

# Achieving the Depopulation Dividend

## Evidence and Experience from Japan's Shrinking Regions

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# JAPAN'S Shrinking Regions in the 21<sup>st</sup> Century

CONTEMPORARY RESPONSES TO DEPOPULATION  
AND SOCIOECONOMIC DECLINE



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with the Shrinking Regions Research Group

# Achieving the Depopulation Dividend

## Introduction

- For the whole postwar period Japan's population age structure and spatial distribution have been changing.
- In the 21st Century Japan's population began to shrink.
- This presentation is the story of that process and its consequences for Japan and, potentially, the rest of East and Southeast Asia, and beyond.

# Achieving the Depopulation Dividend

- Does depopulation have to produce uncomfortable outcomes?
- If depopulation is inevitable, then why lament it?
- Can we begin to embrace it, even benefit?
- To what extent are any anticipated benefits realistically achievable?

# Achieving the Depopulation Dividend

- I will look at the relationships between rural residents and their surroundings - the built and natural environments - and the implications for a sustainable future.
- I will look at Japan's rural-urban dynamics from the perspective of the 'geographies of sustainability', and of the 'spatial demography of well-being'.

# Achieving the Depopulation Dividend

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3. Can East Asia realise a 'depopulation dividend'?



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1. What does a post-growth East Asian society look like?
2. Can shrinking regions in East Asia build resilience against decline and recover from techno-environmental shocks?
3. Can East Asia realise a 'depopulation dividend'?
4. What could a post-growth East Asian society look like?

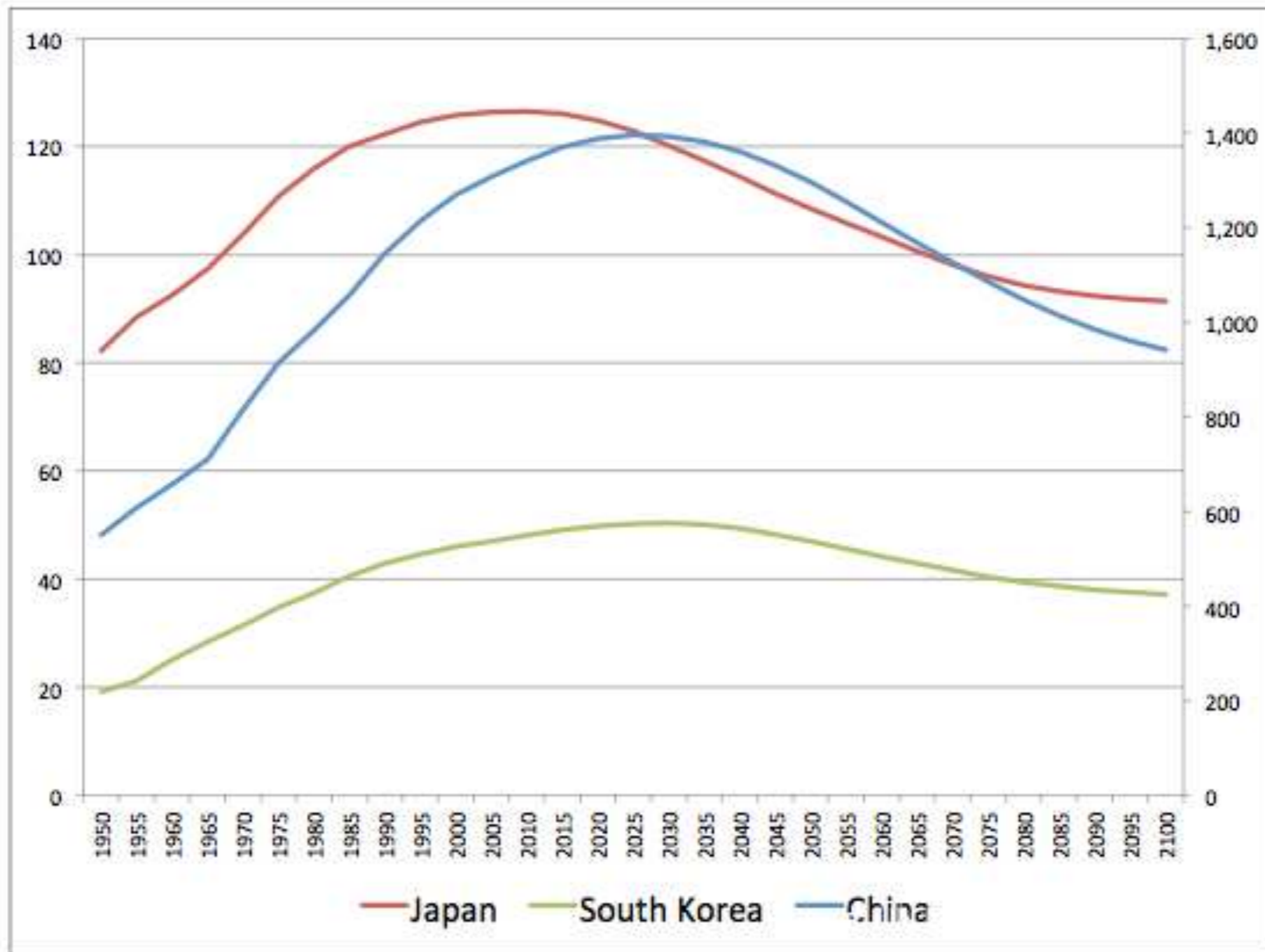
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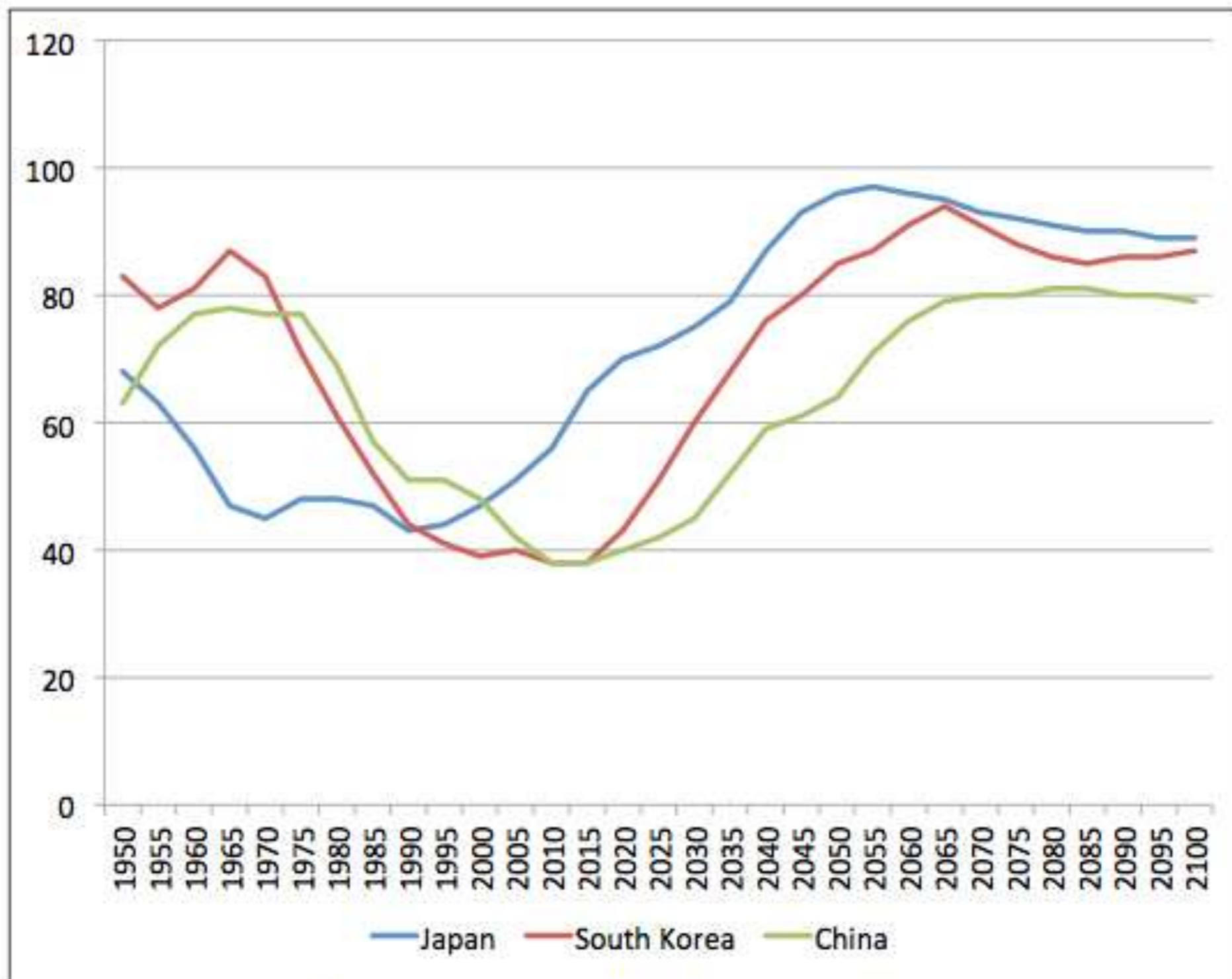
# Growth and Shrinkage in the Modern Era

## 150 Years of Demographic Change in East Asia



Source: UNPD, 2013. Note: Medium variant projections used throughout.

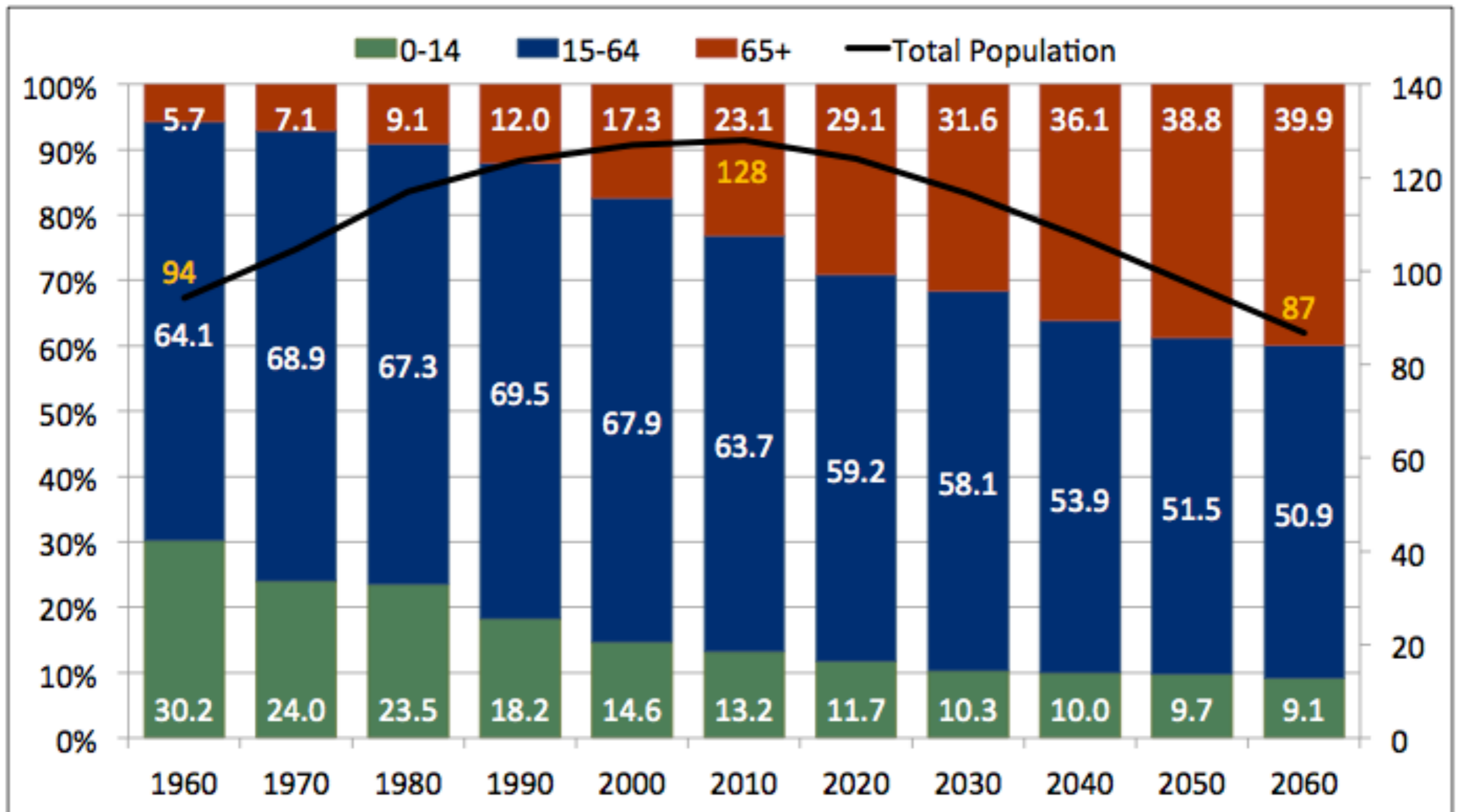
# After the Demographic Dividend in East Asia Child and Old-Age Dependency Ratios



Source: UNDP (2013); Medium variant projections.

# A Century of Growth and Shrinkage in Japan

## The Emergence of a Post-Growth Society

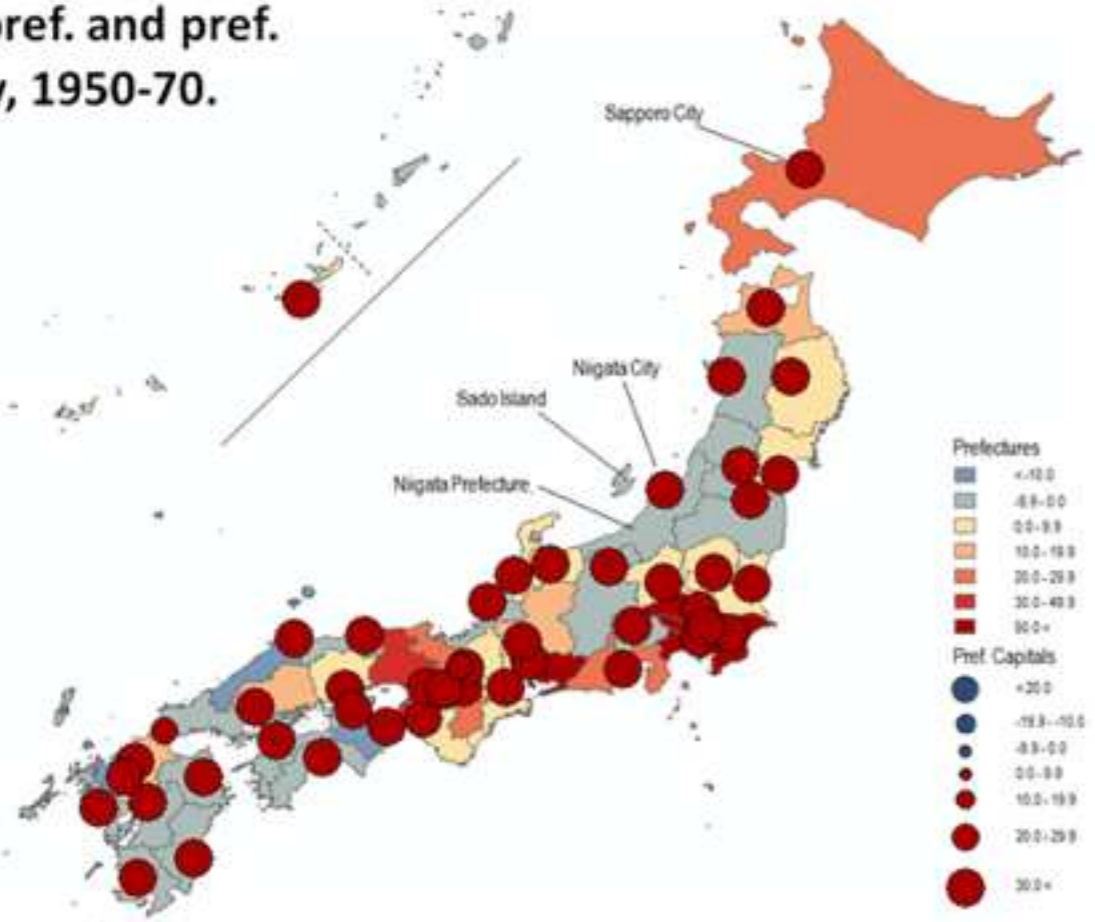


Actual (1960-2010) and Projected (2020+) Population of Japan by Age Group (left hand scale, %), and Total Population (right hand scale, millions). Source: Statistics Bureau, 2011; NIPSSR, 2003.

Map 1: Population change in Japan by pref. and pref. capital city, 1950-70.

Growth

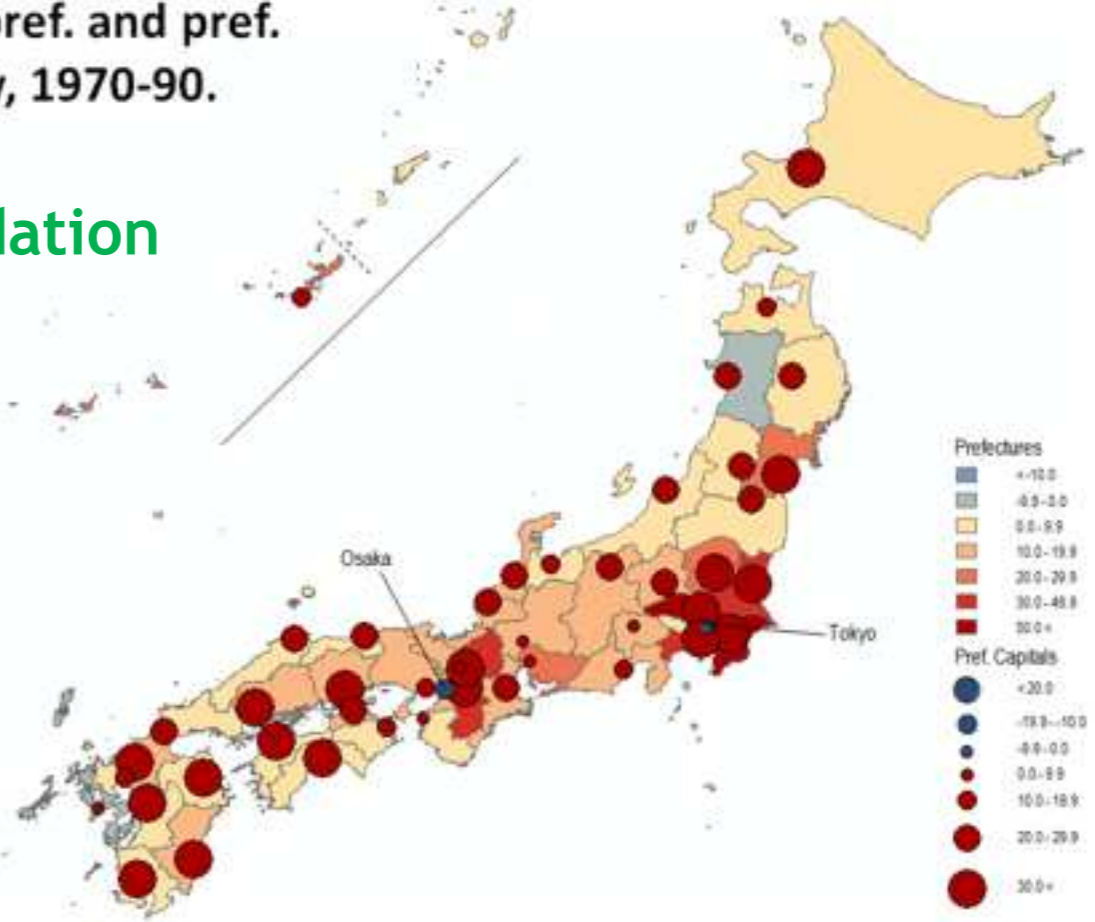
Data source: National Population Census, Various Years.



Map 2: Population change in Japan by pref. and pref. capital city, 1970-90.

Consolidation

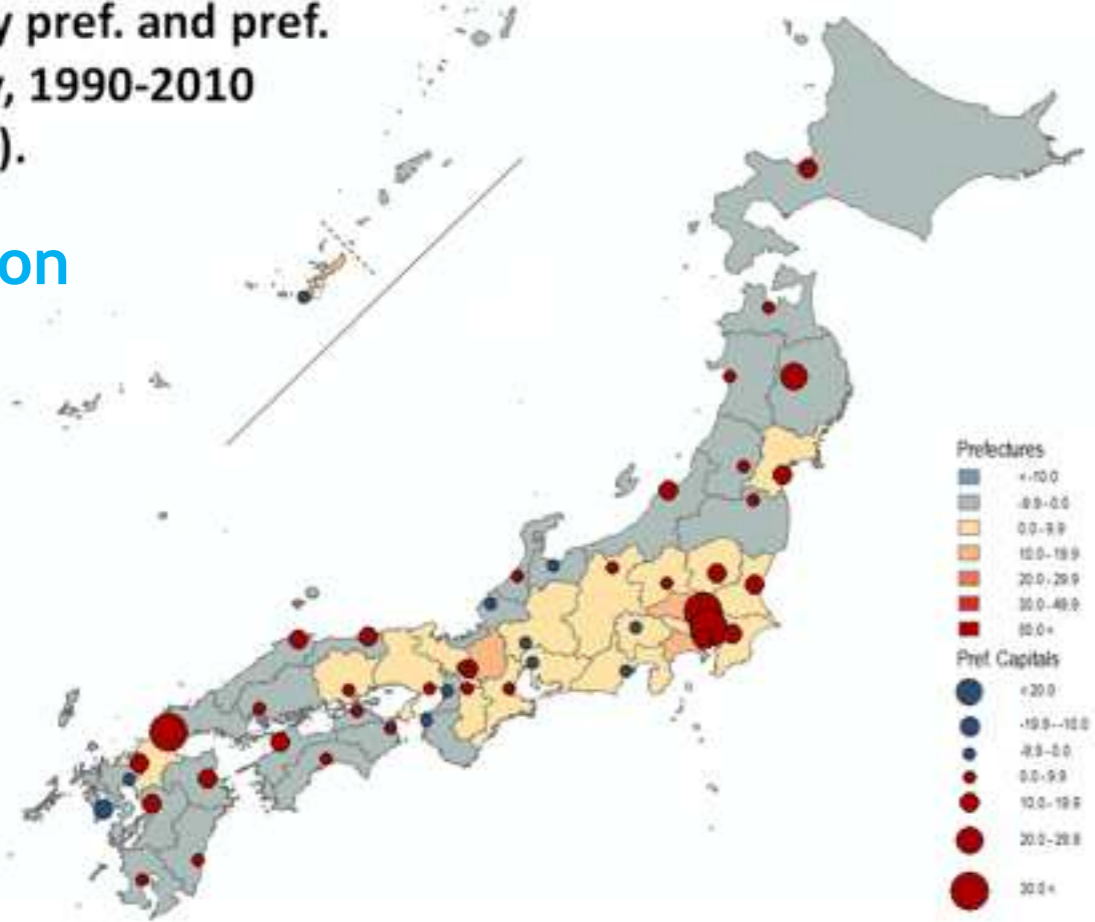
Data source: National Population Census, Various Years.



Map 3: Population change in Japan by pref. and pref. capital city, 1990-2010 (Projected).

Stagnation

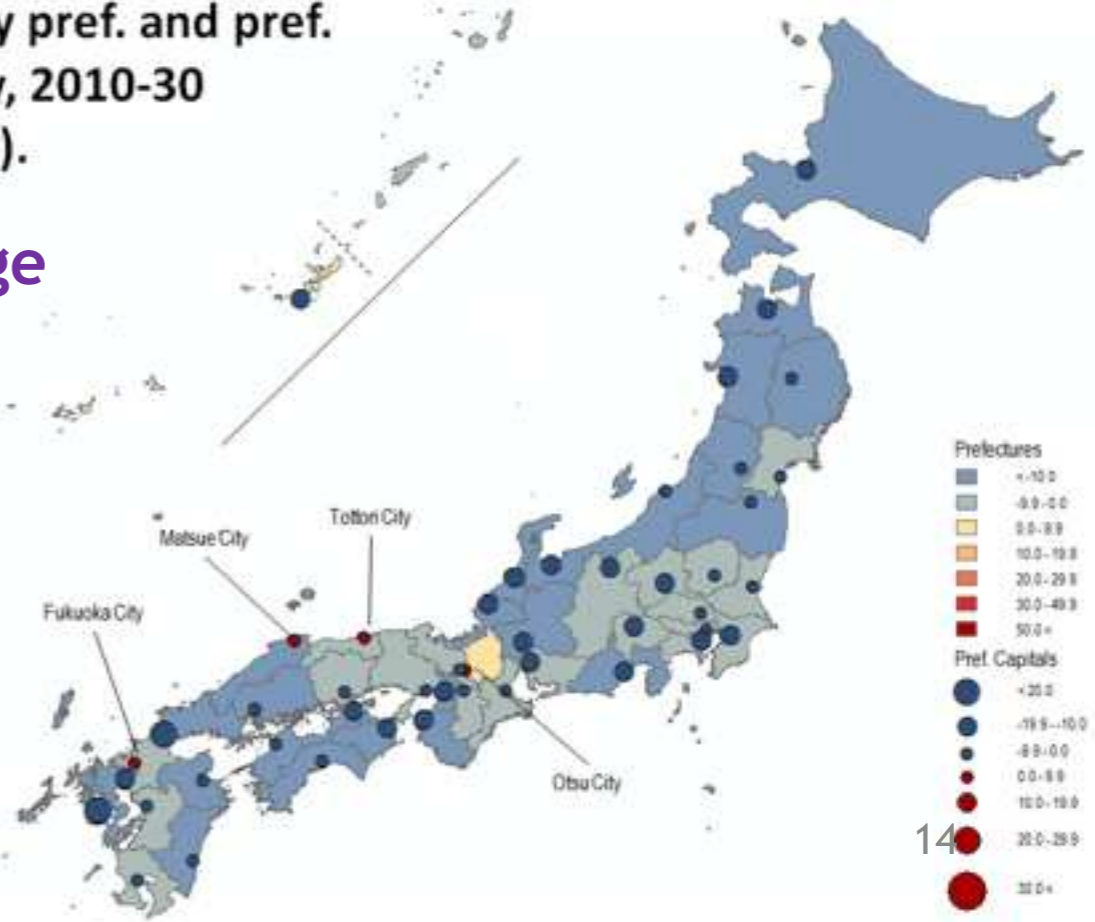
Data source: National Population Census, Various Years; National Institute of Population and Social Security Research (<http://www.ipss.gov.jp/>).



Map 4: Population change in Japan by pref. and pref. capital city, 2010-30 (Projected).

Shrinkage

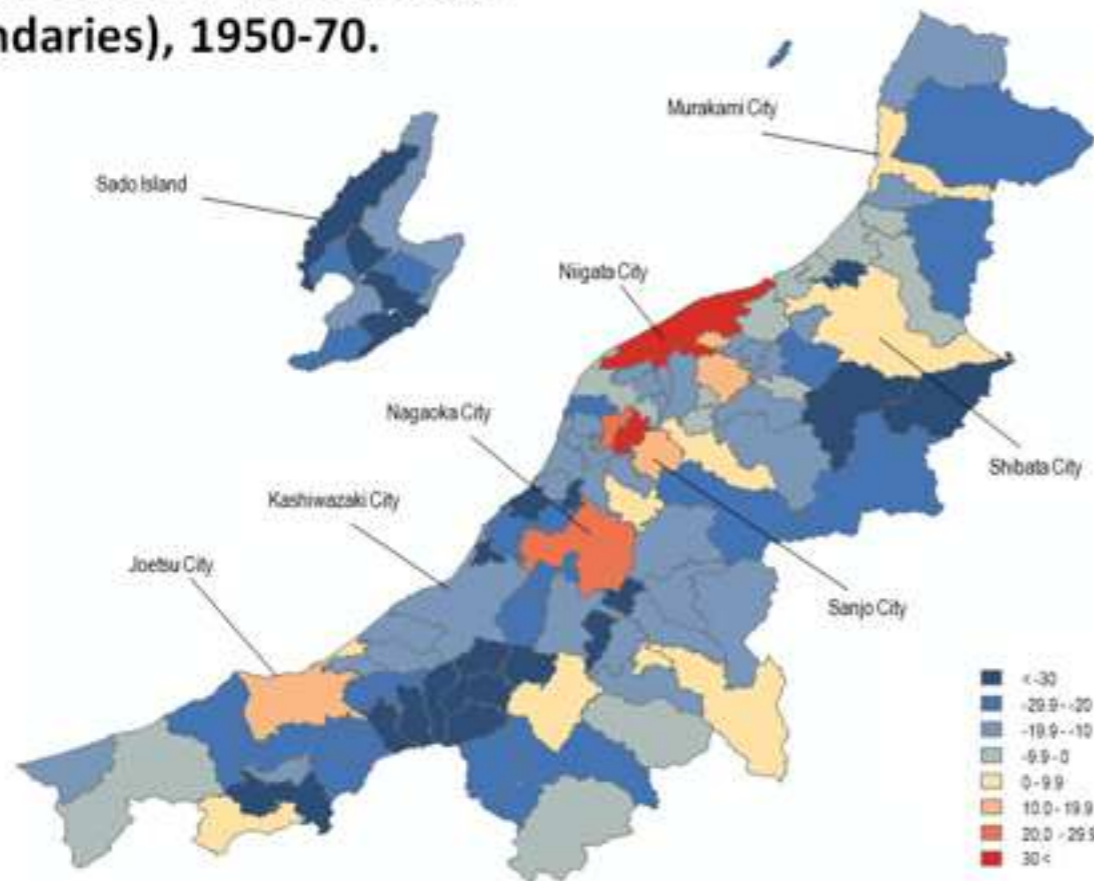
Data source: National Institute of Population and Social Security Research (<http://www.ipss.gov.jp/>).



**Map 5: Population change in Niigata Prefecture by municipality (2000 boundaries), 1950-70.**

**Growth**

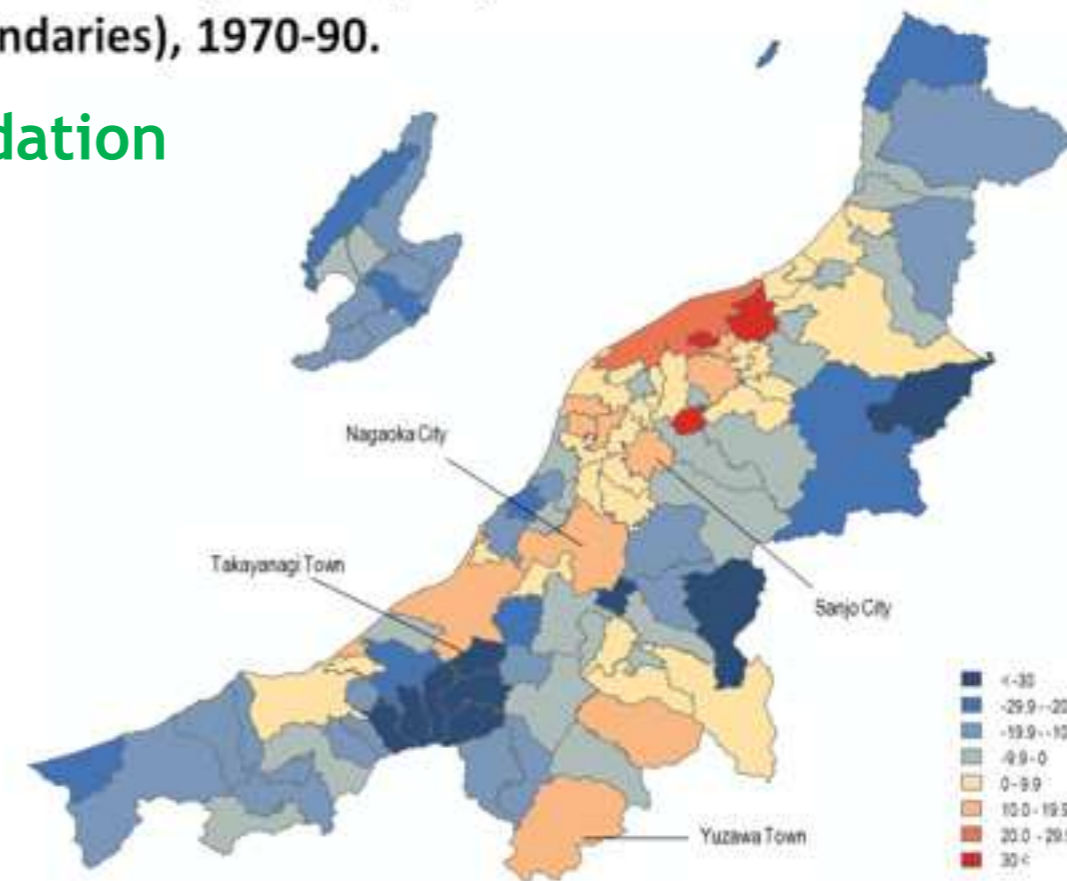
Data source: Niigata-ken, 2006; Niigata-ken Website, Various Pages (<http://www.pref.niigata.lg.jp/>); Higa-shide, 2008.



**Map 6: Population change in Niigata Prefecture by Municipality (2000 boundaries), 1970-90.**

**Consolidation**

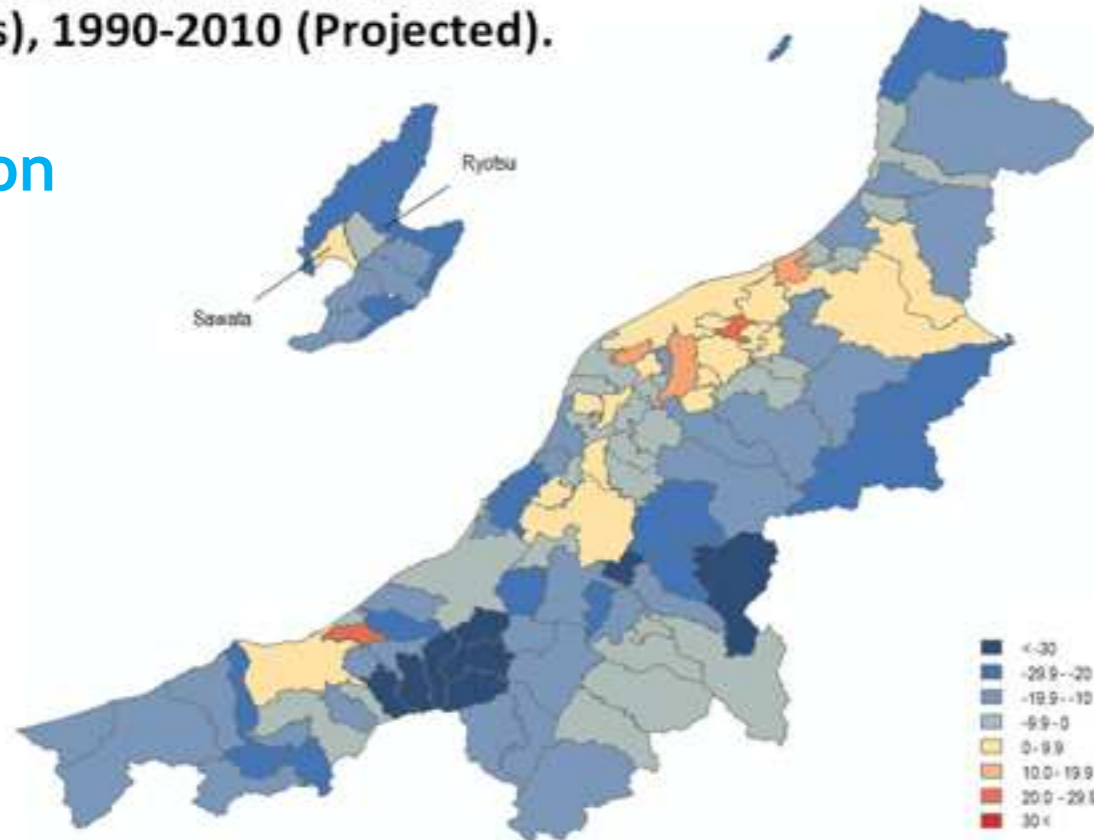
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**Map 7: Population change in Niigata Prefecture by municipality (2000 boundaries), 1990-2010 (Projected).**

**Stagnation**

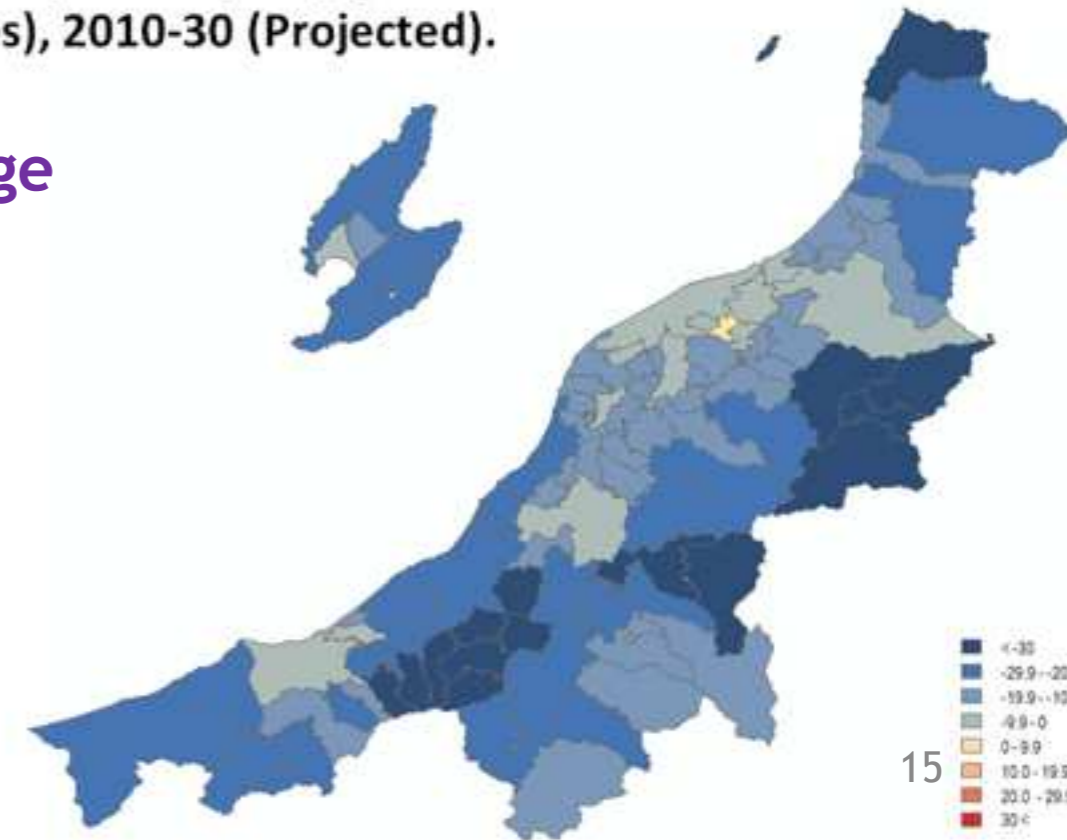
Data source: Niigata-ken, 2006; Niigata-ken Website, Various Pages (<http://www.pref.niigata.lg.jp/>); Higa-shide, 2008; National Institute of Population and Social Security Research (<http://www.ipss.gov.jp/>).



**Map 8: Population change in Niigata Prefecture by municipality (2000 boundaries), 2010-30 (Projected).**

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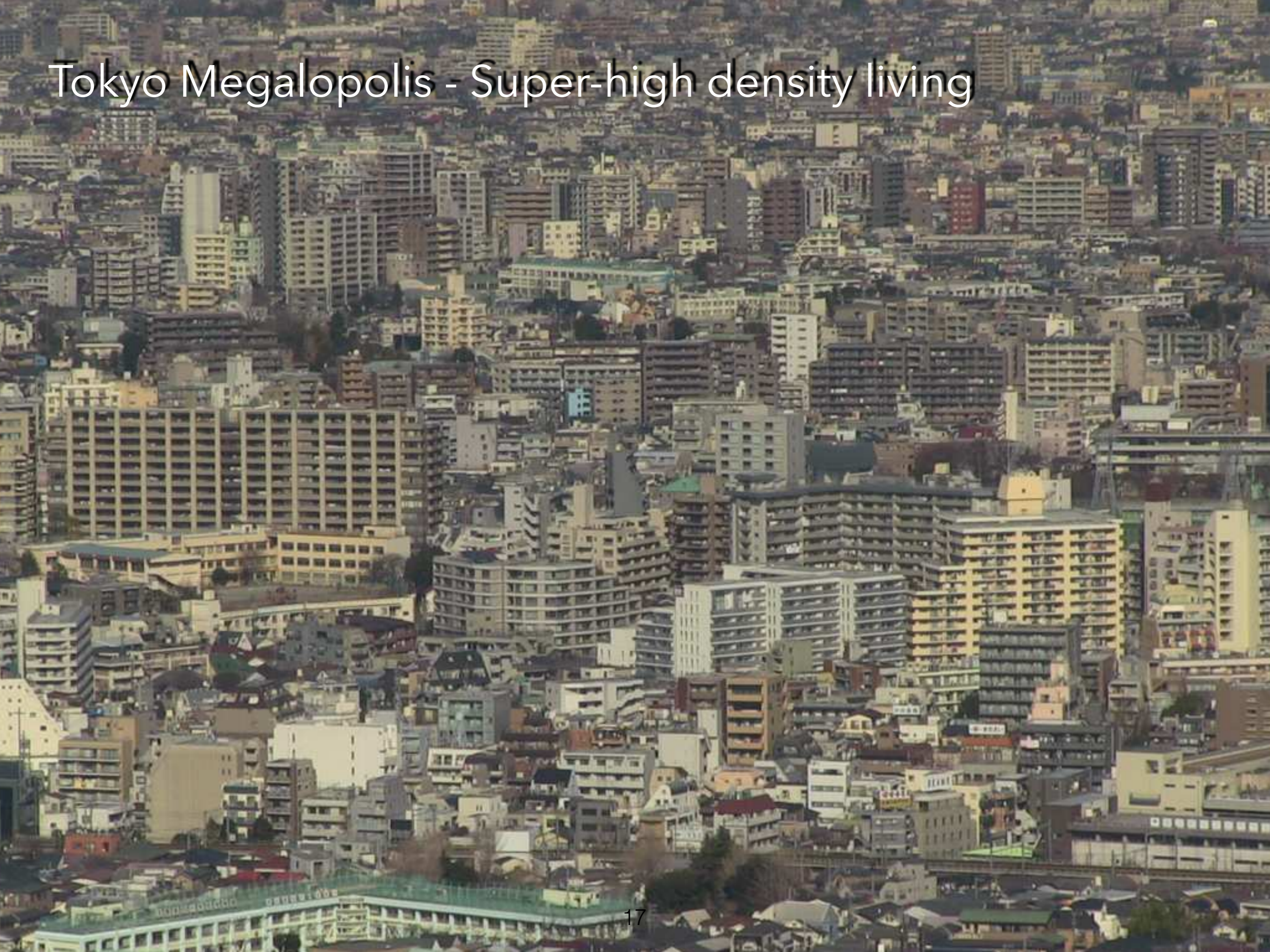


# Tokyo Megalopolis - Massive-scale urbanization





# Tokyo Megalopolis - Super-high density living



# Tokyo Megalopolis - High-rise multi-use urban functions



# Tokyo Megalopolis - Sophisticated high-cost infrastructure



# Rural Japan - Abandoned homes



# Rural Japan - Abandoned farmland



# Rural Japan - Bankrupted businesses



# Rural Japan - Retail deserts



# Rural Japan - Empty hotels and guesthouses





# Rural Japan - Disused and decaying infrastructure



# Rural Japan - Collapsed industries



# Rural Japan - Ghost towns



# Rural Japan - Ghost towns



# Rural Japan - Disaster zones



# Rural Japan - Environmental damage



# Two Types of Shrinkage

## 1. Economic.

- Individual settlements experience economic collapse with the loss of a core industry.
- Can be stabilised or even reversed; e.g. Sheffield in the 1970s-2010s.
- Prompts some to ask why regional shrinkage in Japan is a problem.

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## 2. Demographic.

- The demographic dividend is both an outcome and a cause of low fertility.
- Low fertility results in an ageing society and, eventually, population loss.
- Begins in geographically peripheral and isolated communities but spreads to include towns and cities as ageing and depopulation deepens.



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Japan is experiencing both.

## Consequences?

- 21st Century Japan is a society where gaps in well-being between groups and individuals are assumed to be emerging and widening.
- Wealth and income gaps, quality of life gaps, and gaps in life chances.
- One of these is the gap between urban and rural Japan.

# Consequences?

- With the onset of national scale shrinkage the areas caught in the rural decline trap are broadening to include provincial towns and cities.
- Revitalization - if that means growth - becomes impossible for most areas; because one community's expansion requires another to shrink.

TOKYO ● 2020 



# Geographical Gaps in Well-being

## For Older People

- Increasing proportion of single-person households in neighbourless communities.
- Fewer and less frequent visitors and less human contact.
- Increased personal dangers within and outside the home caused by deterioration in the built environment.
- Reduced quality of life inside and outside the home caused by the encroachment of vegetation, birds, insects and mammals.
- Reduced access to public and private services - e.g.. emergence of food deserts, withdrawal of healthcare provision, transportation etc.

# Geographical Gaps in Well-being

## For Working-Age Adults

- Increased requirement to replace family and community sustenance with maintenance activities
- investing in children > caring for older people.
- Shrinking markets = reduced economic opportunity.
- Reduced service provision = increased transaction costs.
- Fewer adults = fewer social and cultural enrichment opportunities.
- Reduced life chances > out-migration of those who can - leaving behind those that can't.

# Geographical Gaps in Well-being

## For Children and Younger People

- Reduced human capital formation
  - less educational provision - schools > care homes
  - reduced employment opportunities
- Reduced social and cultural capital formation
  - less human contact and cultural variety
- Emotional turmoil
  - increased incentives to leave the home region
  - but feelings of obligation to remain at home

# Consequences?

Reduced human, social, and cultural capital formation, and reduced community maintenance and sustenance, leads to overall reductions in community resilience to:

- Socio-economic pressures
- Adverse political decisions
- Techno-environmental shocks

# Achieving the Depopulation Dividend

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# The Great East Japan Earthquake, Tsunami and Nuclear Meltdowns Tohoku is a Shrinking Region

## Rikuzentakata City ([1 March 2012](#))

Population (2005/10): 24,709 and 23,302 (-5.7%) (National Census data).

Confirmed dead: 1,691 (7.3%) (41 missing)

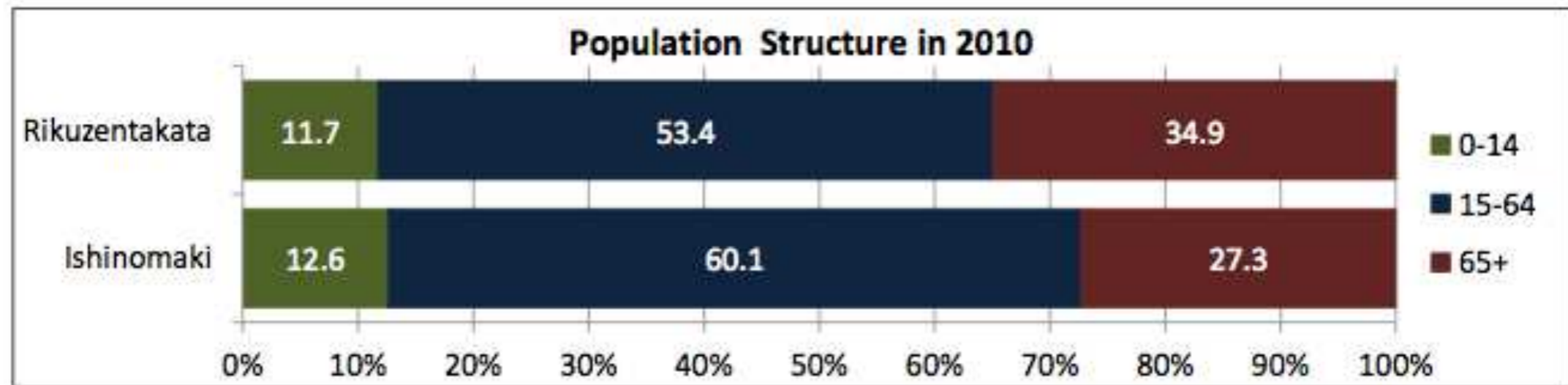
Buildings destroyed: 3,368 (3,159 [totally], 97 [mostly], 85 [half-destroyed], 27 [partially])

Pop. 1 Oct 2011: 20,252 (-13.1% on 2010)

Pop. 1 May 2012: 19,796 (-15.0%)

**20,631 (31 March 2013)**

20,426 (30 September 2014)



## Ishinomaki City ([May 2012](#))

Population (2005/10): 167,324 and 160,826 (-3.9%)

Confirmed dead: 3,428 (2.1%) (499 missing) (Post-disaster population est.= 157,007)

Pop. 1 Nov. 2011: 150,492 (-6.4% on 2010)

Pop. 1 May 2012: 149,342 (-7.1%)

**151,263 (11 April 2013)**

150,114 (30 September 2014)











A fishing port in Miyako, Iwate Prefecture, on 11 March 2011 and 17 Feb. 2012 (Reuters/Miyako City Office and Toru Hanai).  
Reproduced in [Japan earthquake: Before and After](#), *The Atlantic*, 23 February 2012.



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# Tohoku-Fukushima

## A 21st Century Techno-Environmental Compound Event





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- 3. *Can East Asia realise a 'depopulation dividend'?***

# Defining the Depopulation Dividend

Any benefits for socially and environmentally sustainable living that can be gained from depopulation.

- Depopulation must occur in peace time,
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For example:

Energy, water, food, and resource consumption.

Biodiversity and ecosystem benefits.

Land management and living space.

Social benefits - gender equality and ethnic diversity, crime.

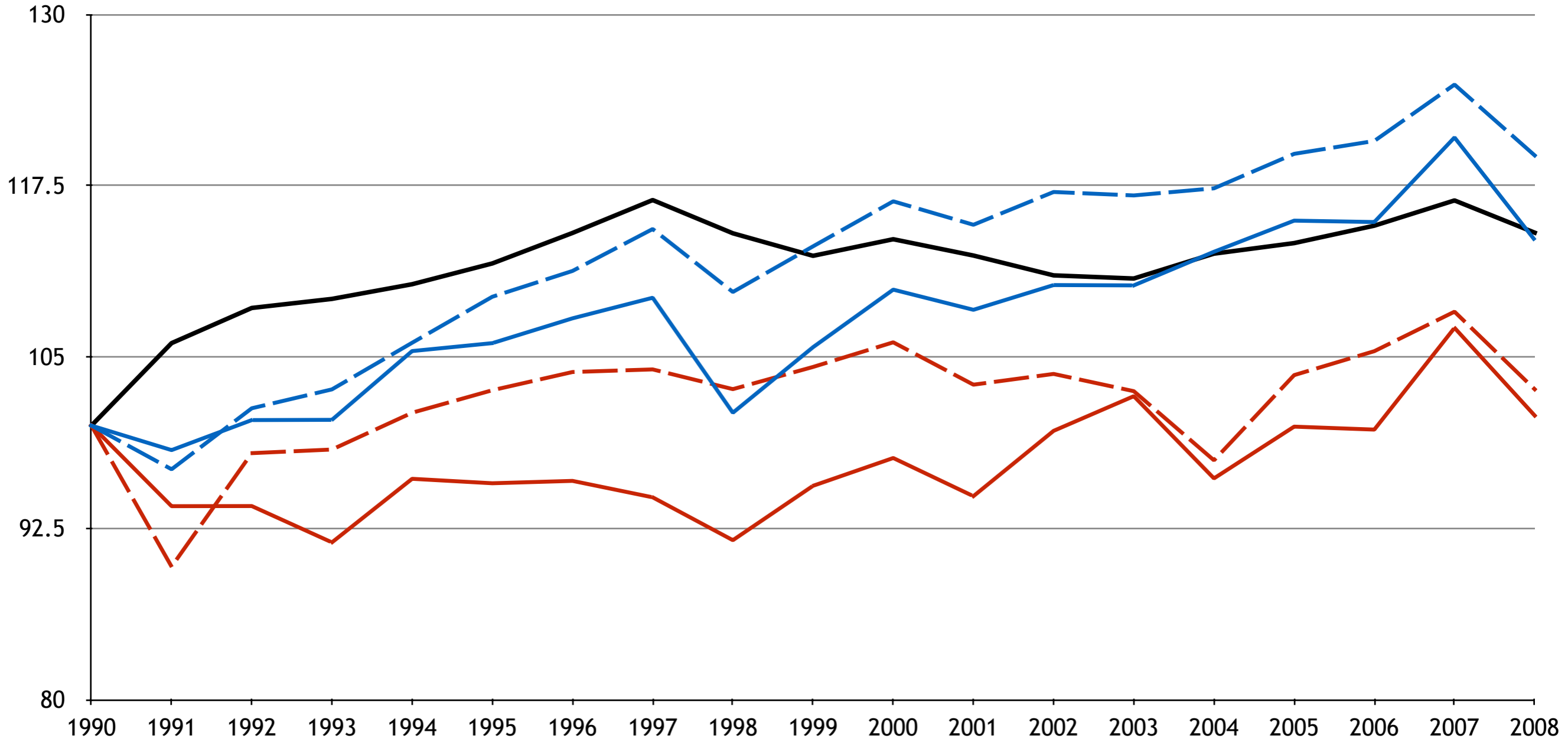
International order.

# Is the World Becoming Overpopulated? Evidence from Around the World

	Pop. In 1950	Pop. In 2010	Pop. In 2050 (Projected)	Ave. Annual Pop. Change 2005-10	Per cent Urban	Rate of Urbanization (Per cent per annum)	2010 Total Fertility Rate	1st Recorded Year of Pop Decrease	Ecological Footprint (ha/capita)	Bio- Capacity (ha/capita)
China	544951	1354146	1417045	0.6	47	2.6	1.77	2035	2.2	1
France	41832	62637	67668	0.5	85	1.4	1.87	2050<	5	3
Germany	68376	82057	70504	-0.1	74	0	1.33	2010	5.1	1.9
Hungary	9338	9973	8934	-0.2	68	0.3	1.39	1985	3	2.2
India	371857	1214464	1613800	1.4	30	2.3	2.63	2050<	0.9	0.5
Indonesia	77152	232517	288110	1.2	44	1.7	2.1	2050<	1.2	1.4
Italy	46367	60098	57066	0.5	68	0.7	1.4	2015	5	1.1
Japan	82824	126995	101659	-0.1	67	0.2	1.26	2010	4.7	0.6
Malaysia	6110	27914	39664	1.7	72	3	2.46	2050<	4.9	2.6
Rep. of Korea	19211	48501	44077	0.4	83	0.8	1.24	2025	4.9	0.3
Russian Fed.	102702	140367	116097	-0.4	73	-0.3	1.41	2000	4.4	5.7
Sweden	7014	9293	10571	0.5	85	0.6	1.87	2050<	5.9	9.7
Thailand	20607	68139	73361	0.7	34	1.7	1.83	2040	2.4	1.2
UK	50616	61899	72365	0.5	80	0.7	1.86	2050<	4.9	1.3
Ukraine	37298	45433	35026	-0.7	69	-0.4	1.4	1995	2.9	1.8
USA	157813	317641	403932	1.0	82	1.3	2.07	2050<	8	3.9
World	2529346	6908688	9149984	1.2	50	1.9	2.52	2050<	2.7	1.8
More Devd. Regions	812026	1237228	1275243	0.3	75	0.7	1.65	2040		
East Asia	659649	1563951	1600005	0.6	50	2.2	1.73	2035		
Europe	547460	732759	691048	0.1	73	0.4	1.52	2020	4.7	2.9

# Index of per capita energy consumption and carbon output in shrinking and growing prefectures in Japan, and per capita GDP

— Shrinking Prefs. Energy Consumption    
 - - - Shrinking Prefs. Carbon Output    
 — Growing Prefs. Energy Consumption  
- - - Growing Prefs. Carbon Output    
 — GDP at Current LCU



Source: METI (2011); World Bank (2011).



# Achieving the Depopulation Dividend

Some questions emerge from the Japanese experience that have resonance for 21st Century East and Southeast Asia:

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2. Can shrinking regions in East Asia build resilience against decline and recover from techno-environmental shocks?
3. Can East Asia realise a 'depopulation dividend'?
- 4. *What could a post-growth East Asian society look like?***

# Achieving the Depopulation Dividend

5 Stages to Community Revitalization.

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Stage 5: Achieve community revitalisation.

# Achieving the Depopulation Dividend

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Which revitalization strategies have not been successful?

***Reluctance to allow women a voice.***

- Women hold communities together.
- Female entrepreneurialism is inclusive.
- Female entrepreneurialism enables families to prosper and grow.

# Achieving the Depopulation Dividend

Which revitalization strategies have not been successful?

Reluctance to allow women a voice.

## ***Concentration on big infrastructure.***

- Airports, bullet trains and expressways enable people to bypass or leave, rather than retain or attract new people in.
- Large numbers of small infrastructure projects help communities achieve organic renewal and growth.
- Smaller projects involve the community as a whole, especially women - who bring children and older people with them.

# Achieving the Depopulation Dividend

Which revitalization strategies have not been successful?

Reluctance to allow women a voice.

Concentration on big infrastructure.

***One village one product.***

- Subject to failure as trends and tastes change.
- Reduces opportunity for organic growth by trial and error.
- Reduces opportunities for fostering community diversity.



# Achieving the Depopulation Dividend

Which revitalization strategies have not been successful?

Reluctance to allow women a voice.

Concentration on big infrastructure.

One village one product.

***Lack of sophistication and scale in electronic connectivity.***

- EC connects and empowers individuals, families and groups.
- Scale enables users to reach out to the whole world.

Are there any examples of communities in Japan that are focusing on well-being, strengthening resilience, and achieving a 'depopulation dividend'?

# Learning to live 'Beyond Growth'

## Sado as 'Ecology and Culture Island'



もういちど



仲間を空へ



# Learning to Live Beyond Growth

## Sado Island as 'Ecology and Culture Island'

- Based around the notion of Sado as a '*sumiyasui tokoro*'.
- Focus on well-being in the broadest sense - physiological, emotional, socio-economic and environmental.
- Not anti-growth in the traditionally 'modernist' sense, but an acknowledgement that growth is no longer possible.
- A search for an alternative to prioritising growth.

# Sado's satoyama in harmony with Japanese crested ibis

[ Sado GIAHS Project: Japan ]

The GIAHS project on Sado Island—which the crested ibis chose as its final habitat in Japan—will use agriculture to foster *satoyama* landscapes where people and the crested ibis coexist.

It will preserve and pass along to future generations Sado's beautiful *satoyama* and the rich ecosystems where Japanese crested ibis can live, now that they have been successfully reintroduced to the wild.

This biodiversity-conserving approach to farming that nurtures the Japanese crested ibis can serve as a new model of agriculture for the world.



## Reviving FOOD – Reviving LIFE – Reviving JAPAN

Sado's agricultural system, which nurtures "food" and "life," grew out of efforts to return the Japanese Crested Ibis to the wild. It is a new model of agriculture for Japan —farming that strives for harmony between people and nature.

### Agriculture and Satoyama Landscapes Shaped by the History and Culture of Sado



## Conservation Action Plan

- **Collaboration with national and prefectural govts to expand and support Sado's biodiversity-nurturing agricultural system.**
- **Collaborating with universities and research institutions to establish nature restoration techniques, utilizing data from field surveys conducted by local farmers.**
- **Working to revitalize agriculture and farming communities through the promotion of product brands that highlight biodiversity-friendly farming.**
- **Preserving biodiversity and revitalizing local communities through partnerships that make use of Sado's rich local resources (agriculture, nature, history, traditional arts, etc.) and that engage local community members with those from outside the region.**
- **Partnerships with companies through corporate social responsibility (CSR) activities, exchange programs involving local residents and visitors from urban areas, and the promotion of Sado Island as a field for environmental education.**

# Learning to Live Beyond Growth

## Sado Island as 'Ecology and Culture Island'

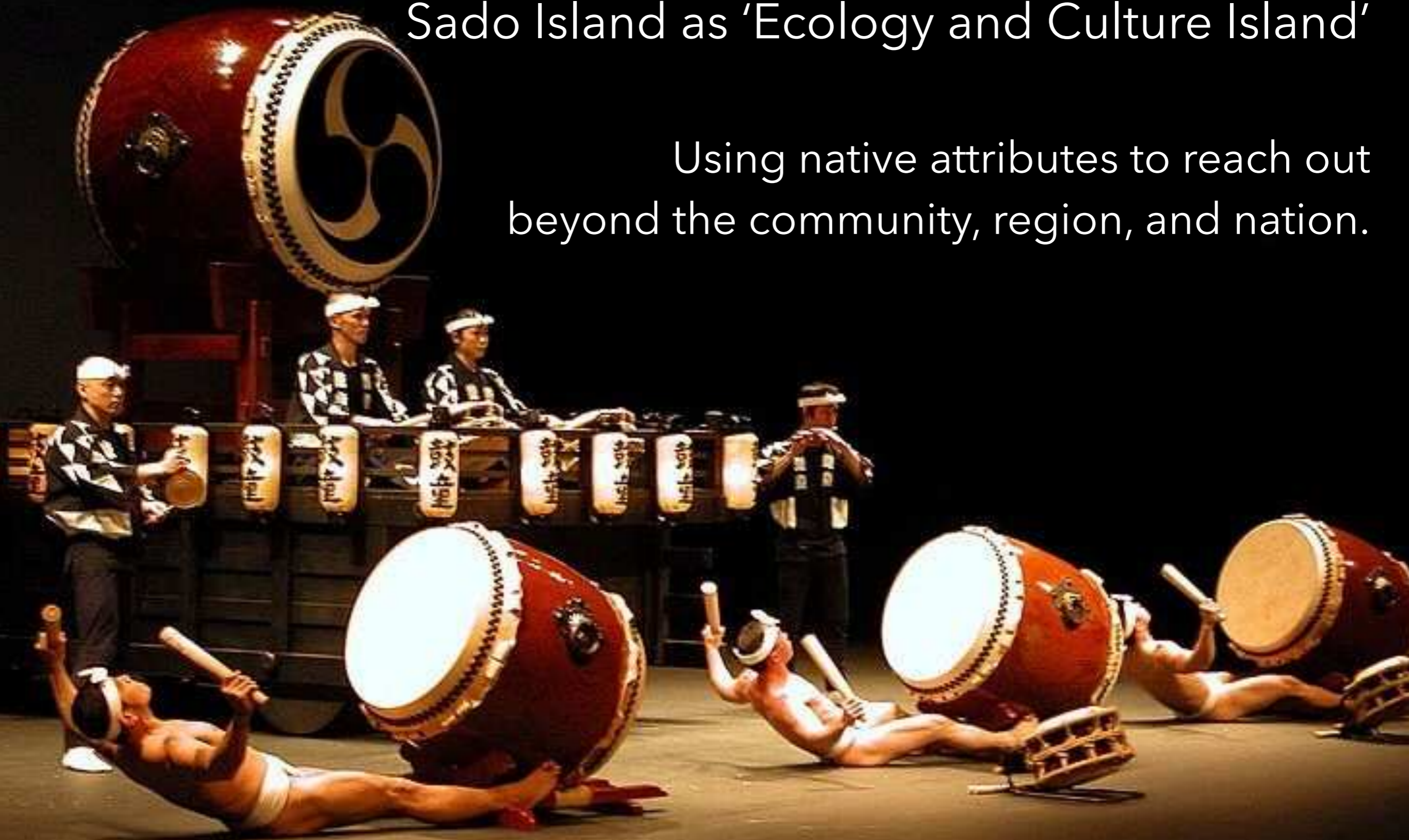
- Improvement of tourism/lifestyle opportunities and infrastructure, based around culture, environment, and health and well-being.





# Learning to Live Beyond Growth Sado Island as 'Ecology and Culture Island'

Using native attributes to reach out  
beyond the community, region, and nation.



# Learning to Live Beyond Growth

## Sado Island as 'Ecology and Culture Island'

- Improvement of tourism/lifestyle opportunities and infrastructure, based around culture, environment, and health and well-being.
- Using native attributes to reach out beyond the community, region, and nation.

5th International Small Islands Conference - Sado Island, Japan

**SICRI Network**  
Small Island Cultures Research Initiative

A big handicap is our geography. It is difficult to set up business here and you can't grow the business unless you export from the island. ... By chance I got the opportunity to sell saké to Nobu's restaurant in New York. One reason for this success is, strangely, our geography. For many foreigners, Sado is a remote and mysterious place. When they come here they quickly discover its charms and want to take that back with them. So, when we started to sell our saké in Nobu's we had a party in New York and I invited Robert de Niro to come here to see for himself. He came by helicopter and we got a little drunk on our saké, but he is now a fan of Sado and our business is doing well over there. He calls Sado 'Saké Island'!

*Saké brewer, Akadomari.*



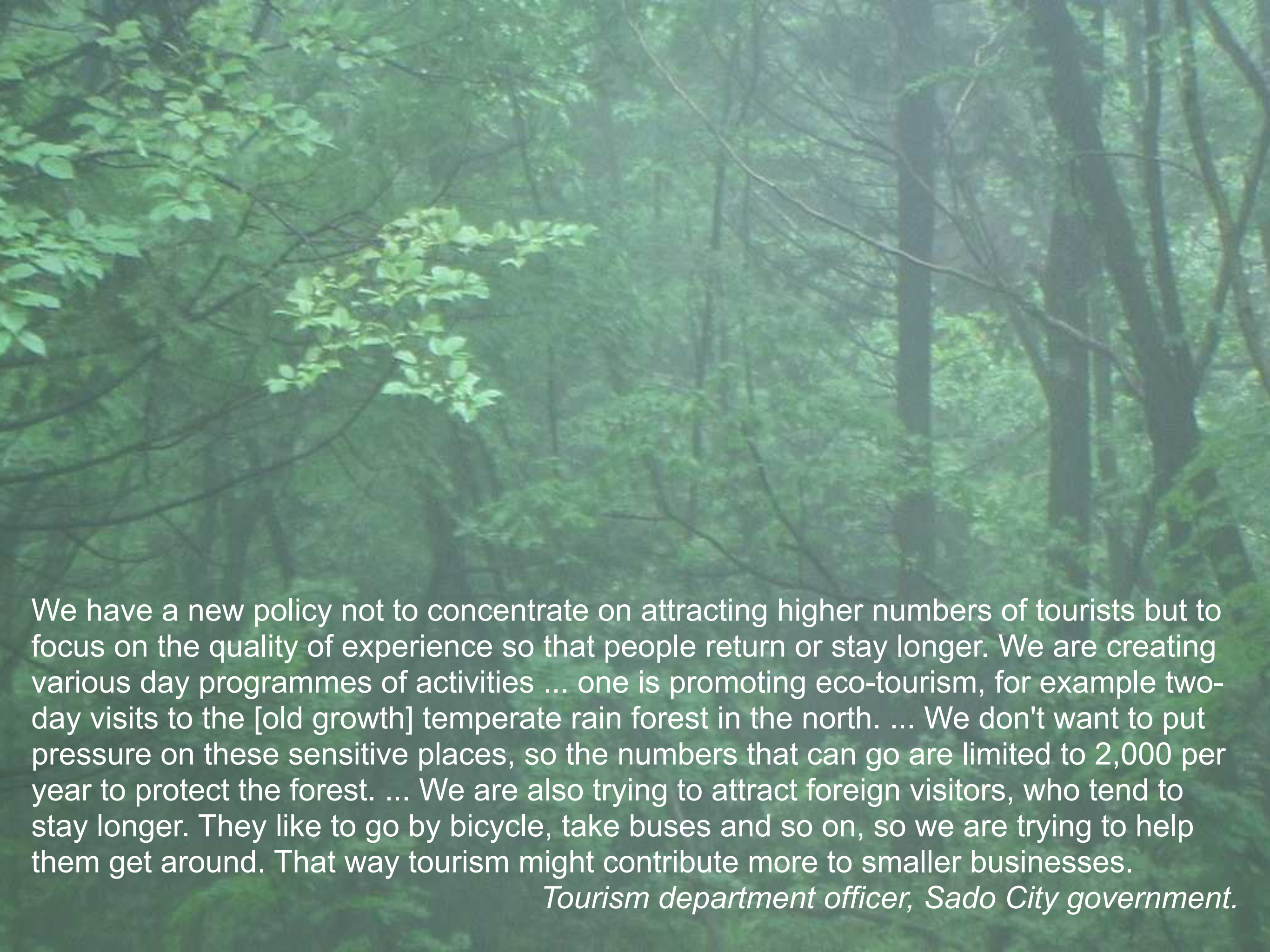
Our aim is the sustainability of society, culture and the environment here by cooperating in technology and tourism and in education. For example, I am working with a local environmental entrepreneur who is developing new waste disposal technologies and we are starting some bio-ecology internships for local senior high school graduates to try to generate high quality employment. ... We hope eventually to make Sado into an 'eco-island' and an example for others to follow.

*Saké brewer, Mano.*

We are hoping to make Sado into a sort of 'Film Island'. It has so many great locations and the sound and light are superb. If we can get funding together we can contribute to the economy of the island by using it as a location, as well as through film tourism, which is becoming big business these days.

*Film Producer, Tokyo.*





We have a new policy not to concentrate on attracting higher numbers of tourists but to focus on the quality of experience so that people return or stay longer. We are creating various day programmes of activities ... one is promoting eco-tourism, for example two-day visits to the [old growth] temperate rain forest in the north. ... We don't want to put pressure on these sensitive places, so the numbers that can go are limited to 2,000 per year to protect the forest. ... We are also trying to attract foreign visitors, who tend to stay longer. They like to go by bicycle, take buses and so on, so we are trying to help them get around. That way tourism might contribute more to smaller businesses.

*Tourism department officer, Sado City government.*

# Implications

1. Expected increase in incidence of large-scale techno-environmental shocks across East and Southeast Asia intersecting with reduced family and community resilience places greater responsibility to invest in resilience building measures - human, social, cultural and environmental capital formation becomes a priority but is increasingly difficult to achieve.

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2. There is potential to decouple the link between growth and well-being and manage decline to enhance well-being by developing a new citizen *ikigai* - but evidence suggests that this may be more difficult to achieve than many currently assume.

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2. There is potential to decouple the link between growth and well-being and manage decline to enhance well-being by developing a new citizen *ikigai* - but evidence suggests that this may be more difficult to achieve than many currently assume.
3. There is need to develop assessment tools for assessing whether strategies for rural/regional sustainability and revitalisation succeed - whether a depopulation dividend can be achieved.



# Implications

1. Expected increase in incidence of large-scale techno-environmental shocks across East and Southeast Asia combined with reduced family and community resilience places greater responsibility to invest in resilience building measures - human, social, cultural and environmental capital formation becomes a priority, but is increasingly difficult to achieve.
2. There is potential to decouple the link between growth and well-being and manage decline to enhance well-being by developing a new citizen *ikigai* - but evidence suggests that this may be more difficult to achieve than many currently assume.
3. There is need to develop assessment tools for assessing whether strategies for rural/regional sustainability and revitalisation succeed - whether a depopulation dividend can be achieved.
4. Might rural areas have a role in leading urban Japan into a depopulation dividend?
5. Might Japan lead the rest of East Asia into a post-growth future?

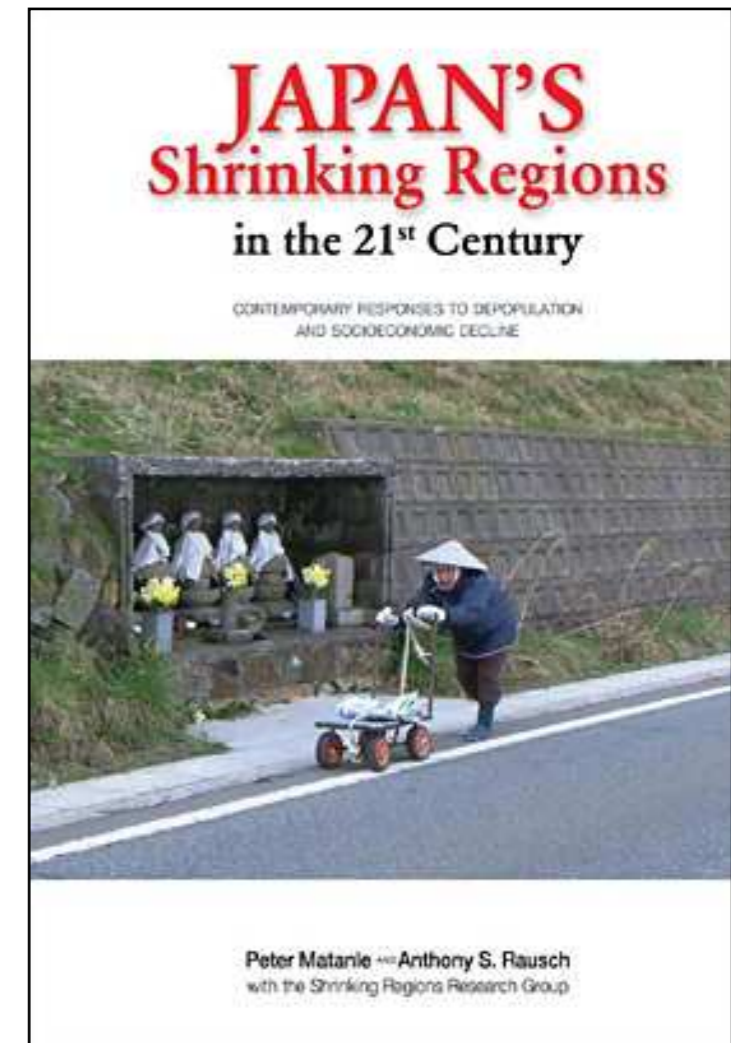
# Recent publications

Matanle, P. (2013) [Post-disaster recovery in ageing and declining communities: the Great East Japan disaster of 11 March 2011](#), *Geography*, 98 (2): 68-76.

Matanle, P. (2011) [The Great East Japan Earthquake, Tsunami and Nuclear Meltdown: Towards the \(Re\)Construction of a Safe, Sustainable, and Compassionate Society in Japan's Shrinking Regions](#), *Local Environment*, 16 (9): 823-847

Matanle, P., Rausch, A., with the Shrinking Regions Research Group (2011) [Japan's Shrinking Regions in the 21st Century: Contemporary Responses to Depopulation and Socioeconomic Decline](#), Amherst, NY: Cambria Press.

Matanle, P. and Sato, Y. (2010) [Coming to a City Near You! Learning to Live 'Beyond Growth' in Japan's Shrinking Regions](#), *Social Science Japan Journal*, 13 (2): 187-210.



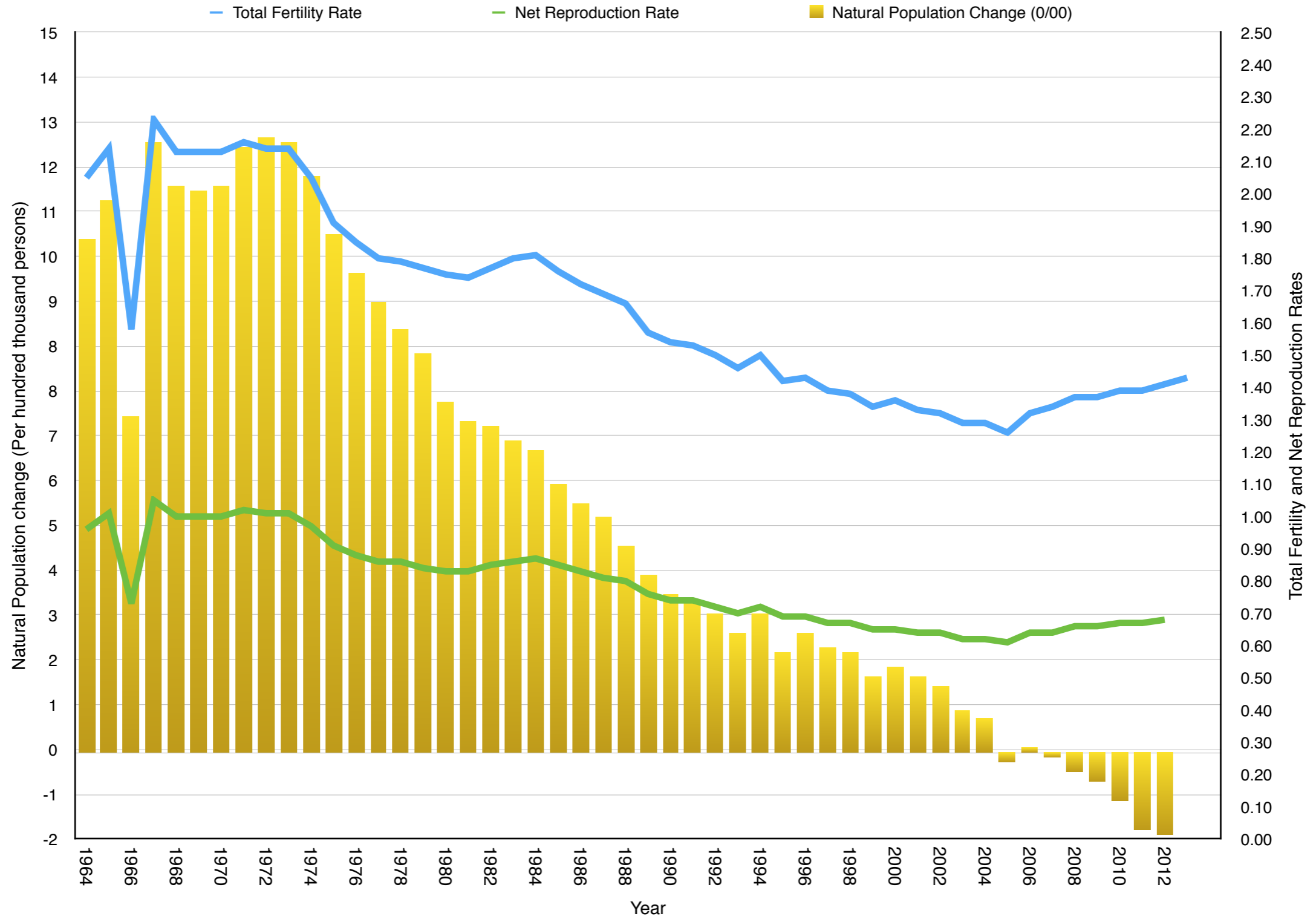
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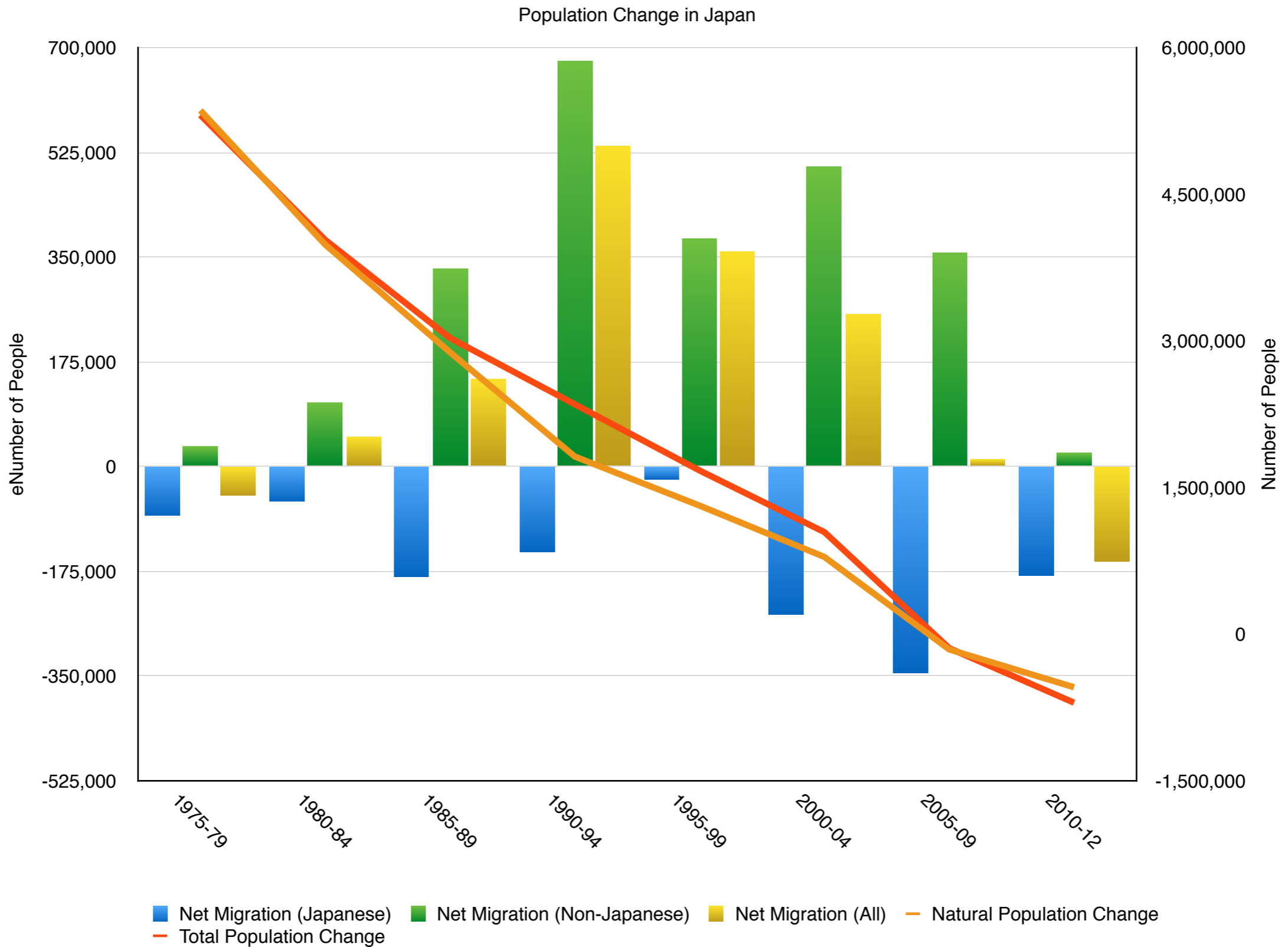
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# Is immigration a solution?



# Is immigration a solution?



# Is immigration a solution?

2. The numbers required would be impossible to accept.

## (d) Scenario III

- Medium variant projection of UN 1998 Revision
- Population maintained at 2005/10 level of 127.5 million.
- Need 17 million net immigrants to 2050 (381,000 annually).
- 2050 = 22.5 million immigrants and descendants.
- 17.7% of total population.

## (e) Scenario IV

- Maintain working-age population constant at 87.2 million (1995).
- Need 33.5 million immigrants from 1995 through to 2050 (609,000 annually).
- Total population 150.7 million by 2050.
- Immigrants and their descendants 46 million (30% of total population in 2050).

# Is immigration a solution?

1. Japan is historically shy of contact with outsiders.
2. The numbers required would probably be politically impossible.
3. Or achieve; because China also will be shrinking soon.
4. Migrants may not settle in the regions which need them most.
5. Too many Japanese are leaving.

Immigration is unlikely to provide anything other than a soft landing.

# Energy Consumption and Carbon Output in Growing and Shrinking Prefectures in Japan (1990-2008).

	Growing Prefectures				Shrinking Prefectures				
	1990	2008	Actual Change	% Change 1990-2008	1990	2008	Actual Change	% Change 1990-2008	
Population	89,335,902	94,779,000	5,443,098	6.1	34,275,265	32,910,000	-1,365,265	-4.0	
Energy Consumption (TJ)	Final Energy Consumption	11,533,078	12,560,020	1,026,941	8.9	4,202,657	4,830,705	628,048	14.9
	Agric. and Construction	454,761	335,900	-118,860	-26.1	350,412	280,432	-69,980	-20.0
	Manufacturing	6,056,931	5,031,327	-1,025,605	-16.9	2,066,108	2,131,879	65,772	3.2
	Commerce	2,461,695	3,655,092	1,193,397	48.5	766,764	1,032,095	265,331	34.6
	Residential	2,061,175	2,730,541	669,367	32.5	795,232	1,029,360	234,128	29.4
	Household Passenger Cars	498,517	807,159	308,642	61.9	224,141	356,938	132,797	59.2
Carbon Output from Energy Consumption (10 <sup>3</sup> tC)	Final Carbon Output	171,045	182,794	11,748	6.9	65,808	71,744	5,936	9.0
	Agric. and Construction	6,898	5,402	-1,496	-21.7	6,005	4,718	-1,286	-21.4
	Manufacturing	97,738	79,009	-18,728	-19.2	33,694	32,300	-1,394	-4.1
	Commerce	32,295	49,050	16,756	51.9	10,869	14,239	3,370	31.0
	Residential	24,998	34,569	9,571	38.3	11,140	13,959	2,818	25.3
	Household Passenger Cars	9,118	14,763	5,645	61.9	4,100	6,528	2,429	59.2

Source: Statistics Bureau (2011b); METI (2011).

Notes.

•Growing prefectures are: Miyagi, Ibaraki, Tochigi, Gunma, Saitama, Chiba, Tokyo, Kanagawa, Ishikawa, Yamanashi, Nagano, Gifu, Shizuoka, Aichi, Mie, Shiga, Kyoto, Osaka, Hyogo, Nara, Okayama, Hiroshima, Fukuoka, Okinawa.

•Shrinking prefectures are: Hokkaido, Aomori, Iwate, Akita, Yamagata, Fukushima, Niigata, Toyama, Fukui, Wakayama, Tottori, Shimane, Yamaguchi, Tokushima, Kagawa, Ehime, Kochi, Saga, Nagasaki, Kumamoto, Oita, Miyazaki, Kagoshima.

•Manufacturing includes: Chemical, Chemical textiles, Pulp & Paper, Iron & Steel, Non-ferrous metals, Cement & Ceramics, Machinery, Duplication Adjustment, Other Industries & SMEs.

•Commerce includes: Water supply, Sewage & Waste Disposal, Trade & Financial Services, Public Services, Commercial Services, Retail Services, Others & Miscellaneous Services.