-
tors have been
discussing a
proposal to
conduct a disaster
vulnerability
assessment of
existing
infrastructure, but
it has not been
done yet.

The local planning
authority does not
provide any
incentives or
penalties to
encourage
compliance with
land use policies
and building codes
that support tsunami
resilience.

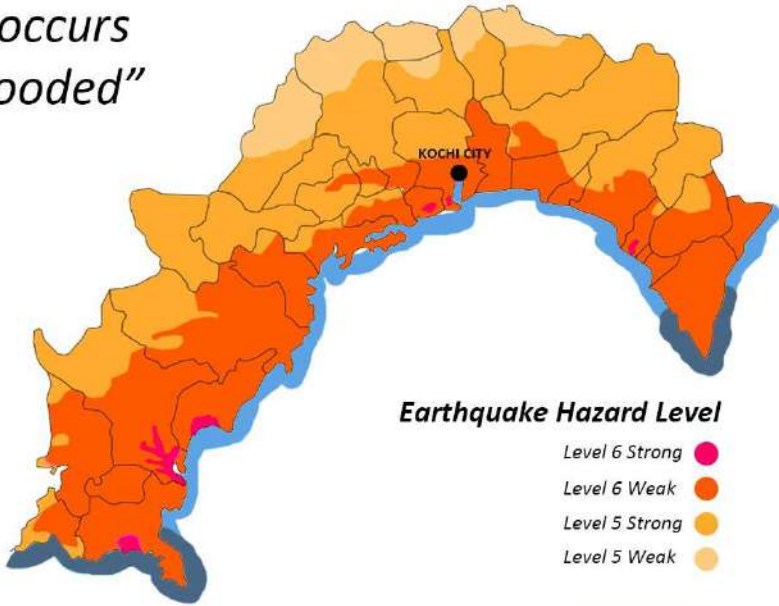
Some informal communications
and outreach programmes have
been produced to educate the
public about hazard and tsunami
risk.

At the prefectural level, Kochi
had a training and registration
system for local architects to
promote seismic reinforcement.
The prefecture also conducted
low-cost seismic reinforcement
measures for existing old wood
houses, and started training local
architects. At a local level, since
2020, Kochi has started to
incentivize real estate holders to
designate their building as
evacuation spaces to be used in
the event of a disaster time.

KOCHI Prefecture

*“All regions of the prefecture will be hit by tremors of 5 or over.
Areas near the coast will suffer from much stronger tremors.
Especially Kochi City will be affected”*

*“After Nankai Earthquake occurs
70% of Kochi City will be flooded”*



Earthquake Hazard Level

- Level 6 Strong
- Level 6 Weak
- Level 5 Strong
- Level 5 Weak

- Regions hit by Tsunami within 30 minutes
- Regions hit by Tsunami within 5 minutes

LOW LYING GROUND OR RIVER BASINS CAN BE AFFECTED BY A TSUNAMI EVEN IF THEY ARE A LONG DISTANCE FROM THE COAST

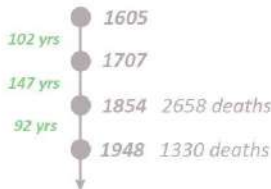


The oceanic plate off the coast of Kochi Prefecture is sinking about 6cm per year in the direction of the arrow in the diagram. The continental plate is slowly bear, it springs back up to its original position and causes an earthquake. Because of this movement the seawater resting on the seabed is jolted up and down and causes big waves. This is a tsunami.



“There’s a 40% chance of the next earthquake hitting before 2030”

and 80% in within 50 years!!!



NEXT?

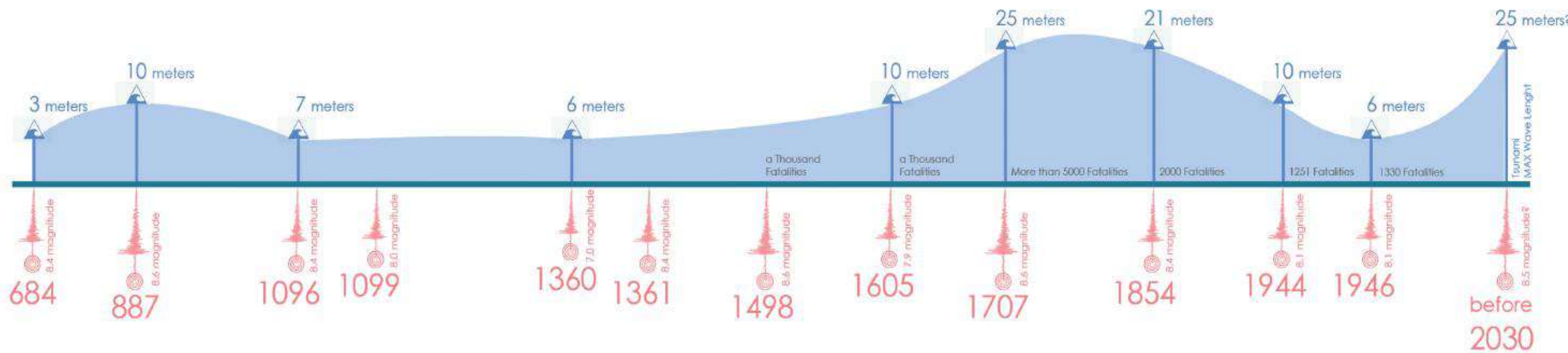
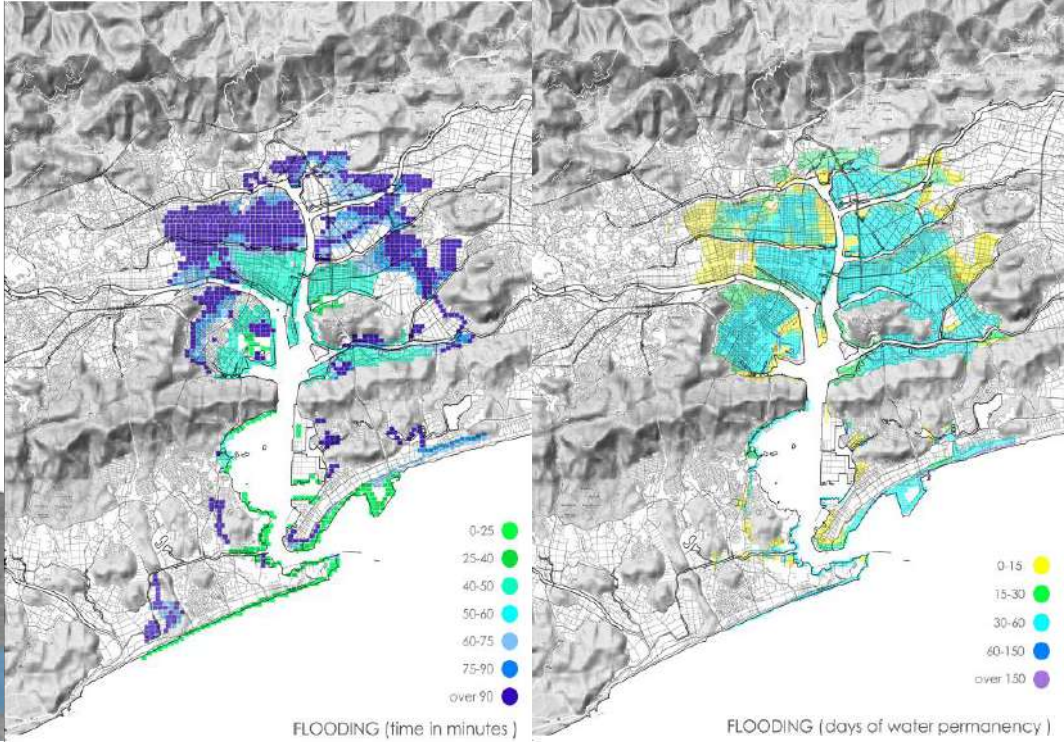
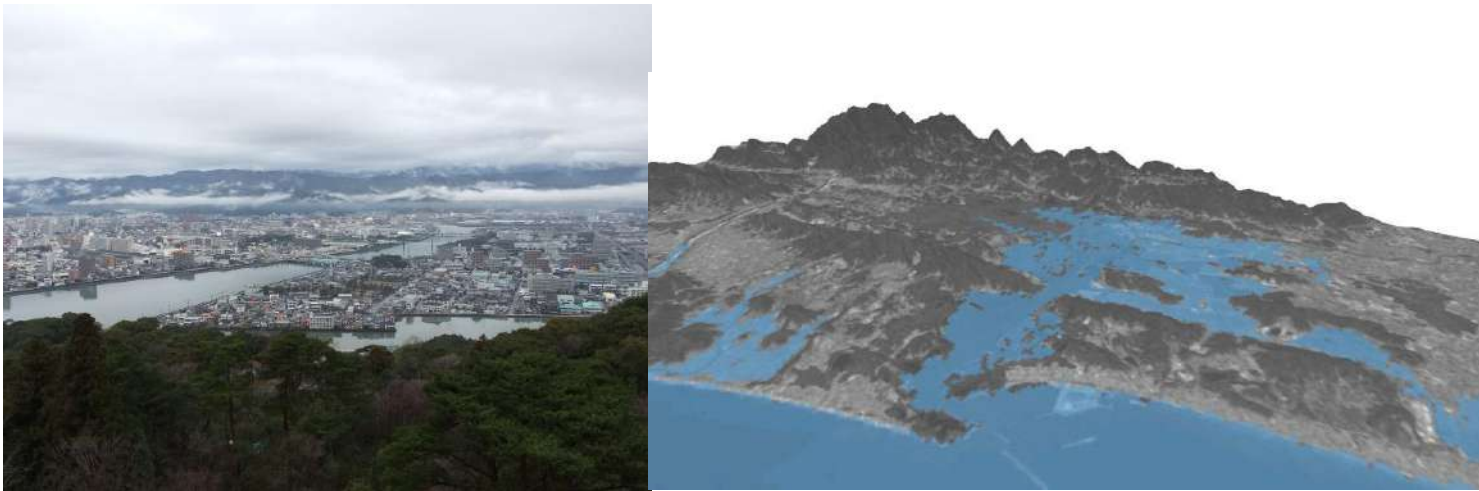
SHIKOKU

is the smallest and least populous of the four main Japanese islands

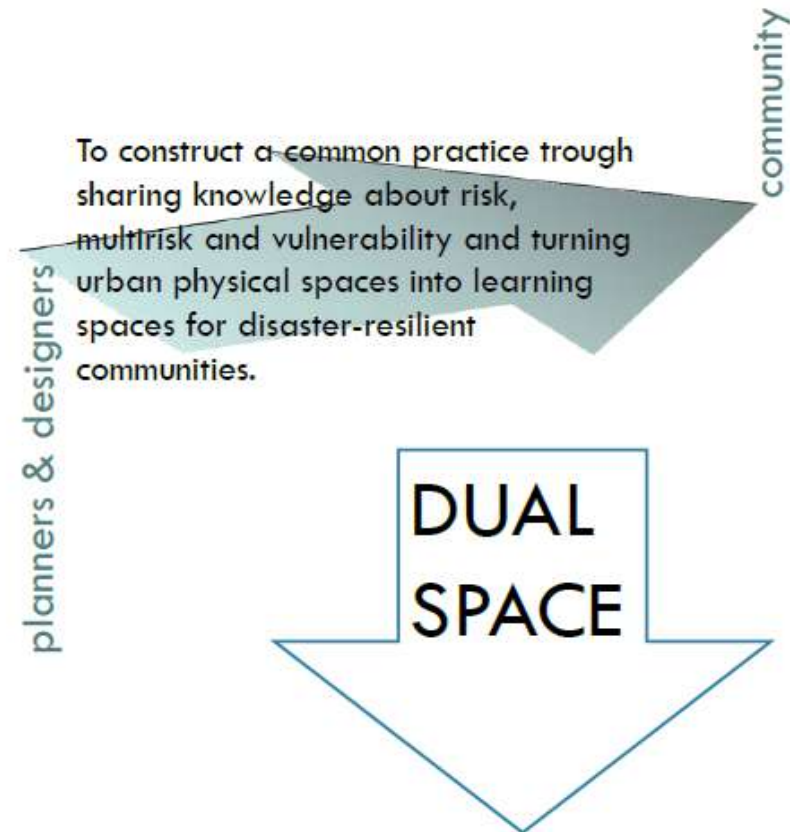
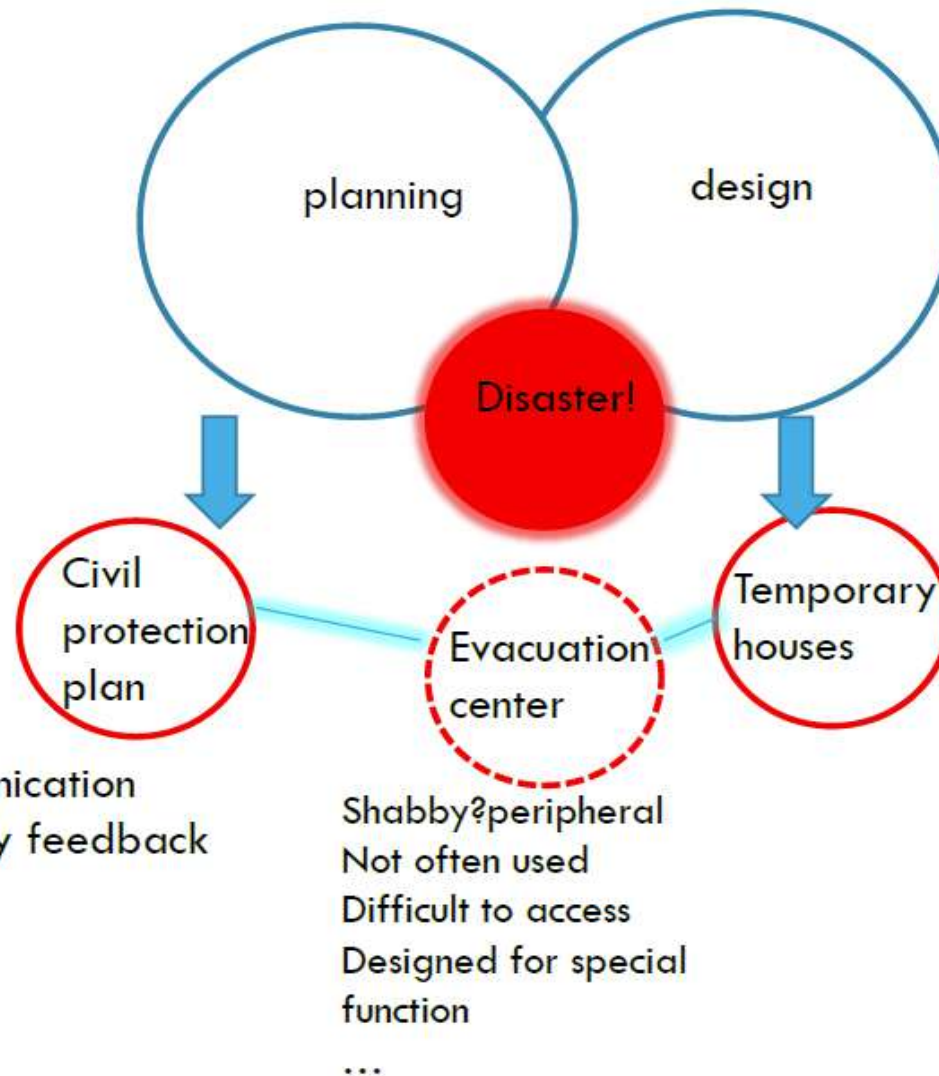
AREA: 18800 kmq
POPULATION: 4144955
DENSITY: 220/kmq

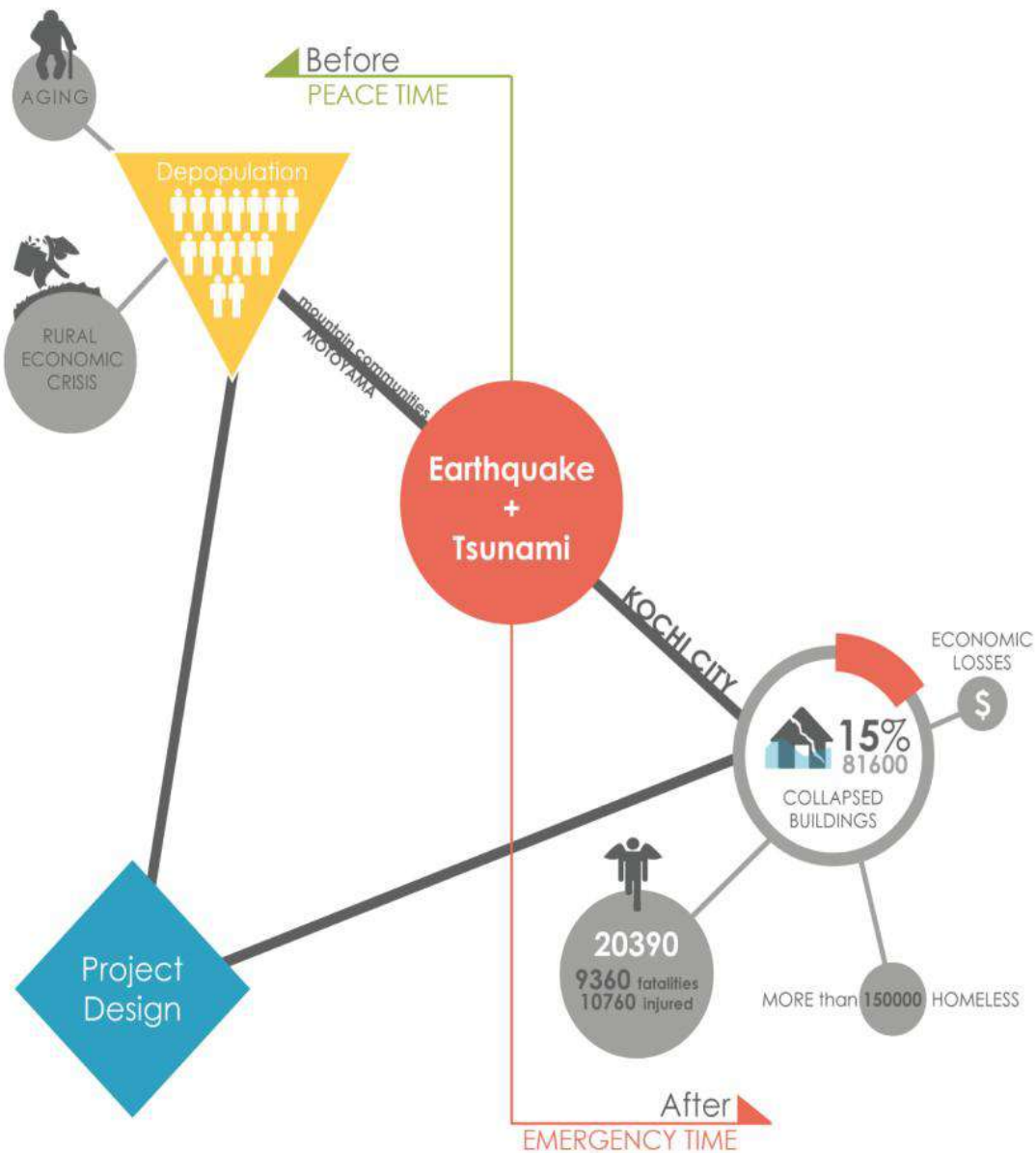


Spazi duali = spazi resilienti
urblab Diver s City + University of Kochi



WHY PLANNING & DESIGN



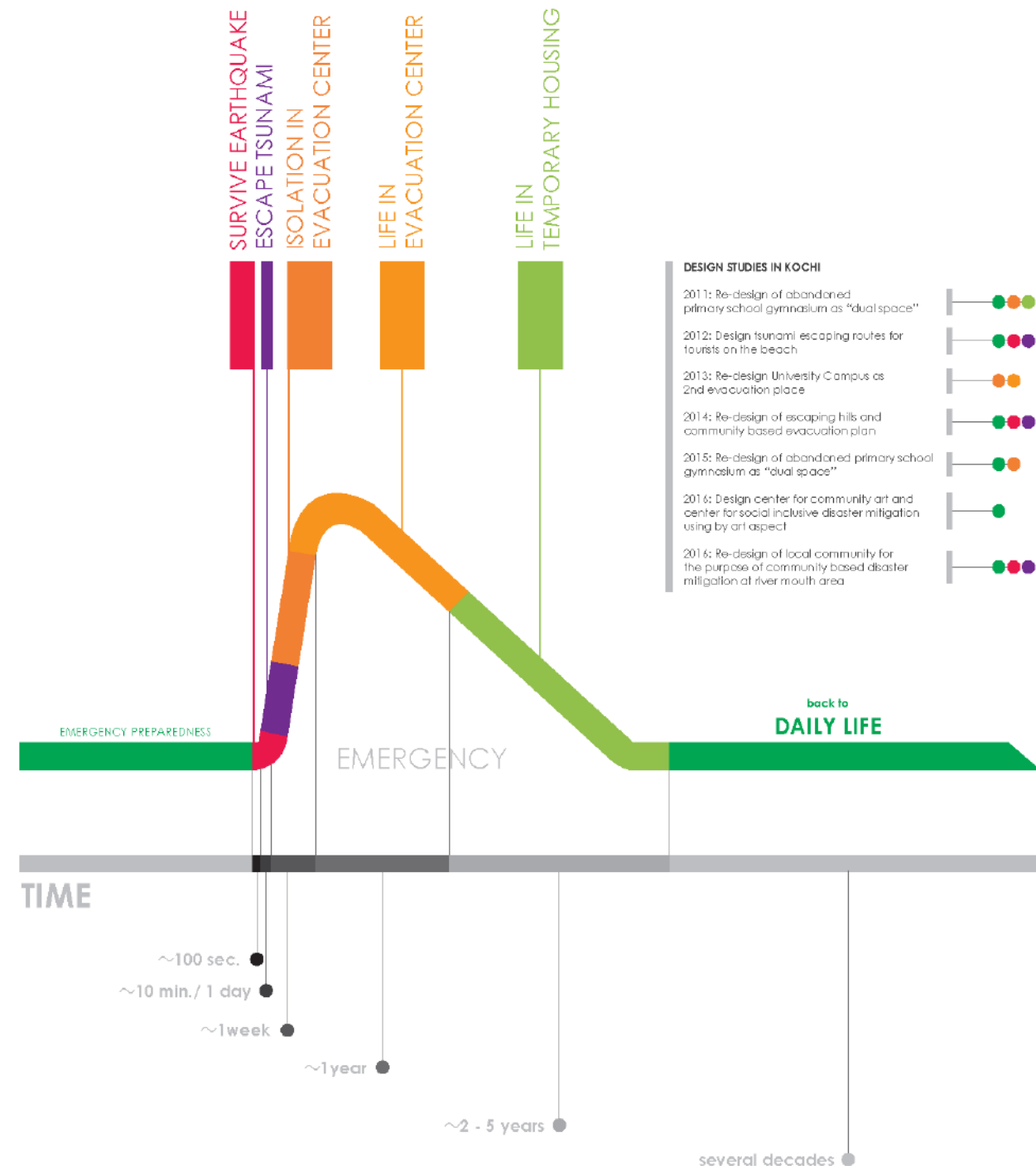


Why dual public spaces

- The **experience started september 2011** working with colleagues of Kochi University.
- The first collected information were telling once more a story of **problems related to evacuation public centers** to the number of casualties linked to the inadequate condition of the evacuation centers for a **long permanence** with all the related consequences.
- The concept of **dual space** design was born.

Spazi duali = spazi resilienti urblab Diver s City + University of Kochi

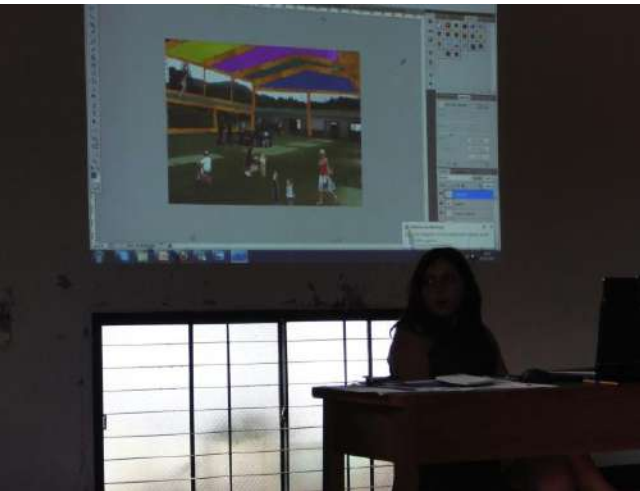
- From 2011 to 2019 we worked at 9 projects that we tried to implement and realized in cooperation with local communities and stakeholders.
- common risk / space **[non]** common dual space / common **[non]** space

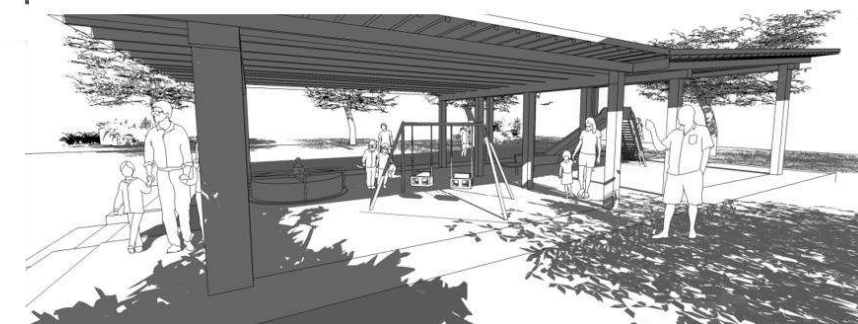
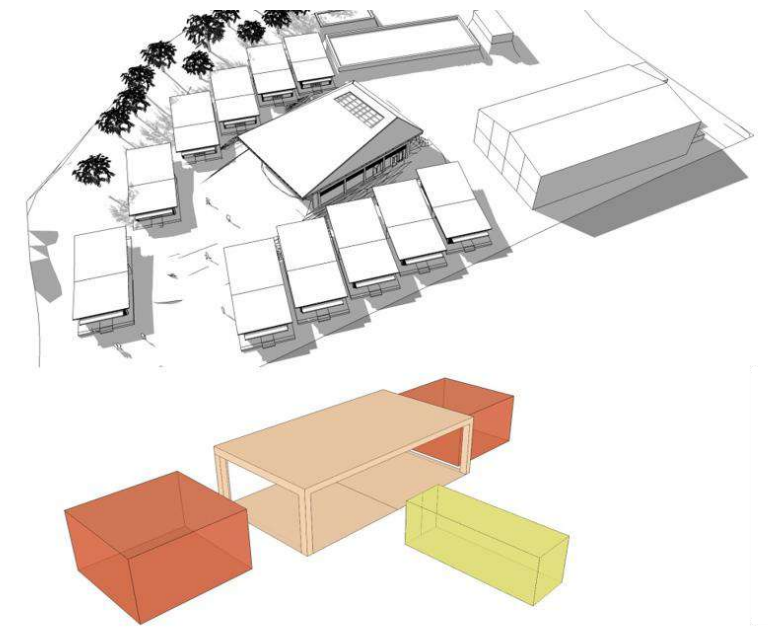
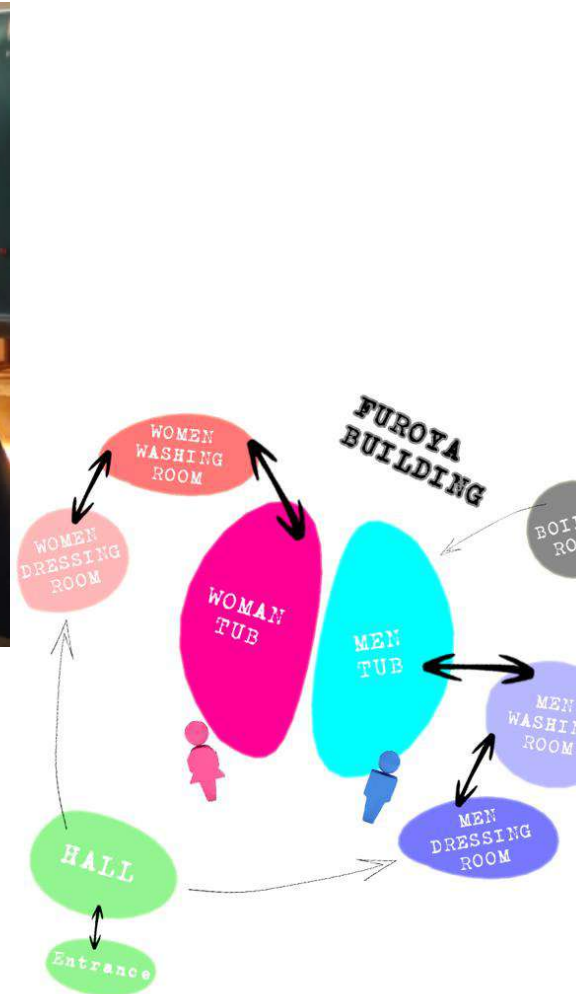


- 2011: Yoshino district, MOTOYAMA, Kochi prefecture
- 2012: Oki district, TOSA-SHIMIZU CITY, Kochi prefecture
- 2013: Asakura campus Kochi university, KOCHI CITY, Kochi prefecture
- 2014: USA district, TOSA CITY, Kochi prefecture
- 2015: Maruyama district, SHIMANTO TOWN, Kochi prefecture
- 2016: Art Zone Warakau Soko, Minamikaneda, KOCHI CITY, Kochi prefecture
- 2016: Gadatsan district, KOCHI CITY, Kochi prefecture

1 - Case of study: Motoyama town, Kochi prefecture

2011_september
participatory design of
community dual space

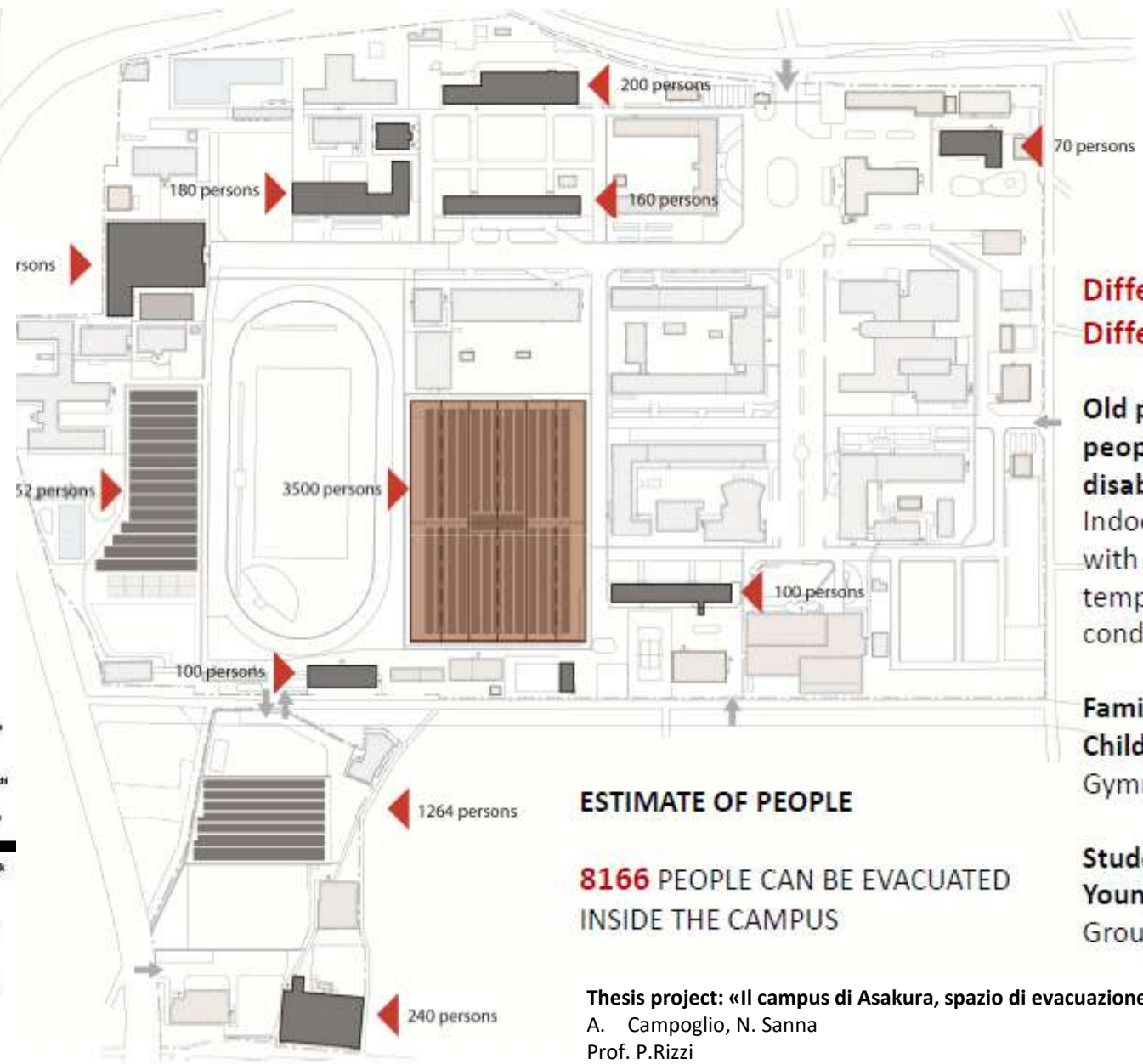
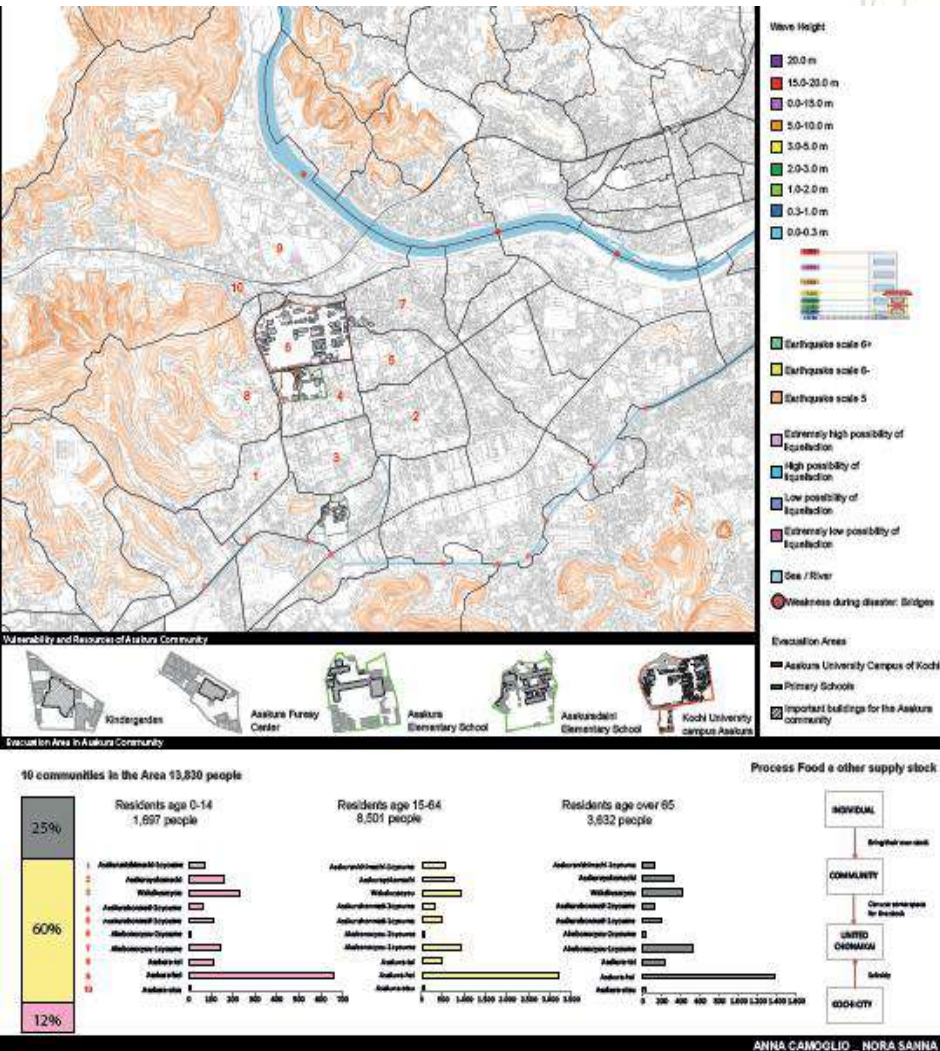




1 - Case of study: Motoyama town, Kochi prefecture

2011_september
participatory design of community dual space

2 - Case of study: Kochi city Evacuation plan based on dual space of Campus Asakura



**Different Places
Different Need**

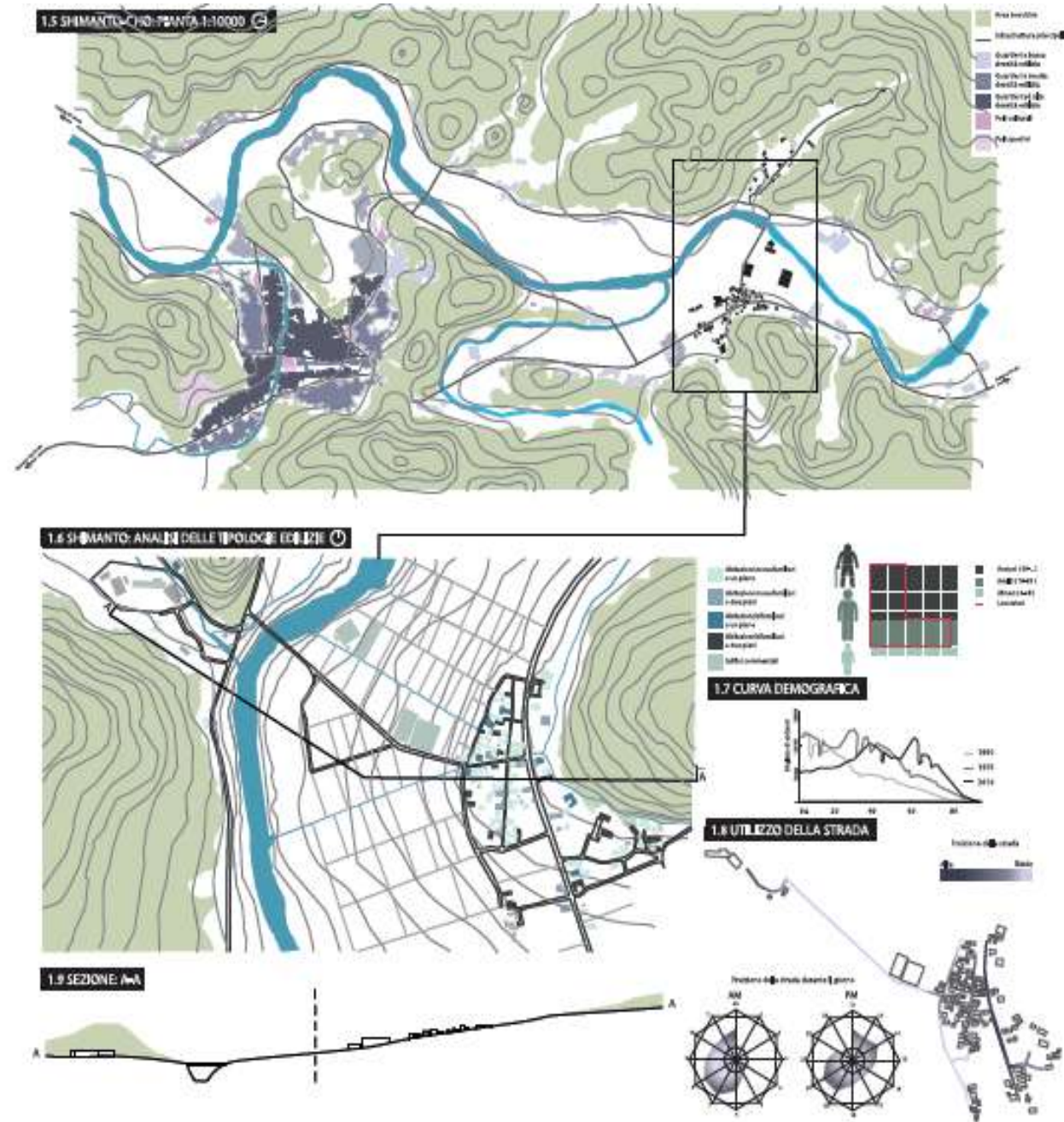
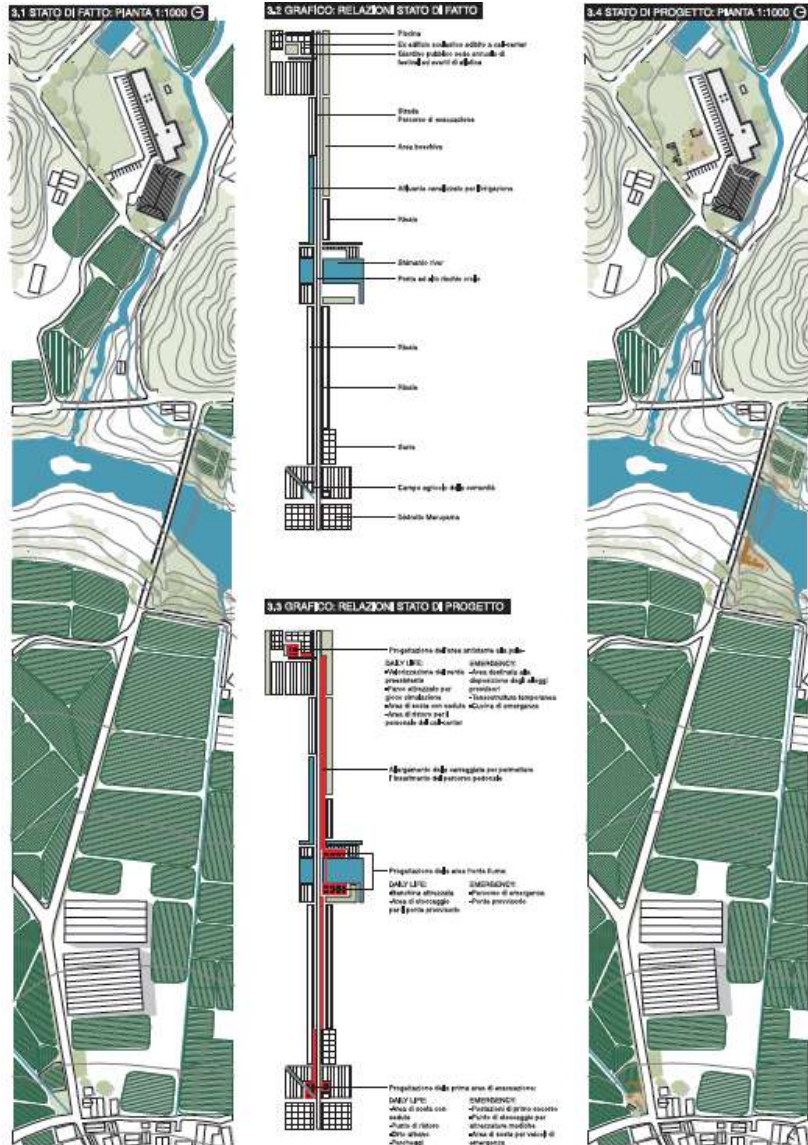
**Old people and
people with
disabilities:**
Indoor Spaces
with good
temperature
conditions

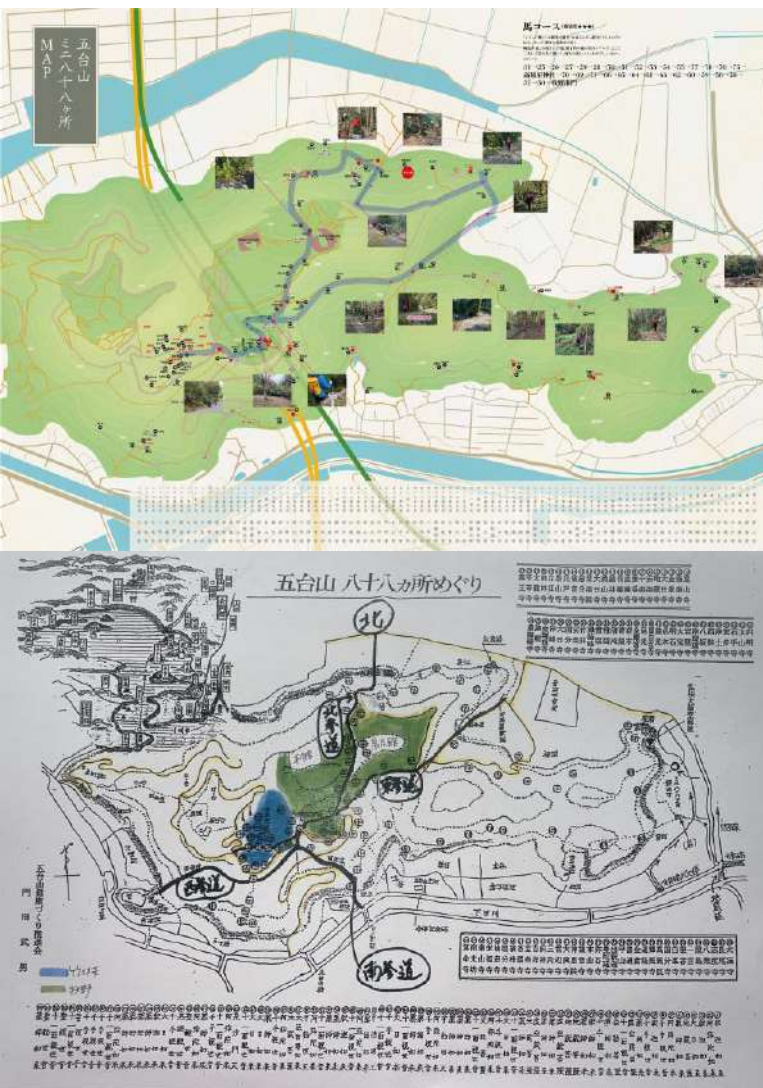
**Family and
Children:**
Gymnasiums

**Student and
Young people:**
Ground

3 - Case of study: Shimanto town evacuation plan

Evacuation plan based on dual space: a new bridge on Shimanto river





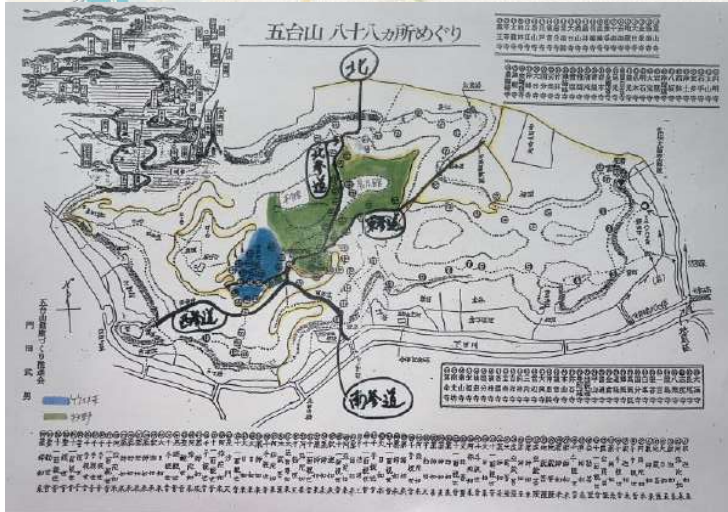
Godaisan and the 88 temple pilgrimage



- MAINTENANCE OF HERITAGE
- KEEPING LOCAL COMMUNITY IDENTITY
- NEED OF LOW BUDGET MANAGEMENT
- DEVELOPMENT OF TOURISM
- SAFETY OF HERITAGE
- HERITAGE AS SAFETY







Godaisan and the 88 temple pilgrimage

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In the context of risk, a **dual walkable space** should allow for identifying the nature of the risk or the risk itself and should be part of a network rather than its (dead) end.

Turning evacuation routes and points into high-quality walkable areas is a different approach to evacuation drills and risk communication, but also to evacuation plans in general. Currently, not only are these calculated exclusively on a quantitative basis, as emphasized before, but directions other than a home evacuation point, a work evacuation point, or non-flat or non-empty surfaces are not even taken into account.





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海外視点で地震との共存探る イタリア学生らが須崎市に滞在、研究



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社説

連載・特
集

週間行われた。街を歩いてのリスク分析や聞き取りを通じて、浸水エリアに建設予定の市立図書館の在り方などを考えた。…



津波避難タワーで、地元住民の防災意識を聞き取るイタリアの大学教授や大学生ら（13日、須崎市南古市町）

Implications for Planning (3)

Reorient from growth-dependence

- Need a shift from an exclusive focus on new development, its promotion, regulation and urban design.
- Planning should increasingly be based on what is already there rather than on what can be built.
- Seek to fulfil planning goals by building bottom-up capacity rather than through regulation and planning gain.
- Could be considered a move to urban repair and maintenance rather than place-making through urban design.

Yvonne Rydin/ Bartlett School of Planning // UCL, *Possibilities in Planning*, 24 September Alghero

Diver s City laboratory, which has been operating since 2006, focuses on the topics of disaster prevention, mitigation, and risk communication of environmental risk.

The laboratory works both teaching and conducting **research** under the **collaboration** with **national** and **international research institutions** and **universities**.

Among others, the laboratory has connected with universities in **Japan**, *Ritsumeikan University*, *DMUCH Research Centre Disaster Mitigation for Urban Cultural Heritage* (Kyoto) and *Kochi University* (Kochi); in **Thailand**, *Thammasat University* (Bangkok); in **Indonesia**, *l'Universitas Ngurah Rai* (Bali); and in the **USA**, *National Disaster Preparedness Training Center* (Honolulu).



Grazie!
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