

International relations and solutions of environmental issues



D1 LE ANH TUAN
D1 CAO RUOMING

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Contents:

- Literature introduction
- Environmental issues
 - ✓ Global warming
- International relations
- Case introduction: Toyota Motor Corporation
- Future trend of environmental issues solution under globalization: sustainable development
- Summary

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Literature introduction

Title: “Environmental issues and international relations, a new global (dis)order - the role of International Relations in promoting a concerted international system”

by Joana Castro Pereira

Rev. Bras. Polít. Int. 58(1): 191-209 [2015]

DOI: 10.1590/0034-7329201500110

This article analyzes the growing importance of environment in international relations, and aims to raise awareness among International Relations scholars to the potential positive impact of the development of the discipline in integration with global environmental change studies

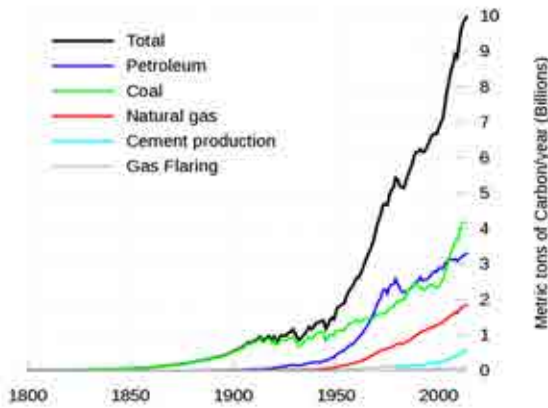
3

Environmental issues

- Environmental issues are harmful effects of human activity on the biophysical environment (source: Wikipedia).
- Human activities includes agriculture, industry, fishing, irrigation, mining and war, etc.
- Environmental issues includes climate change, pollution, environmental degradation and resource depletion, etc.
- A basic characteristic of environmental issues is that they are cross-disciplinary and it is this characteristic that so often makes them difficult to solve.

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Environmental issues



https://en.wikipedia.org/wiki/Environmental_impact_of_the_energy_industry#/media/File:Global_Carbon_Emissions.svg



https://en.wikipedia.org/wiki/Environmental_impact_of_paper#/media/File:PulpAndPaperMill.jpg

□ Global fossil carbon emission by fuel type increase year by year (1800-2007). And it would lead to the global warming.

□ Pulp and paper manufacturing requires large amounts of energy, and a portion of it comes from burning wood residue.

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Environmental issues



<http://www.sjzast.org.cn/twdl/5595.htm>



<https://e-info.org.tw/node/102420>

□ With climate change, some glaciers are also thinning. And it affects the survival of animals.

□ Deforestation occurred would lead to resource shortage and soil erosion.

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Global warming

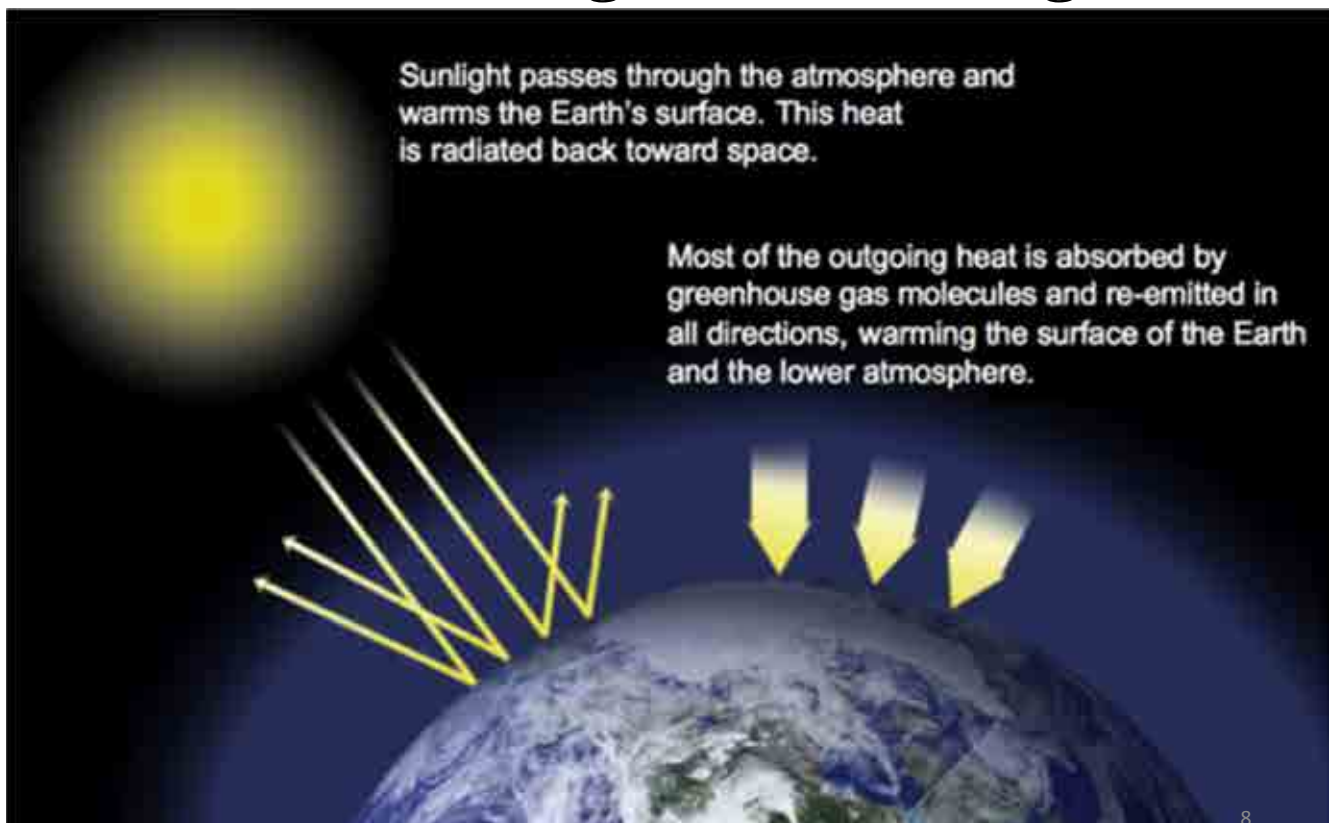
- Global warming is a long-term rise in the average temperature of the Earth's climate system (source: Wikipedia). It has become **one of the most severe challenges** facing human society.
- The environmental effects of global warming are broad:
 - Artic sea ice decline
 - Sea level rise
 - Extreme weather
 - Extreme events
 - Tropical cyclones
 - Ecosystem changes
 - and etc.



<https://www.tehrantimes.com/news/414713/Consequences-of-global-warming-over-Iran-and-the-Middle-Eastern>

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Causes of global warming



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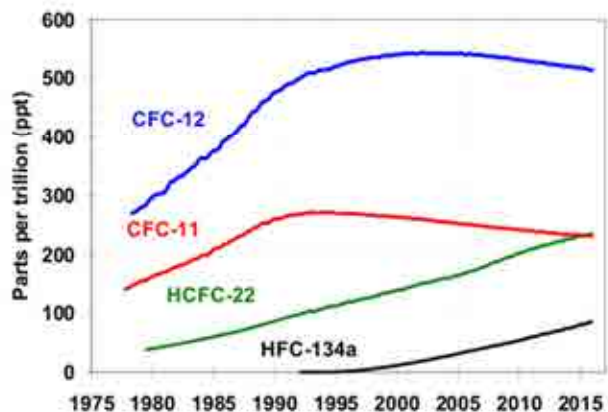
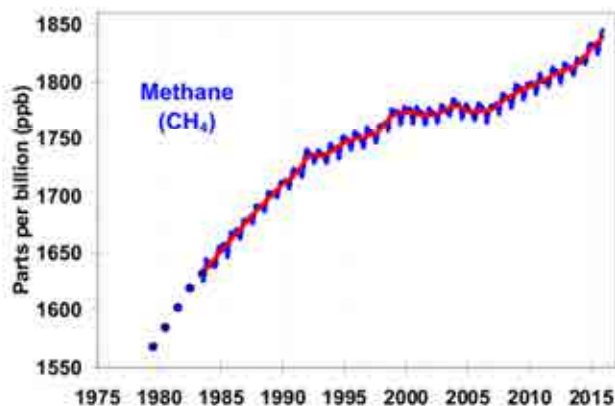
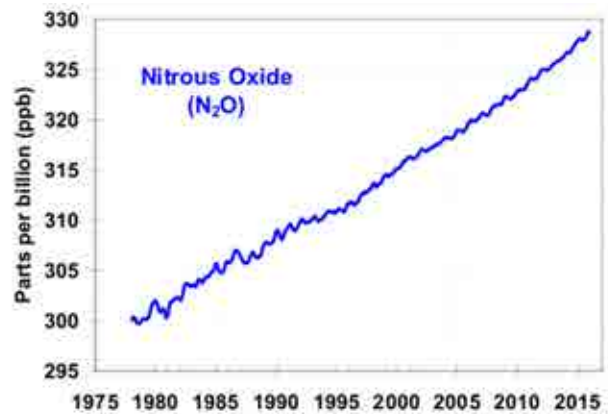
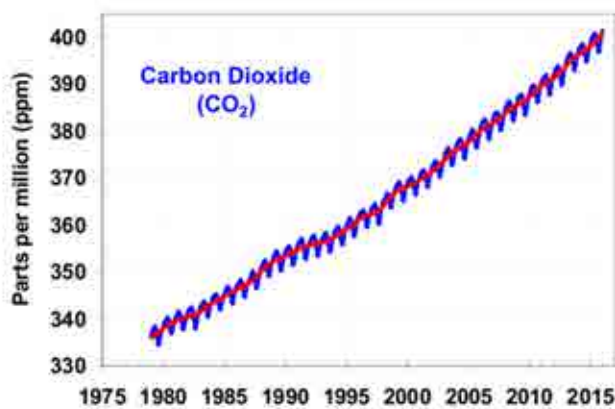
<https://climate.nasa.gov/causes/>

Situations and solutions of global warming by country



With the rapid economical development, what about the situation of environment behind of that?

Greenhouse gas emission increased year by year



Effects of global warming



Frost-free season (and growing season) will lengthen



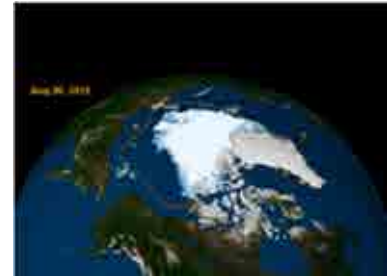
Changes in precipitation patterns



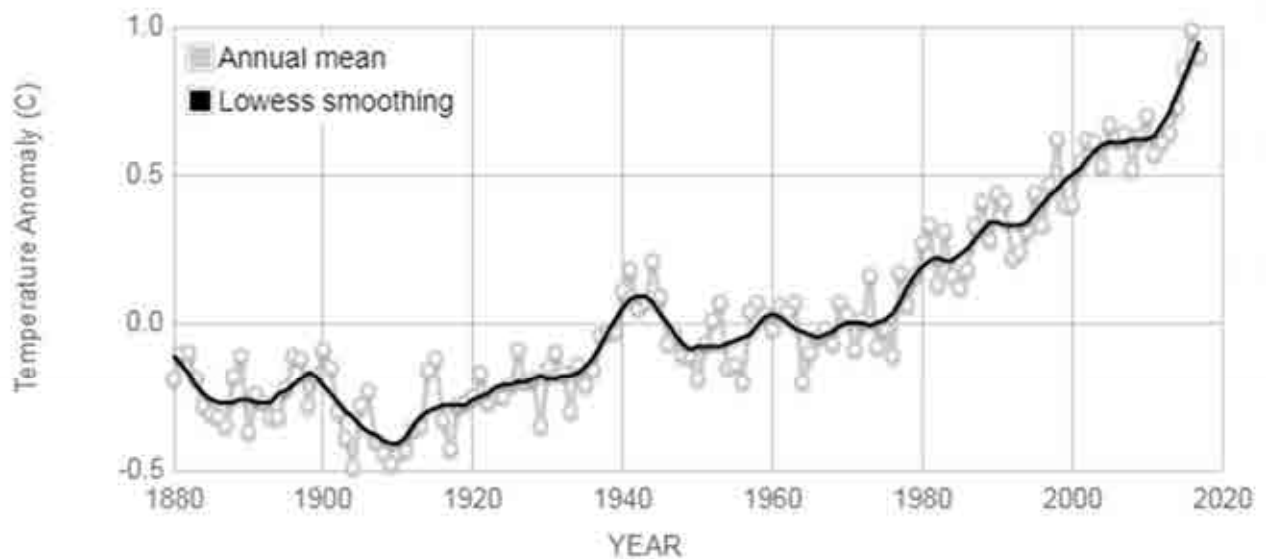
More droughts and heat waves



<https://climate.nasa.gov/effects/>
Sea level will rise 1-4 feet by 2100 Arctic likely to become ice-free



Global warming is very serious!



<https://climate.nasa.gov/vital-signs/global-temperature/>

International relations

International Relations is a field of study dealing with how nations with vary power, interest, and identity interact with each other in the absence of a **global government**.



<https://www.worldatlas.com/articles/what-does-globalization-mean.html>

Globalization

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Globalization

Globalization is considered as a “double-edged sword”. With rapid economical and social development, environmental challenges are important parts of these ambiguous and unpredictable effects of globalization.

Cooperation among countries for solving environmental issues

The international community faces many environmental issues, and the chaos might become much greater than what we have recently seen unless it cooperates to solve them.

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Environmental organizations



Earth System Governance



- United Nations Environment Program



PEMSEA

- Partnerships in Environmental Management for the Seas of East Asia



Global Green Growth Institute



- Intergovernmental Panel on Climate Change (IPCC)

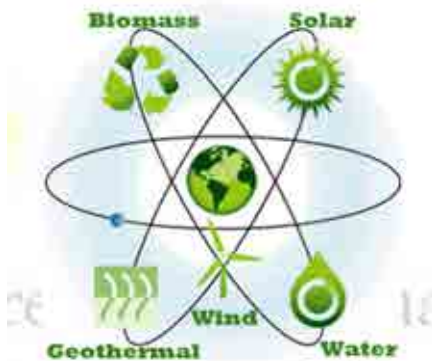


- International Union for Conservation of Nature



- European Environment Agency (EEA)

Solutions of environmental issues



https://www.researchgate.net/publication/316691239_Global_Warming_Causes_Effects_and_Solutions

Using renewable energy



Strictly controlling the CO2 emission from factories



<http://nymag.com/intelligencer/2018/03/the-epa-is-set-to-roll-back-vehicle-emissions-standards.html?gtn=top>n=bottom>

Reducing CO2 emission from transportation



<https://science.howstuffworks.com/environmental/green-science/5-green-myths5.htm>

Green activities

International cooperation on global warming

1. United Nations Framework Convention on Climate Change (UNFCCC)

- The UNFCCC (1992) is the primary framework for international climate change cooperation. Its objective is to stabilize greenhouse gas concentrations at a level that would prevent dangerous human induced interference with the climate system.
- The UNFCCC's Kyoto Protocol (2007) was ratified. The Kyoto Protocol binds developed countries to target to limit and reduce greenhouse gas emissions.
- Climate summit in Paris (2015) was held. Targets in detail were set.

Targets for reducing CO₂ emission in each countries

Countries	Target for decreasing CO ₂ emission
China	60–65 % by 2030 compared with 2005
EU	40 % by 2030 compared with 1990
India	33–35 % by 2030 compared with 2005
Japan	26 % by 2030 compared with 2013
Europe	70–75 % by 2030 compared with 1990
America	26–28 % by 2025 compared with 2005

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2. Mission innovation

- Mission Innovation (MI) is a global initiative of 23 countries and the European Union to dramatically accelerate research and development efforts for innovative clean energy technologies.



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- Innovation challenges are global calls to action aimed at accelerating research, development, and demonstration (RD&D) in technology areas where MI members believe increased international attention would make a significant impact in our shared fight against climate change.
- The innovation challenges were developed through a collaborative process between MI members.

		Australia	Austria	Brazil	Canada	Chile	China	Denmark	EC	Finland	France	Germany	India	Indonesia	Italy	Japan	Mexico	Norway	Republic of Korea	Saudi Arabia	Sweden	The Netherlands	UAE	UK	USA
1	Smart Grids Innovation Challenge	Participant	Participant	Participant	Participant	Participant	Lead	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
2	Off Grid Access to Electricity Innovation Challenge	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
3	Carbon Capture Innovation Challenge	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
4	Sustainable Biofuels Innovation Challenge	Participant	Participant	Lead	Lead	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
5	Converting Sunlight Innovation Challenge	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
6	Clean Energy Materials Innovation Challenge	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
7	Affordable Heating and Cooling of Buildings Innovation Challenge	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant
8	Hydrogen Innovation Challenge	Lead	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant	Participant

● Lead ● Participant

3. The climate and clean air coalition

- It is a voluntary partnership of governments, intergovernmental organizations, businesses, scientific institutions and civil society organizations committed to improving air quality and protecting the climate through actions.
- Activities to reduce black Carbon (aerosol) and methane emissions:



Case introduction: Toyota Motor Corporation Establishing a future society in harmony with nature

“Enriching lives of the community”



Toyota's forestry

Collaborative activities with employees of Toyota's affiliates, communities, and various organizations



Approximately 8.6 million trees planted in total

Examples of Toyota plants



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Planting trees at plants

- Employees and family members, and community members have planted native species.
- Employees of all the plants cultivate the trees to grow into abundant forests.



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Planting trees at plants

Along with the growth of the forests and biotope, surrounding native living creature and plants increasingly build nests, and these rich nature environments are starting to connect with the communities.



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Environmental activities grant

In addition to forestry, Toyota has launched environmental conservation projects in the company-owned fields and has gradually expanded the range of nature and habitats.



100 projects per annum

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Contribution to environmental education

Environmental education at each plant, community, and outside company-owned fields implementing environmental education according to the local culture.

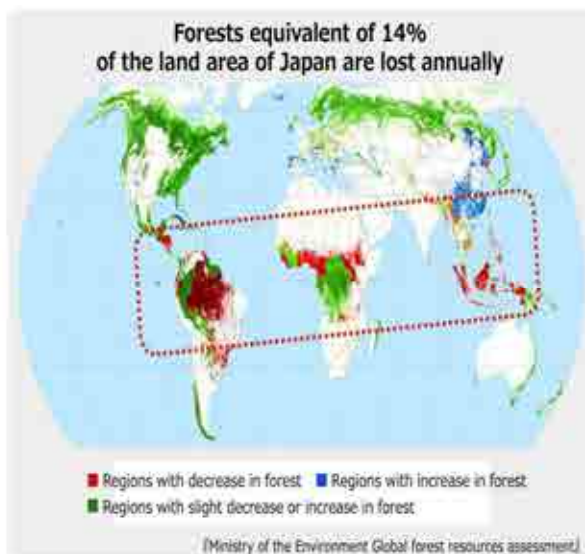


Over 430,000 participants

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Problem awareness

Habitats in each region are still segregated due to economic development, and biodiversity losses has not stopped.



In surrounding forests, grasslands, waterfronts, swamps, development is causing habitats to shrink and segregate.

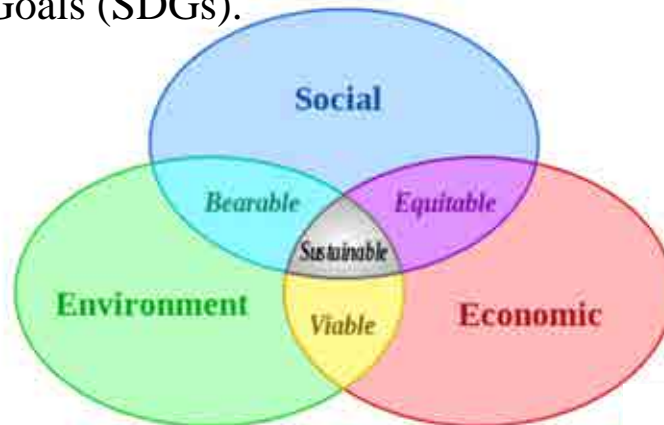


It is important to restore the fragmented habitats quickly!!!

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Future trend of environmental issue solution under globalization

- **Sustainable development** can be classified as development that meets the needs of the present without compromising the ability of future generations.
- In September 2015, the United Nations General Assembly formally adopted the "universal, integrated and transformative" 2030 Agenda for Sustainable Development, a set of 17 Sustainable Development Goals (SDGs).



Scheme of sustainable development

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Summary

- Globalization has created an era of rapid economic development, but environmental issues occurred one by one. It appeals that countries should cooperate to solve them.
- For global warming, one of the most serious environmental problems, international cooperation has been making much efforts to mitigate it.
- Toyota company, which we visited in Dec. 2018, also aims to establish a future society in harmony with nature and is giving its efforts.
- Sustainable world is expected to establish in the future.³⁰

Thank you very much for your attention



Land Use and its Impacts: An Observation in Tokyo Japan

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6. Summary

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What is Land Use?

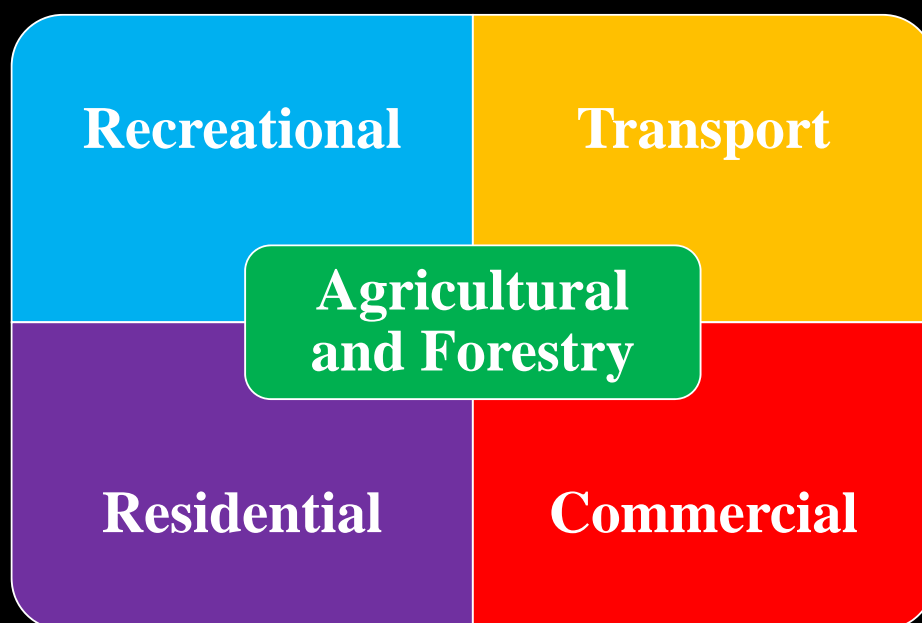


Land use is the function that humans apply to the land available to them.

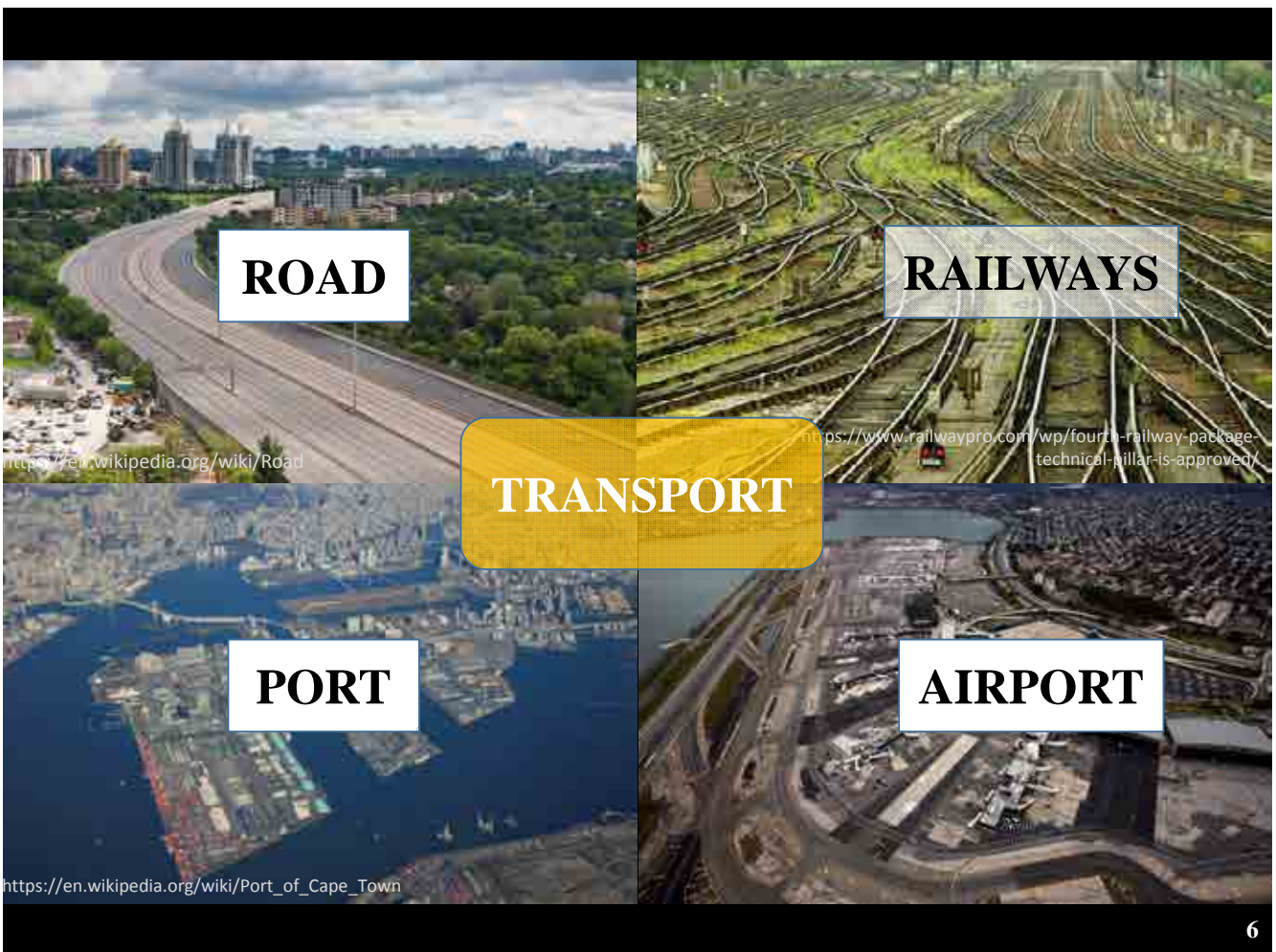
Land use involves the management and **modification of natural environment** or **wilderness into built environment** such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods.

3

Land Use Type



4



SINGLE-HOUSE



APARTMENT



RESIDENTIAL

CONDOMINIUM



TOWNHOUSE



FACTORY



SHOPPING MALL



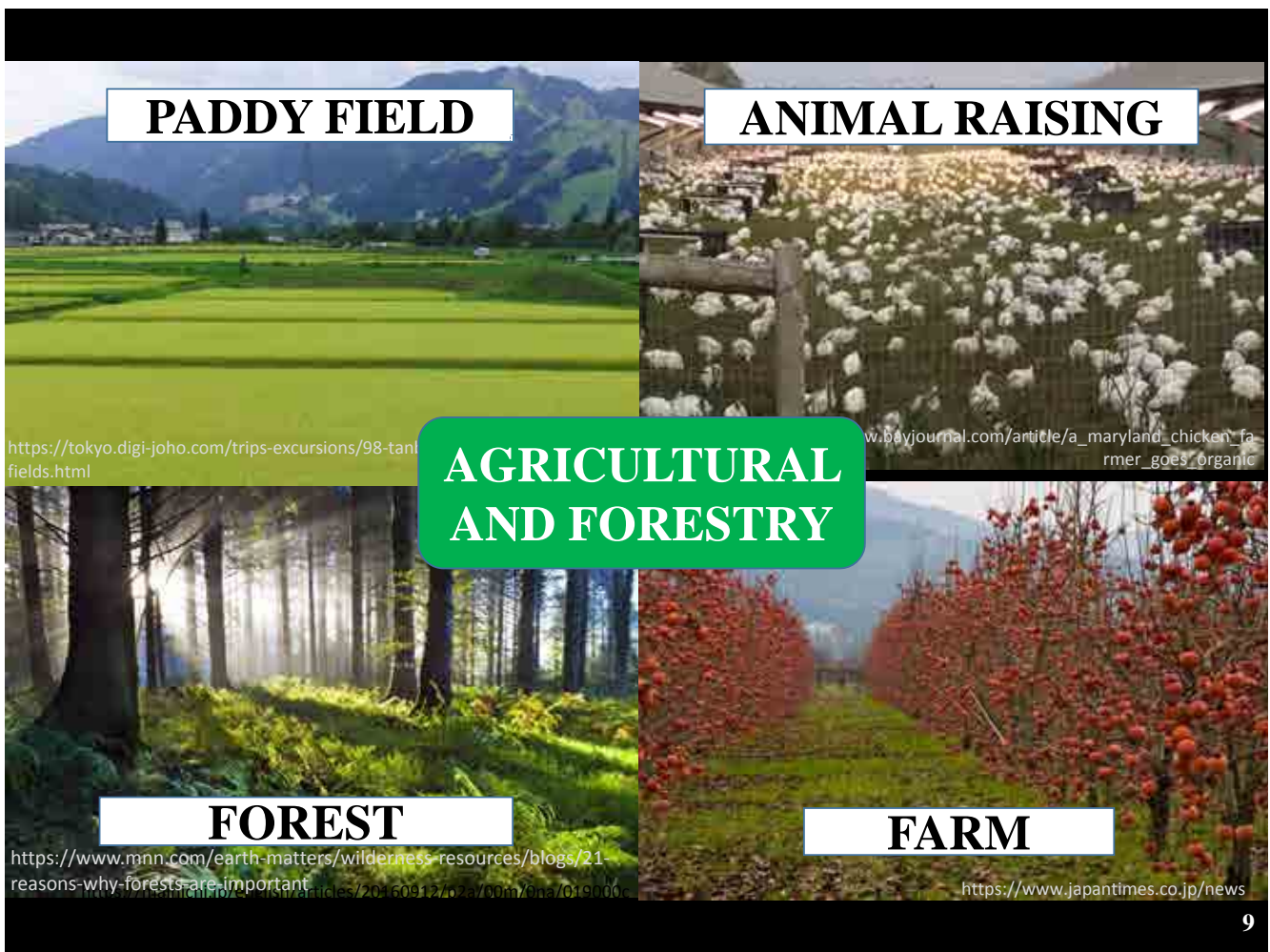
COMMERCIAL

MARKET PLACE



MINI MARKET





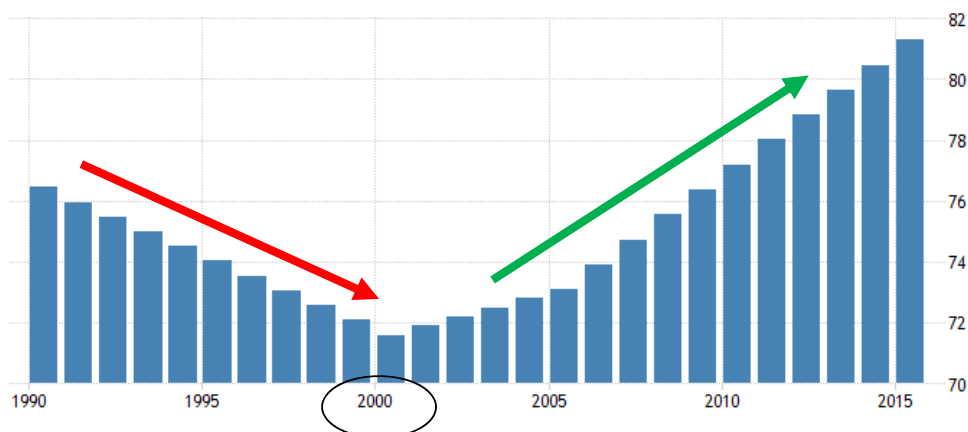
For what we have to know the land use?

- Land use is the **purpose that humans give to land that they own or settle on**. It's the way humans have adapted the natural world to their needs and in what proportions that changed land is utilized.
- **Zoning for land use is the permission governments and cities (policy) give regarding what can be built on a particular piece of land. This can be done for reasons of efficiency, desirability and environmental protection.**
- Understanding land use helps us to **predict issues** that might occur in the **future**, including environmental change, and to better and more efficiently plan our settlements.
- Land use planning can affect **social and economic** impacts, as well as **environmental** impacts

Case study of Land Use in Northern Laos and its Impacts

Brief Introduction in Laos:

- Forest area (% of land area) in Laos was reported at 81.29 % in 2015, according to the World Bank collection of development indicators, compiled from officially recognized sources.



Changes of Forest Area in Laos

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Policies play an important role in changing land use

Before 2000

After the withdrawal of France from Indochina in 1954, civil war and consequent social disorder continued until the beginning of the 1970s.

The introduction in 1986 of Chin Tanakan Mai, a **market-oriented economic** policy, and “**converting Indochina from a battlefield into a market place**” policy

After 2000

The overarching policy of the Lao government related to shifting cultivation has mostly remained the same over the past three decades, but during 1990s, the **Land and Forest Allocation Program** began in earnest, which was intended to be used as a mechanism to stabilize and eventually eradicate shifting cultivation.

This Program also supported by FAO program. It will be implemented through the FAO Technical Cooperation Programme project “Promoting Forest Landscape Restoration (FLR) in selected Southeast Asian Countries.”

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Continuity and Discontinuity in Land Use Changes: A Case Study in Northern Lao Villages

Thatheva SAPHANGTHONG* and KONO Yasuyuki**

Abstract

This article highlights land use changes of composite swidden farming villages in the northern part of Laos under the drastic transformation of political and economic systems at national and regional levels, including civil war, independence, implementation of a planned economy and the introduction of a market-oriented economy, during the last several decades. Interpretation of remotely sensed images and farming system analysis of the selected study villages revealed the extensive development of agriculture coupled with a rapid deforestation in the 1970s and the early 80s and the intensification of land use and commercialization of farming in the following period. **These findings suggest two kinds of mechanisms of land use changes: continuous and gradual changes under a social regime and discontinuous and drastic changes when the social regime collapses.** This article concludes that the latter mechanism is much more destructive and exploitative than the former and dominates the long-term tendency of land use changes.

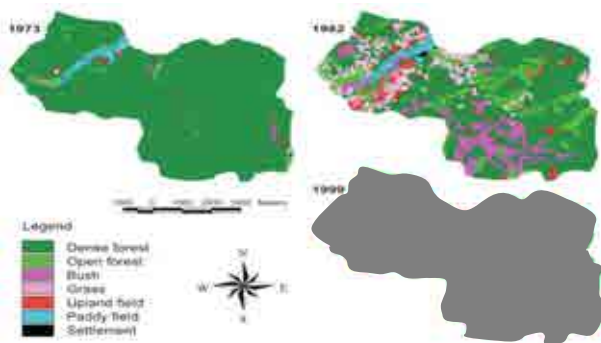
Keywords: land use changes, deforestation, shifting cultivation, social regime, air- and satellite-born images, Oudomxay province

Research Period of time: 1975-1999

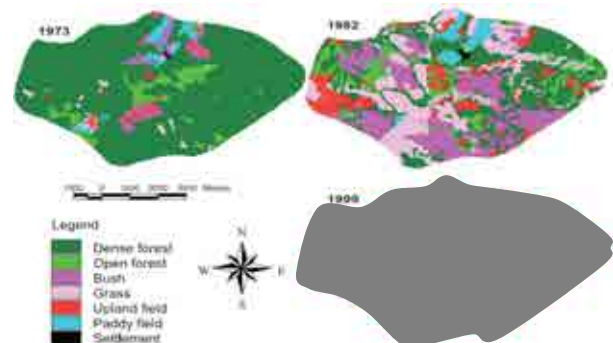
13

Period 1 (1975-1982)

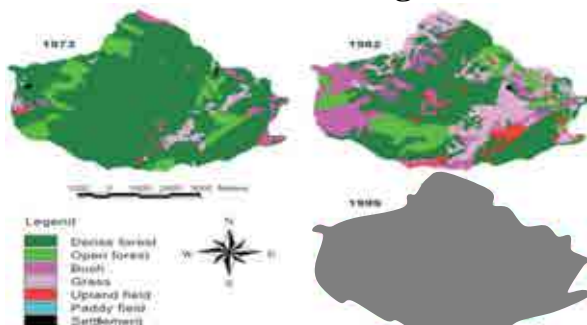
1. Napa Tai Village



2. Samkang Village



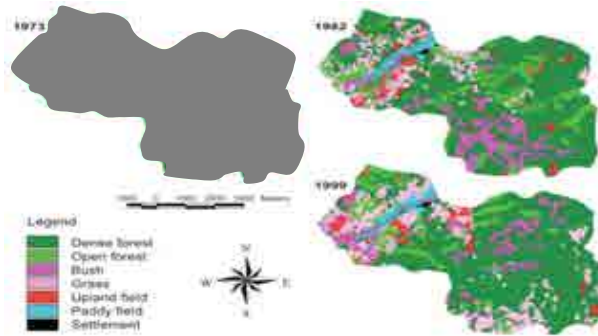
3. Oudom Village



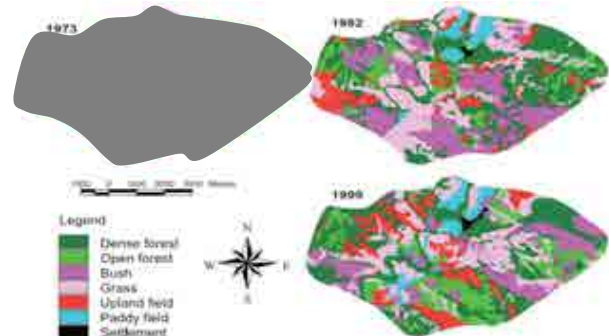
- Land use **conversion from forest to agricultural land** was caused by population increase due to increasing demand for food.
- Before 1975, during the civil war, **the local Villagers had to construct shelters in the forest** and move there to escape from bombing
- After 1975, Bombing stopped, **they tried to produce rice through shifting cultivation activity** to improve their economic activities (Drastically change and social regimes collapse In transition)

Period 2 (1982-1999)

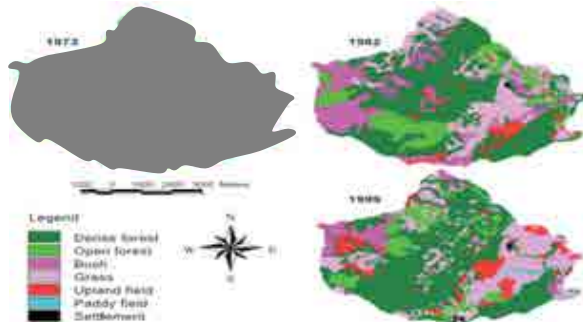
1. Napa Tai Village



2. Samkang Village



3. Oudom Village



- Period 1982-1999, in 1997 introduced the **land-forest allocation program** in the study area. The government held up a policy target of banning shifting cultivation and, as a transitional measure.
- The government also promoted a **migration program** for shifting cultivators settled in mountainous areas and far from the road network to move them to areas of the valley bottom and near the road.

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1. Changes in Land Use of Napa Tai Village

Year	1973	1982	1999
Dense forest	95.0	56.8	57.8
Open Forest	1.0	13.1	9.3
Bush	0.7	12.4	8.7
Grass	0.7	10.6	17.6
Upland field	0.4	4.6	3.6
Paddy Field	2.2	2.3	2.8
Settlement	0.0	0.2	0.2

2. Changes in Land Use of Samkang Village

Year	1973	1982	1999
Dense forest	82.6	30.7	29.9
Open Forest	6.4	10.4	15.4
Bush	4.4	22.3	15.3
Grass	1.7	22.8	22.3
Upland field	1.8	9.9	11.6
Paddy Field	3.0	3.6	5.0
Settlement	0.1	0.3	0.5

3. Changes in Land Use of Oudom Village

Year	1973	1982	1999
Dense forest	80.7	46.6	49.2
Open Forest	11.3	13.2	9.9
Bush	3.5	17.3	22.2
Grass	3.6	18.4	9.5
Upland field	0.7	4.3	8.4
Paddy Field	0	0.1	0.4
Settlement	0.2	0.1	0.4

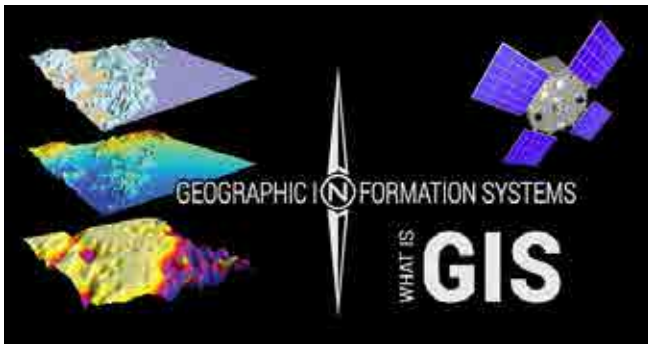
Result shows:

- Percentage of forest in the study area drastically decrease in two period time
- Forest change to agricultural land due to the demands of food at the village level.
- It has a good impact on their livelihood and the economic each household.
- But, the other hand it has a negative impact, natural resources from the forest disappear caused by deforestation.

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Method to Observe the Land

➤ Geographic Information System (GIS)



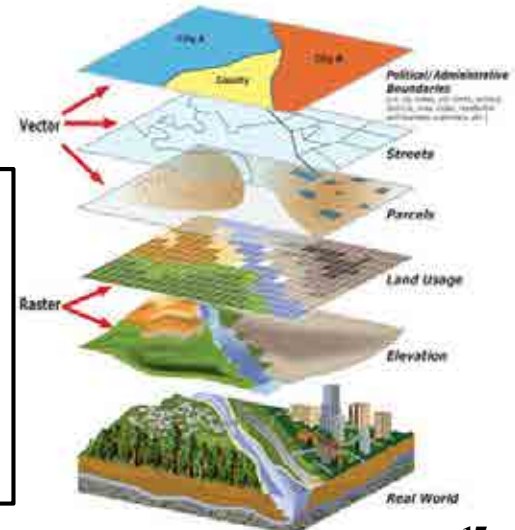
<https://gisgeography.com/what-gis-geographic-information-systems/>

GIS is a computer-based tool that analyzes, stores, manipulates and visualizes geographic information, usually on a map.

GIS comes down to just four simple ideas:

- **Create** geographic data
- **Manage** geographic data
- **Analyze** geographic data
- **Display** geographic data on a map

These are the primordial functions of a GIS.



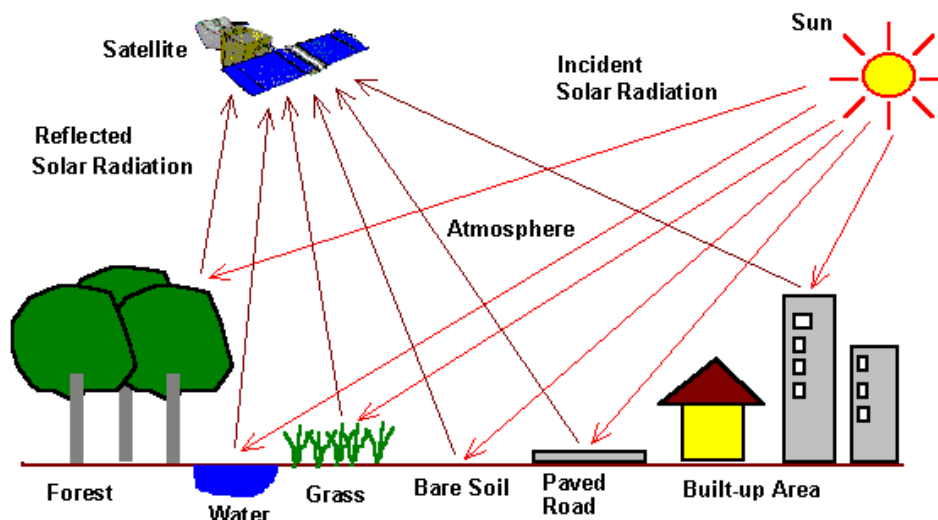
<http://icodeit.org/2014/04/intro-map-gis/>

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Method to Observe the Land

➤ Remote sensing (RS)

RS is the process for detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance from the targeted area. Special cameras typically from aircraft or satellites will collect remotely sensed images of the earth, which help us “sense” things about the earth.



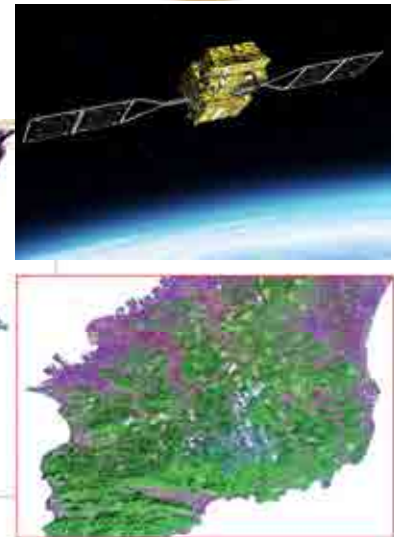
<http://maps.unomaha.edu/Peterson/gis/notes/RS2.htm>

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Method to Observe the Land

Global Change Observation Mission - Climate “SHIKISAI” (GCOM-C)

The SHIKISAI was launched from the Tanegashima Space Center at 10:26:22 on December 23, 2017 (Japan Standard Time). The image shown in the left is a true color composite image and the image in the right is a false color composite image of 250 m spatial resolution captured over Kanto area in Japan by the SHIKISAI around 10:30 on January 6th 2018 (JST).



Color composite image of vegetation in Japan

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Method to Observe the Land



Japan Aerospace Exploration Agency (JAXA) **Earth Observation Research Center (EORC)**

EORC receives data from Japanese and foreign earth observation satellites, then processed, inspected and analyzed.



The data are provided to regional public organizations, research institutes, and universities which utilize it in various fields, such as environmental problem resolution, disaster observation, and resource exploration. Also, for the effective use of the observation data, EORC cooperates internationally to collect data and provide as data sets.

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Type of Satellite: An Observation in JAXA



Source: Observation in JAXA, Hatoyama-Machi, Saitama on 7 December 2018

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Type of Satellite	Purpose
ALOS	Advanced Land Observation Satellite to precise land coverage
GOSAT	Green house gases observation
ADEOS ADEOS-I ADEOS-II	Advanced Earth Observing Satellite - Earth environmental research: integrated observation of geophysical parameters, global observation of land, ocean and atmospheric processes (ocean color and sea surface temperature)
MUOS 1	(Mobile User Objective System) is a next-generation narrowband tactical satellite communications system designed to significantly improve ground communications for U.S. forces on the move.
JERS-1	Japan Earth Resources Satellite focus on survey of geological phenomena, land usage (agriculture, forestry), observation of coastal regions, geologic maps, environment, disaster monitoring, etc.
LANDSAT	Landsat for global change research and applications in agriculture, cartography, geology, forestry, regional planning, surveillance and education, and can be viewed through the U.S. Geological Survey (USGS) 'Earth Explorer' website.
ERS-1	European Remote Sensing for Earth's land surfaces, oceans, and polar caps
SPOT	exploring the Earth's resources, detecting and forecasting phenomena involving climatology and oceanography, and monitoring human activities and natural phenomena

Land Use in Japan

Brief Introduction in Japan:

- 73% of Japan is mountainous
- The terrain is mostly rugged and mountainous with 66% forest

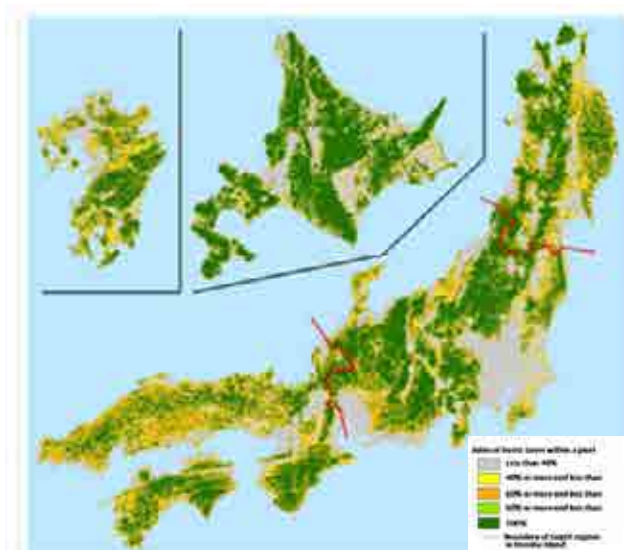
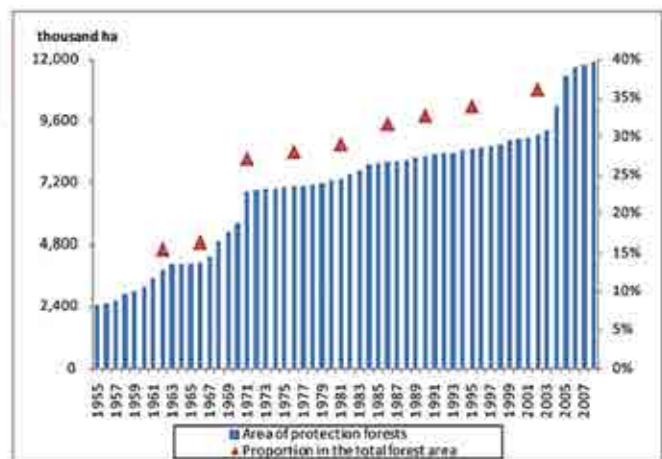
Forest	Agricultural land	Residential area	Water surface, rivers, waterways	Roads	Wilderness	Other
66.4%	12.8%	4.8%	3.6%	3.4%	0.7%	8.3%
251,000 km ² (97,000 sq mi)	48,400 km ² (18,700 sq mi)	18,100 km ² (7,000 sq mi)	13,500 km ² (5,200 sq mi)	13,000 km ² (5,000 sq mi)	2,600 km ² (1,000 sq mi)	31,300 km ² (12,100 sq mi)

Source: [Ministry of Land, Infrastructure, Transport and Tourism](#)

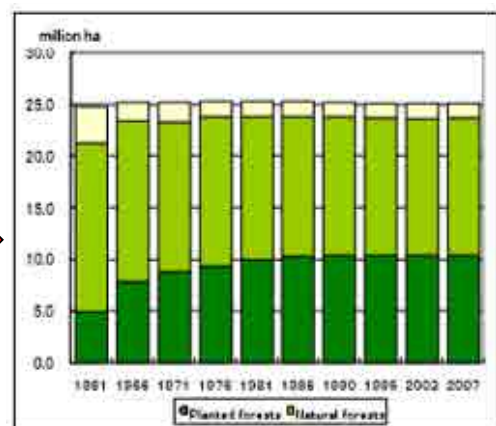
23

Changes in area of protected forests in Japan

- From 1955 to 2007, the total area of protected forest in Japan gradually increase due to the policy of forest protected area



Sources: Forest Agency, Japan



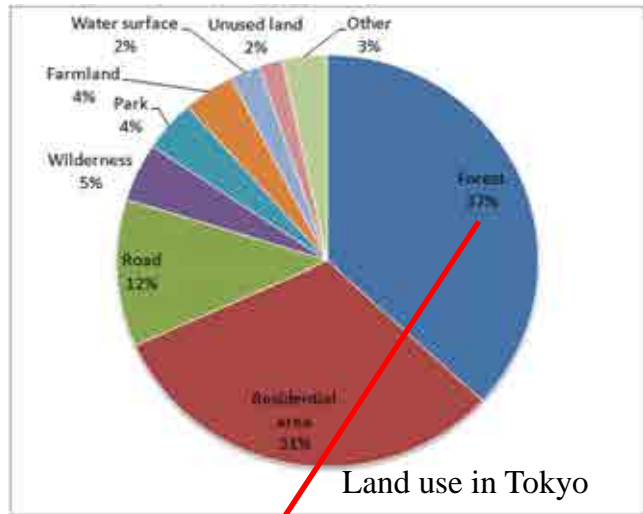
Changes of Forest in Japan in 1951-2007

Sources: Forest Agency, Japan

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Land use in Tokyo: Problem and Its Regulation

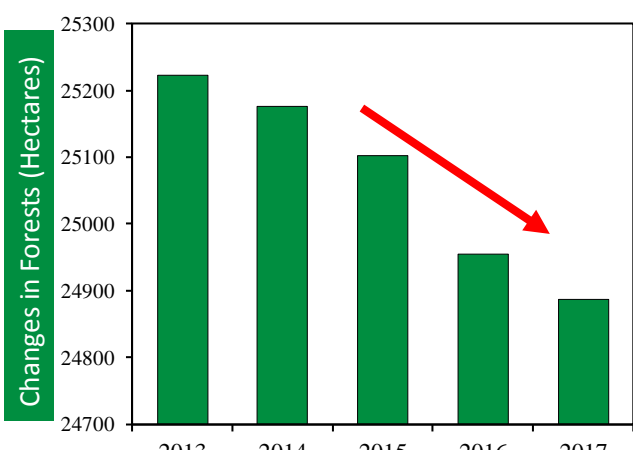
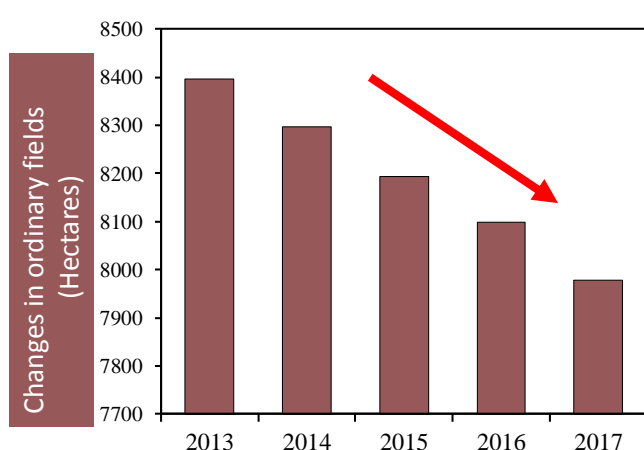
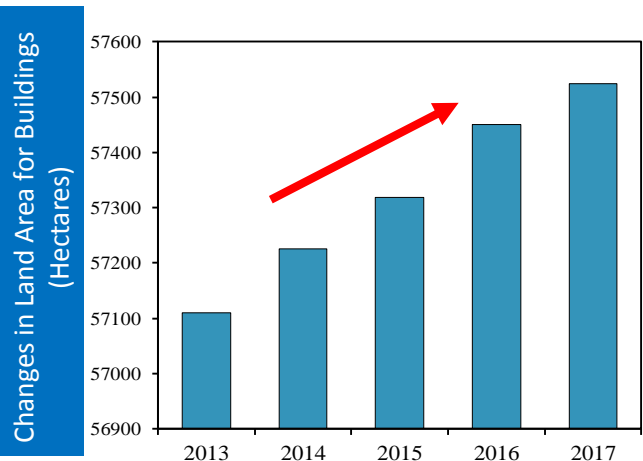
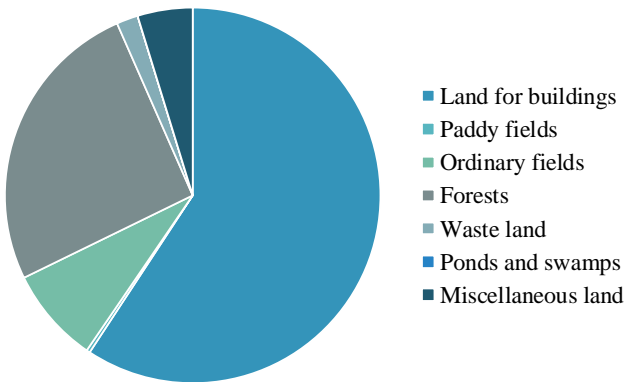
- Tokyo is Mega Metropolitan City with the highest population city in the world.
- 37 million people are living in the metropolitan area (United Nations)



A booklet Kurashi to Tokei 2016
くらしと統計 2016

Where is the Forest?

Land use in Tokyo



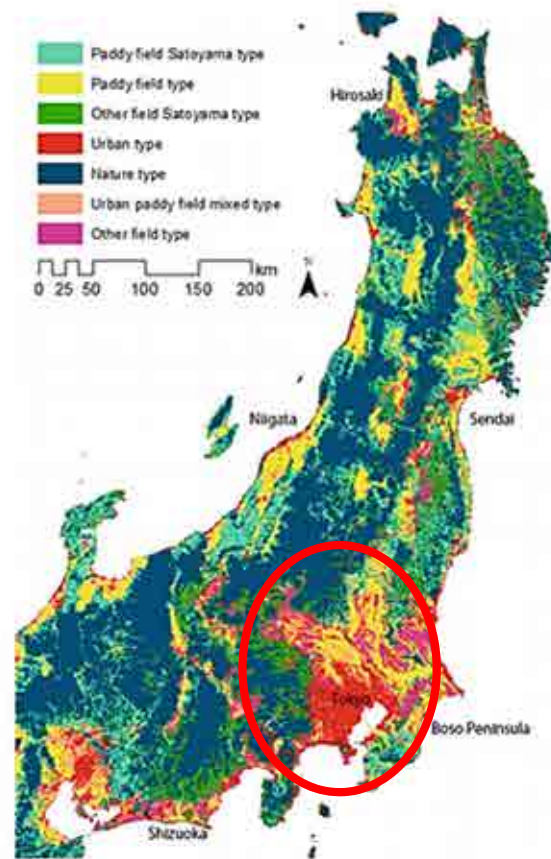
Japanese Basic Landscape Types, and Change in Population and Urban Land Use

Hiroyuki Shimizu

Abstract This chapter illustrates typical landscape types extracted by principal component analysis and cluster analysis. It also discusses the distribution patterns and characteristics of these landscape types and examines the relationship between land use and population changes. The following seven landscape types were extracted: urban landscape, urban paddy field mixed landscape, paddy field landscape, other field landscape, paddy field satoyama landscape, other field satoyama landscape, and nature landscape. Then, through the combination analysis of land use and population changes in recent years, shrinking, compacting, stability, scattering, and expanding tendencies are observed. Not only in Nagoya but also in the periphery of the Tokyo Metropolitan Area, a mosaicked structure of the above tendencies was clearly observed, with satoyama landscape types most dramatically confronting the crisis of disappearance.

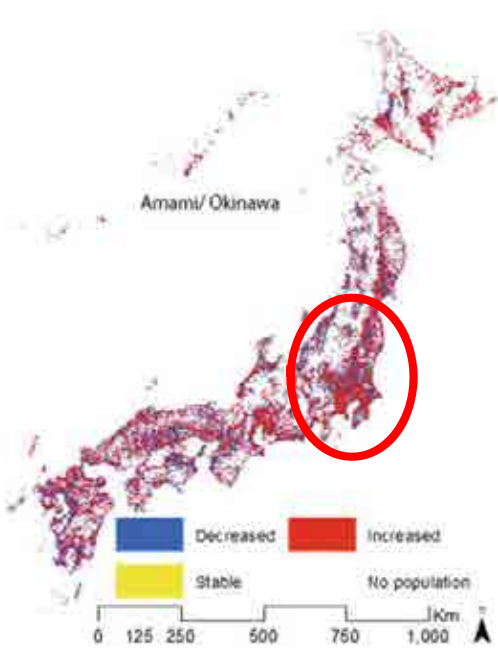
Keywords Population · Land use · Change · Landscapes type · Population

This paper shows the population and urban land use change in Japan between two periods:
Period 1 : 1975 – 2010
Period 2 : 2005 – 2010

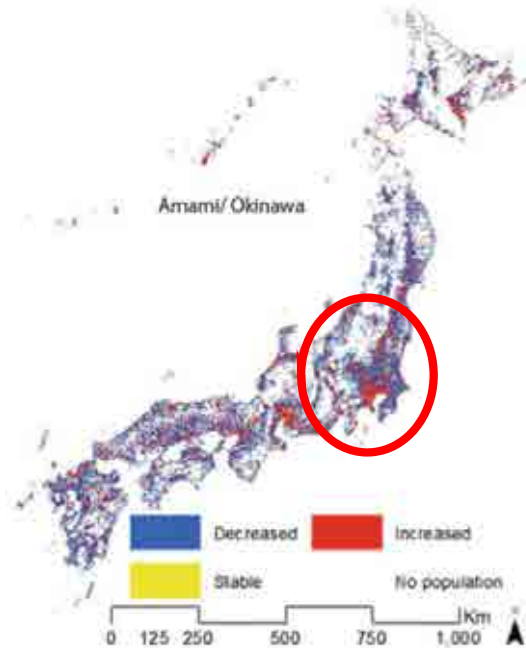


Basic landscape types in Tohoku, Kanto, Hokuriku and Tokai wide regions

Population changes between 1975 and 2010 in Tokyo

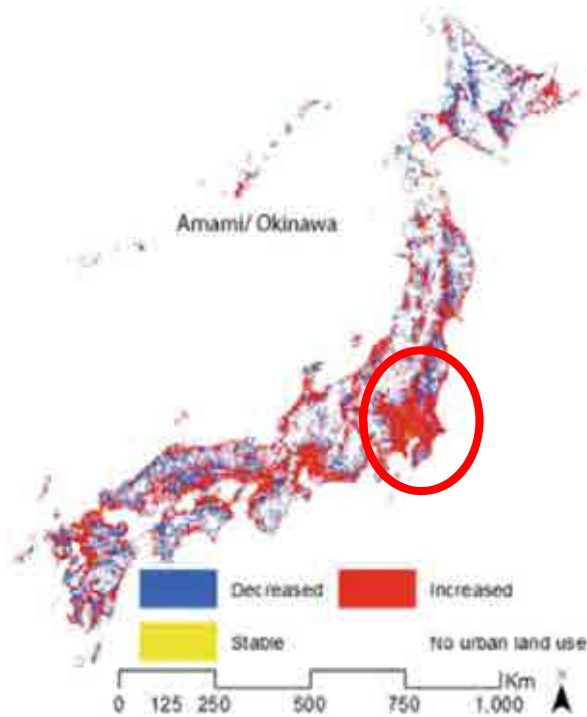


Period 1: 1975-2010

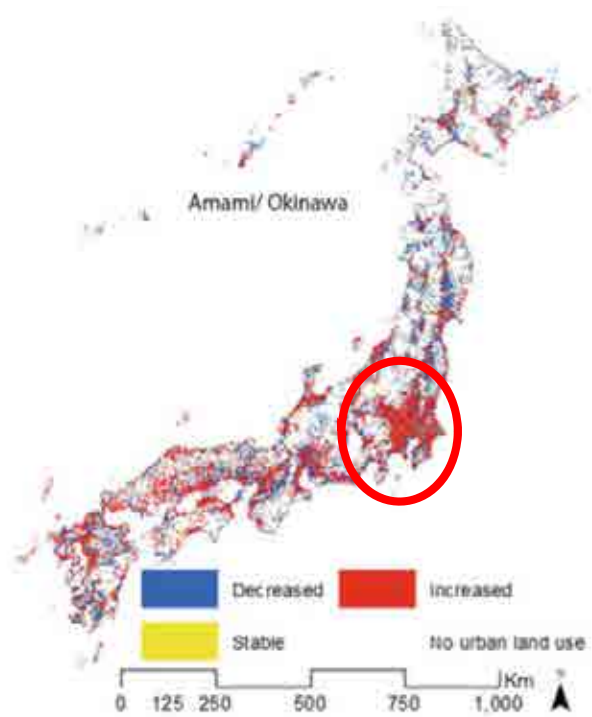


Period 2: 2005-2010

Urban land use changes between 1975 and 2010



Period 1: 1975-2010

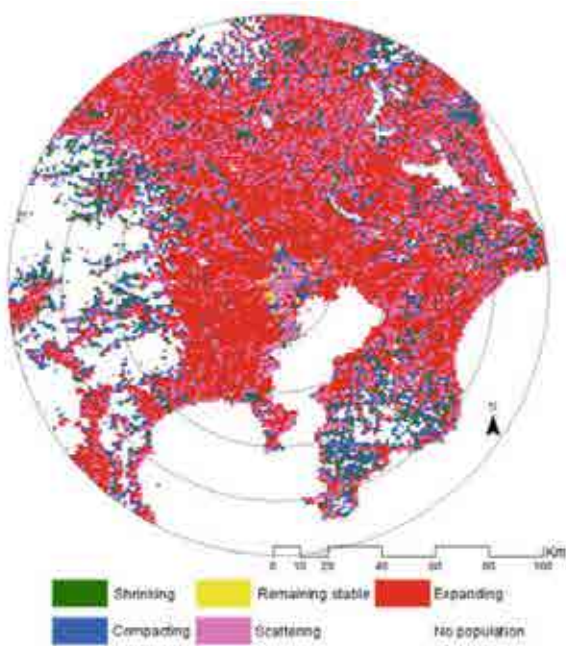


Period 2: 2005-2010

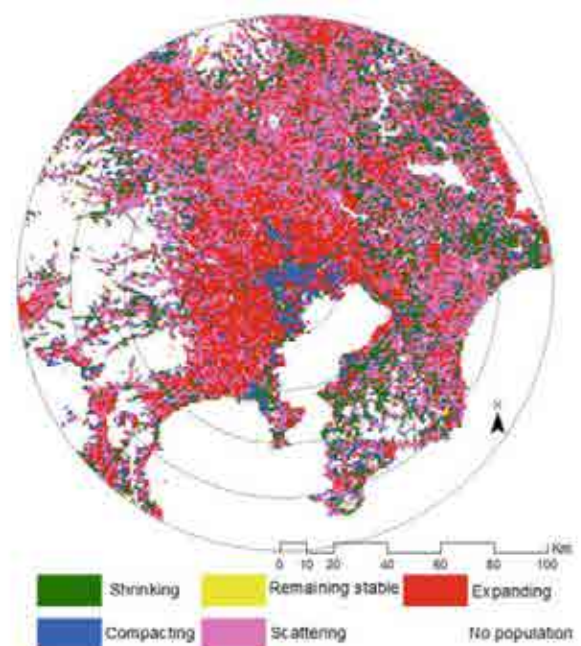
Source: Shimizu, 2017

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Spatial distribution of combination changes of population and urban land use in Tokyo



Period 1: 1975-2010



Period 2: 2005-2010

Source: Shimizu, 2017

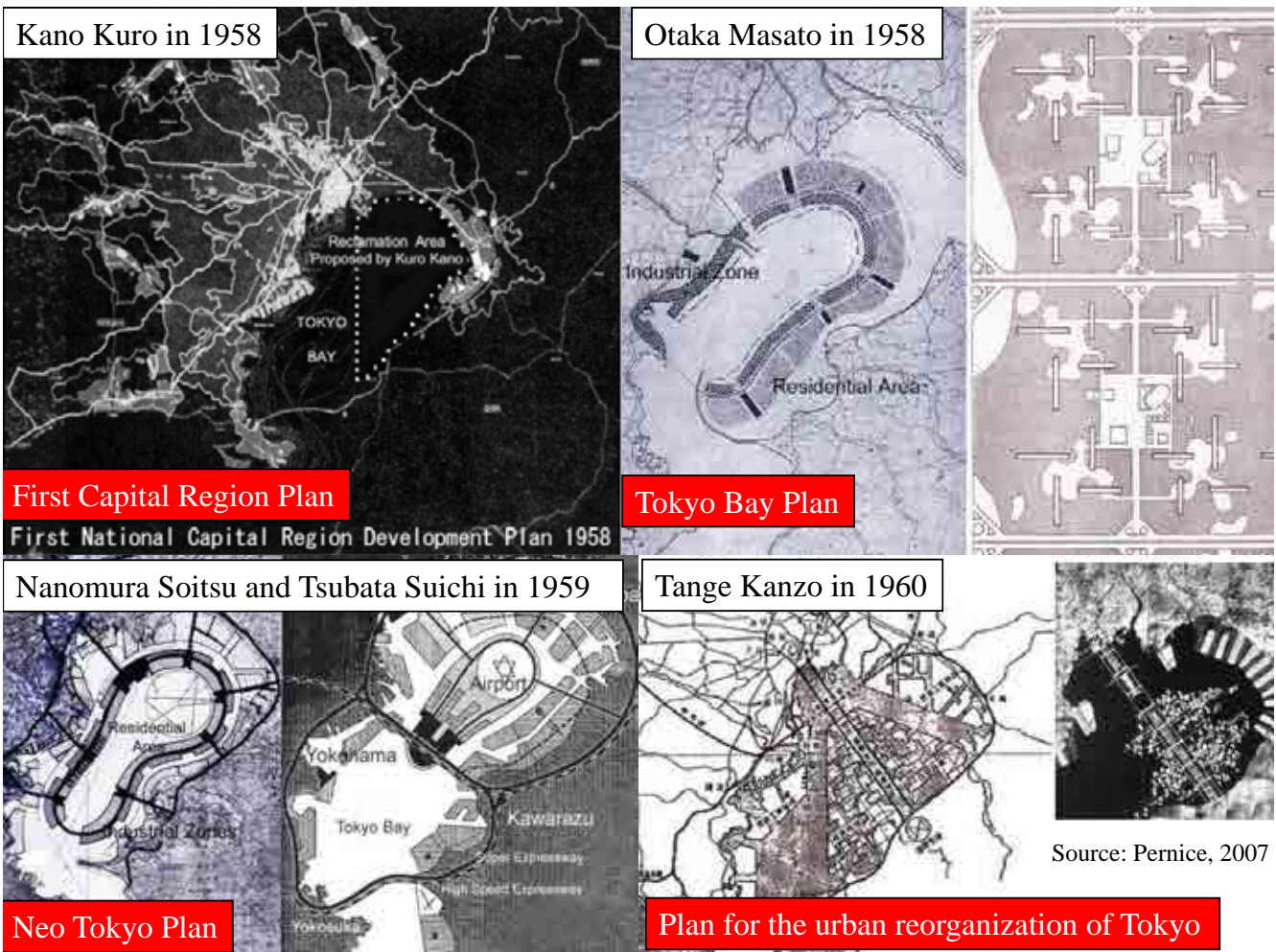
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The Policy in Japan

- **To improve the economic:** In 1950s there is the Japanese economic policy after the world war 2, during Japan's post-war, various coastal areas across Japan undertook vast land reclamation projects to house maritime and industrial factories, including Tokyo Bay.
- **To keep the food sufficiency due to increased population:** In 1992, Japan designated roughly 13,000 hectares of urban land nationwide, and around 3,200 hectares in Tokyo, as "Productive Green Space", offering 30 years of tax incentives to those who would use the area for Agriculture Purpose.
- **To increase the society and economy:** in the 1990s, Tokyo governor redevelops Odaiba as a Tokyo Teleport Town a showcase for a futuristic living, with new residential and commercial development housing a population of over 100,000 peoples.

As the biggest city in the world, Tokyo has no more land.

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Land Reclamation: An Observation in Odaiba, Tokyo

Currently Odaiba is an area where being kind to the environment for a way of business and life.



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<https://explorernippon.com/travel/odaiba-tokyo/>

History of Odaiba

Odaiba's Maritimes past

- Hundreds of years ago (Called Shinagawa)
- Japan used ships for cargo transportation
- Place to transfer big freighters to smaller vessels
- The good things brought to "Edo"

The shook incident in Japan (1639-1854)

- Foreigners was forbidden to enter Japan except Dejima (Nagasaki Prefecture) as a window for trade
- 1853 four warships arrived in Kanagawa Prefecture carrying letter from the President USA to open the country and gave Japan ultimatum for a year.

The origin of the place called Odaiba

- To protect Edo Castle from the gunfire of warships, the government of the time decided to erect fortresses
- The name "Odaiba" is derived from this historical background, as the Japanese term for fortress is "daiba".

Convention of Kanagawa

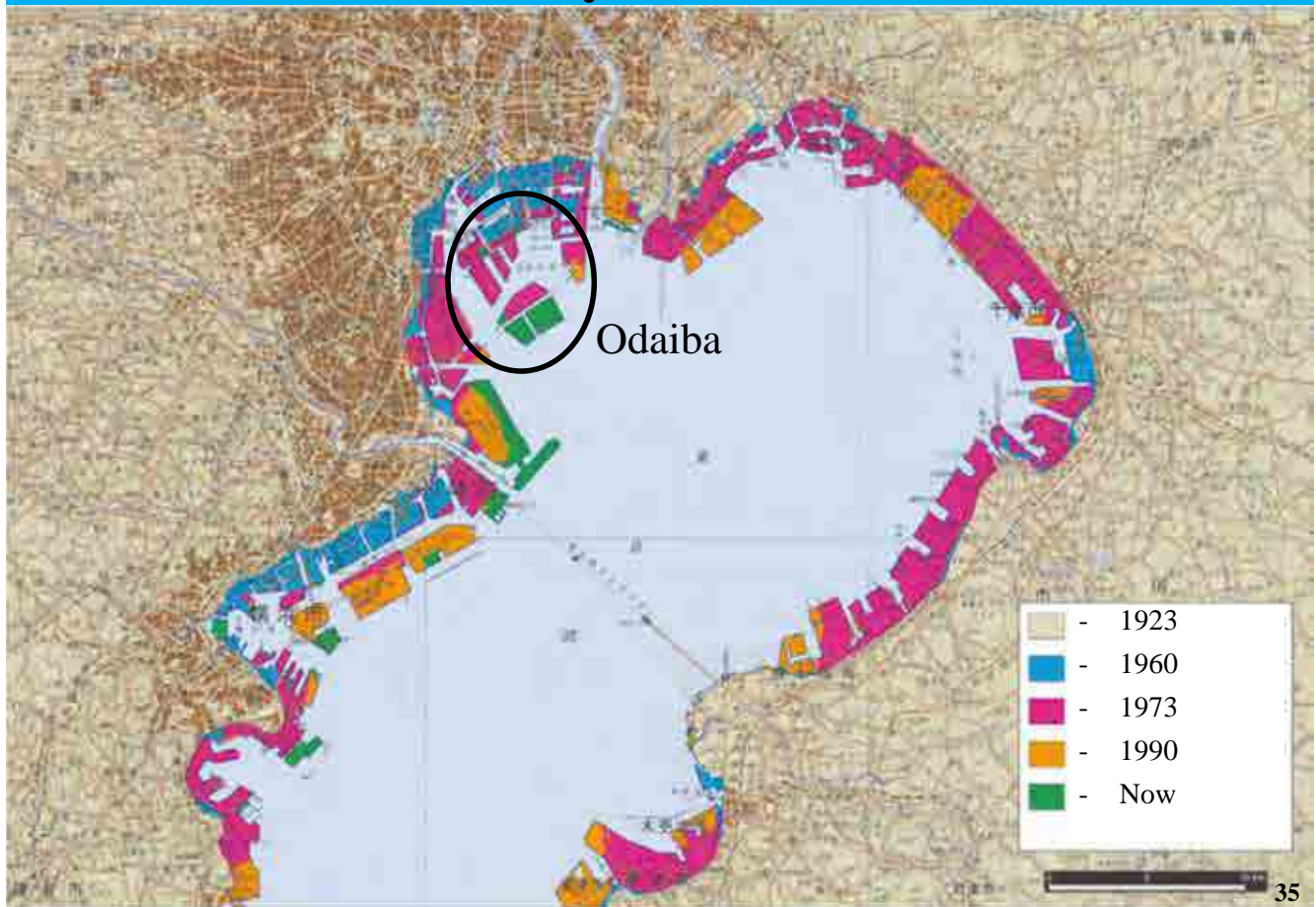
Because the construction process of Odaiba's fortresses took a long time, finally government changed its policy and ultimately signed the Convention of Kanagawa (March 31th 1854)

After Convention

- Odaiba has never seen a single day of combat
- Then Odaiba was used as a shipyard.
- After the 2nd World War, it became the home of a camp for war orphans.

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Odaiba in Tokyo Reclamation land



**Is Odaiba the solution of land use problem in Tokyo?
What is the reclamation land made in Tokyo?**

- Reclaimed land in Tokyo is **made up of the landfill from waste materials, sand from dredging, soil removed from construction sites.**
- It is not only used to create man-made islands in harbors **but also used to make embankments/dams in inland areas.**
- **Land use planning for Odaiba was already thinking about the negative impacts of reclamation. Decision makers had considered preventing the effects.**

Wasteland: Tokyo grows on it own trash

The island is composed of ash from incinerated trash, pulverized non-burnable trash, and processed sewage sludge along with real soil.

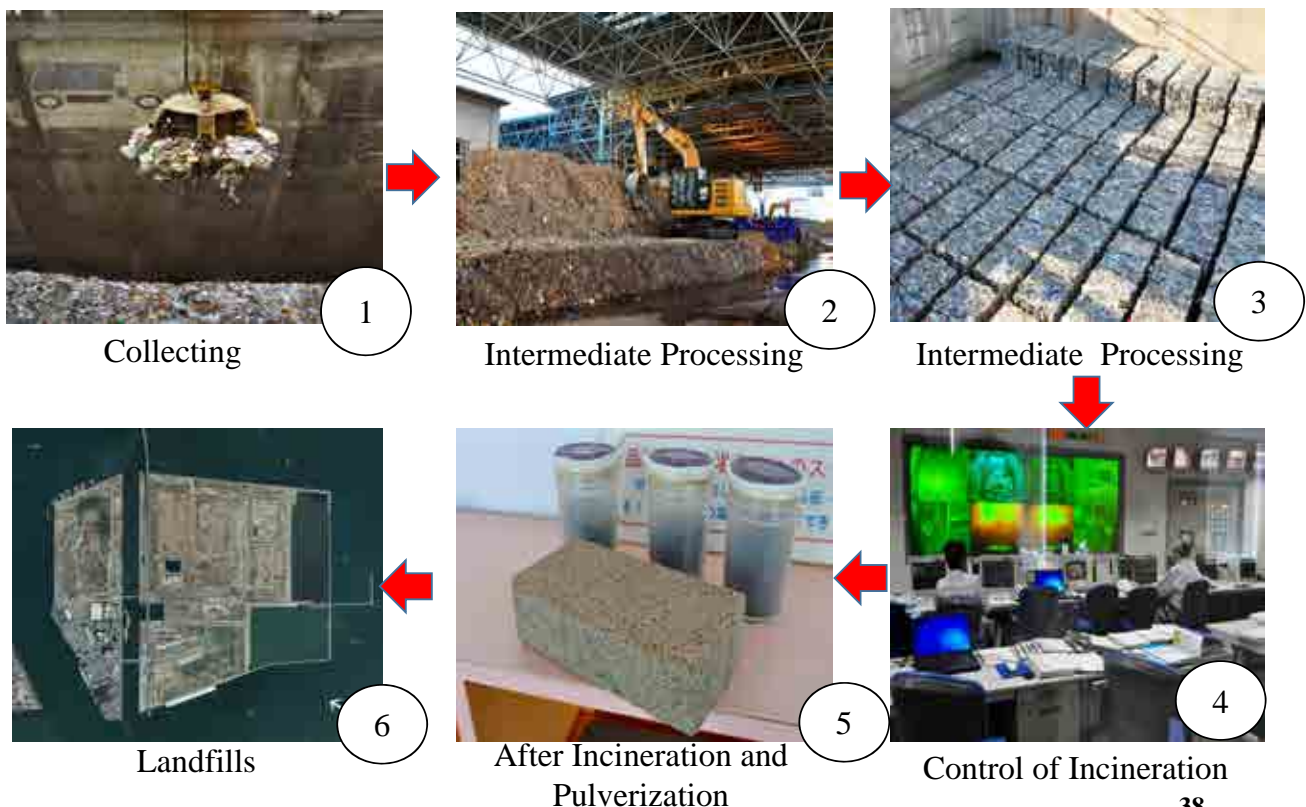
Exhaust pipes for methane gas seeping from the garbage underfoot stud the mass, while exposed sedimentary layers reveal plastic scraps and other refuse.



Reclamation of The Central Breakwater landfill sites (left, middle) and the New Sea Surface Disposal Site (right)

Source: Japan Times
<https://www.japantimes.co.jp/life/2017/02/18/environment/wasteland-tokyo-grows-trash/#.XDL-uFwzbiU>

How its process?



Water Management System in Odaiba

As a big city and has lot of population , Tokyo has many good management water systems. For example [Shibaura, Sunamachi, Ochiai, and Ariake Water Reclamation Center](#)

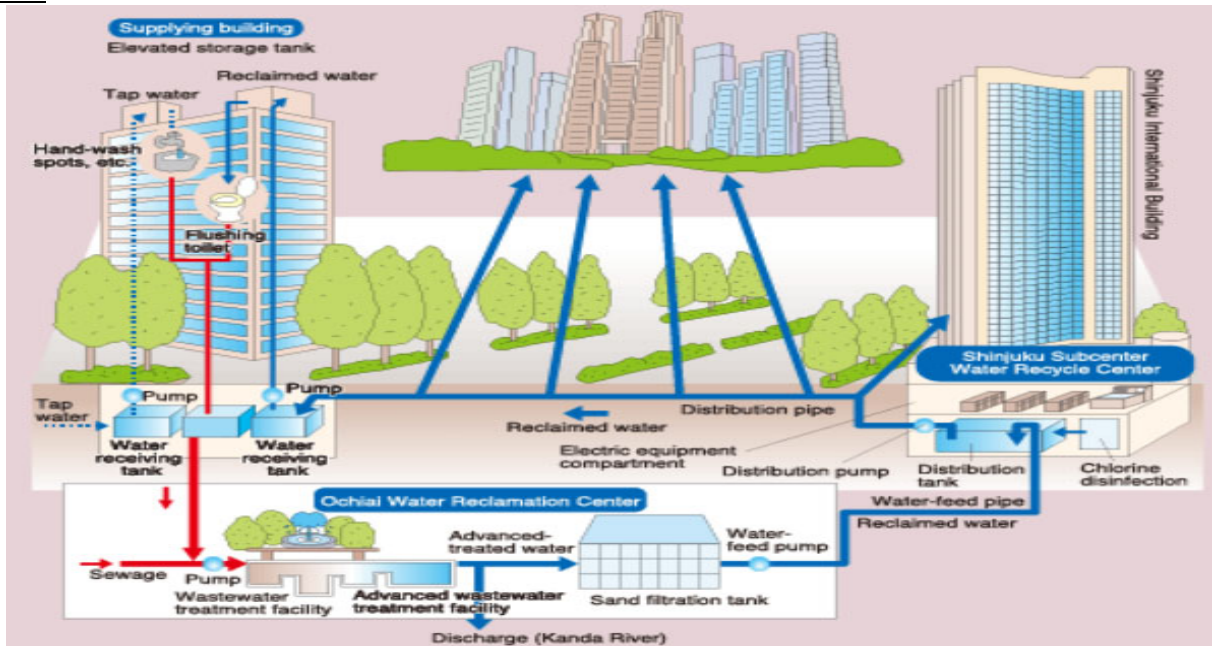


Diagram Proses of Ochiai Water Reclamation Center

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Prevent the Coastal Erosion

To prevent the coastal erosion several types of protection works have been employed:

- (1) Sea wall
- (2) Submerged breakwater,
- (3) Artificial nourishment,
- (4) Their combination

Over a stretch of 5 km, the shoreline was protected with coastal jetties and sea walls

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Eco-Housing (20% CO₂ Emission Reduction)



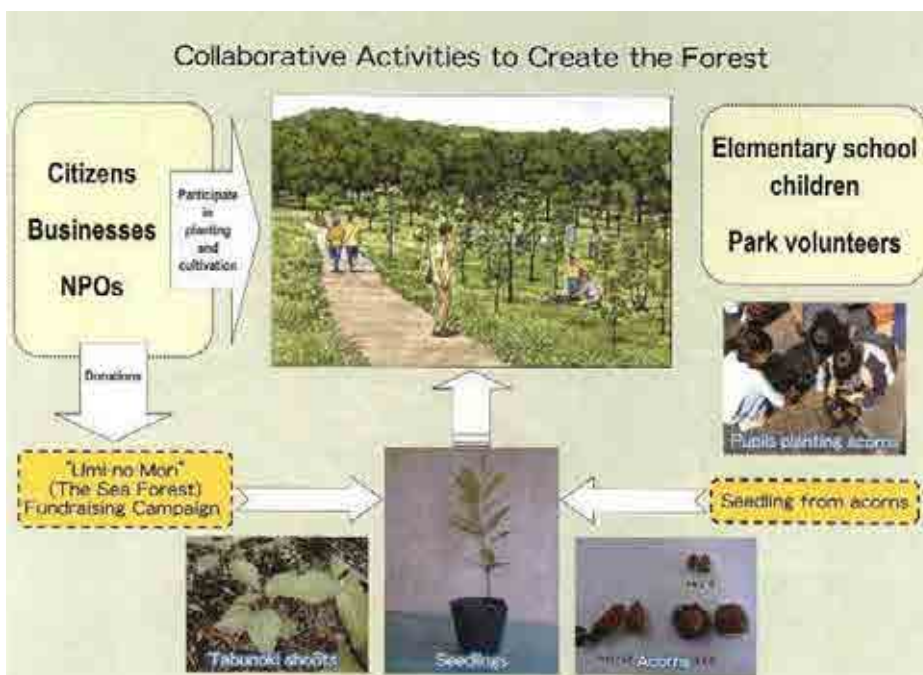
<http://www.solar-frontier.com/eng/news/2016/C059787.html>

Sunlight Energy Collector

https://energyeducation.ca/encyclopedia/Solar_panel_orientation

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‘Umi no Mori’ plan in Land Reclamation



Umi no Mori was created to turn something negative garbage from people's everyday lives into something positive for making a beautiful forest.

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<https://tokyogreenspace.com/tag/sea-forest/>

Tokyo Now! Odaiba has become the center of all human activities

Education

- Education center (museum)
- Introduce new technologies (Eco-element)
- E-Learning



Recreation

- The Ferris Wheel
- Park, Garden, and the coastal



Economic

- Business and Commercial Center
- Port, Offices, and Shopping mall.

Social Gathering

- Ceremony
- Reunions
- Parties
- Competition

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Summary

- Land use is the backbone of agricultural economies, and it provides substantial economic and social benefits. Land use change is necessary and essential for economic development and social progress;
- Land use change is arguably the most pervasive socioeconomic force driving modifications and degradation of ecosystems. Deforestation, urban development, agriculture, and other human activities have substantially altered the Earth's landscape. Such disturbance of the land affects essential ecosystem processes and services, which can have wide-ranging and long-term consequences;
- Land use provides many economic and social benefits but often comes at a substantial cost to the environment. Although most economical costs are figure into land use decisions, most environmental externalities are not.
- The policy of land use in Japan cannot provide the positive impacts to the environment, but every policy had considered preventing the negative impacts on the environment, and every decision was already decided to minimize environmental damage and improve the economy and human activities to reach sustainable development.

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Thank You

