# Trends and Obstacles in Mandating Biodiversity Offsetting in Japan

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# Background

- ✓ The Government of Japan has been considering mandating offsets. (Ministry of the Environment, 2018).
- ✓Japanese style biodiversity offset that conserve secondary ecosystems
- ✓It  may contribute to protect or conserve biodiversity in Asian countries.
- ✓ Currently, we can see new movement that relate to offsets.
- ✓ Especially, MOE showed “Regional Circular and Ecological Sphere”in the 5$^{th}$ basic Environmental Plan. This concept means similar to “No-Net-Loss (NNL) ”.

➢ Though almost previous studies published in 2009 to 2014.

# Objective

We discovered trends and obstacles of mandating offsetting in Japan based on recent cases.

# Methodology

## 1. Collecting Cases

We gathered cases with the Internet survey and interview survey

A) Policies promoted or mandated offset

B) Development projects did or planed offset

C) Activities similar to Biodiversity Banking

## 2. Analysis of cases

We modified 14 perspectives of offsets in Japan (Tanaka, 2014)

## 3. Consideration of trends and obstacles of mandating offsets in Japan

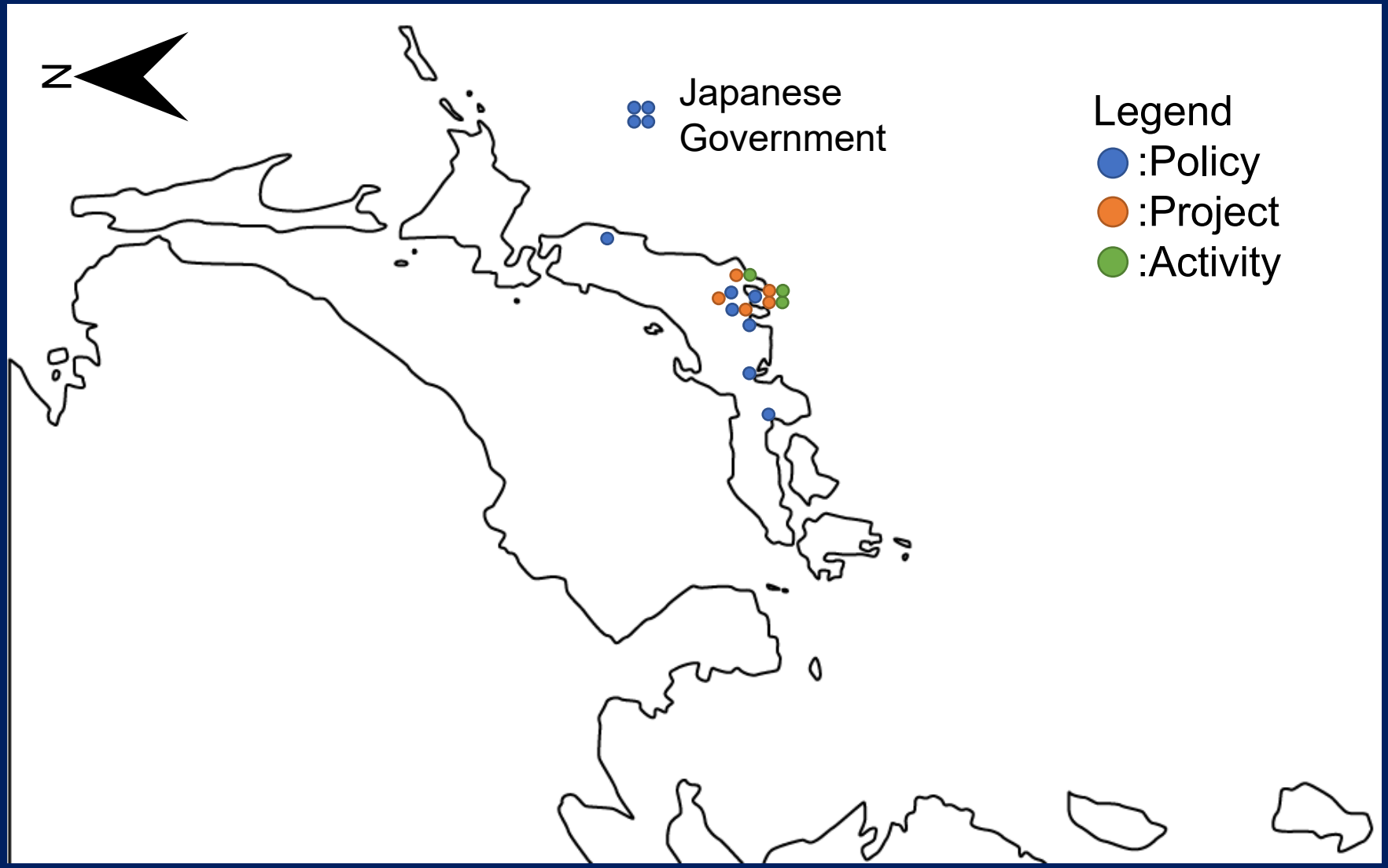
# Table 1: Perspectives on Offsets, Conditions and Criteria

| Perspectives on Offsets | Conditions and Criteria |
|---|---|
| 1. Quality of Nature | In-kind (Developed site's nature type = restoration site's type) or Out-of-kind (Developed site's nature type ≠ restoration site's type) |
| 2. Placement of restoration site | On-site(Offset in near place) or Off-site(Offset in distant place) |
| 3. Relationship between Conservation area and restoration site | Restoration site can not be developed or can be developed |
| 4. Equivalence of Spatial Volume | Offset volume >= Develop volume or Offset volume < Develop volume |
| 5. No net loss or Net loss | No net loss (Offset volume and quality are same or larger than developed these) or Net loss (Offset volume and quality are smaller than developed these) |
| 6. Timing of offsets | Offset before approval of construction or after approval of construction |
| 7. Utilization of Quantitative Biodiversity Evaluation Method | Were the impacts evaluated by Quantitative Biodiversity Evaluation Method? |
| 8. Operation Sector | Who conducted the offsets? (e.g. Developer, Municipality) |
| 9. Sponsor | Who paid cost of offset? (e.g. Developer, Municipality) |
| 10. Mitigation Hierarchy and Multiple plans | Were the offsets conducted after considering avoidance and minimization? (Did the project follow the Mitigation Hierarchy?) |
| 11. Relationship between offset and EIA system | Were the offsets executed as part of the EIA process? |
| 12. Direct or Indirect Offsets | Land-based offset or In-lieu fee offset(offset with payment) |
| 13.Post-development Maintenance of restoration site | Is there a long-term management plan of restoration site or not |
| 14. Liability of Offsets | Legal offset or Voluntary offset |

Reference: Tanaka(2014) modified by author

# Results

# 1. Collected Cases




- 11 policies, 5 projects, and 3 activities were collected from 9 Prefectures (Iwate, Gumma, Saitama, Chiba, Kanagawa, Yamanashi, Shizuoka, Aichi, Osaka) and the Japanese Government.

Figure 1. Location of collected cases

**Table 2. Category 1: Ordinances promoting or mandating offsets**

| No. | Administrator | Name of case | Year of Enactment |
|---|---|---|---|
| 1-1 | Japanese Government | Climate Adaptation on Biodiversity | 2016 |
| 1-2 | Japanese Government | Case studies of Biodiversity Conservation on EIA system in Japan | 2017 |
| 1-3 | Japanese Government | Newly established Class 2 National Endangered Species on Japanese Endangered Species Act | 2017 |
| 1-4 | Japanese Government | Revision of Nature Restoration Promotion Guidance on Law for the Promotion of Nature Restoration | 2019 |
| 1-5 | Iwate Pref. | Rural Area's Promotion Plan with Promotion of Renewable Energy | 2015 |
| 1-6 | Yamanashi Pref. | Technical Guidance on Yamanashi Prefecture's EIA Ordinance | 1999 |
| 1-7 | Saitama Pref. | Nature Restoration Ordinance in Shiki City | 2001 |
| 1-8 | Kanagawa Pref. | Ordinance for Creating Better Urban Environment in Zushi City | 1992 |
| 1-9 | Shizuoka Pref. | Ordinance for Conservation of Okitsu River in Shimizu City | 1993～2003 |
| 1-10 | Aichi Pref. | Aichi Mitigation | 2013 |
| 1-11 | Osaka Pref. | Ordinance of Greening Tax in Mino City | 2015 |

**Table 3. Category 2: Development projects which conducted or planned offsets**

| No. | Place | Name of case | Year completed or published |
|---|---|---|---|
| 2-1 | Gumma Pref. | Development Project of SANDEN Forest Akagi Factory | 2002 |
| 2-2 | Yamanashi Pref | Land Readjustment Project in Joei, Showa Town | 2006 |
| 2-3 | Chiba Pref | Narita Airport Expansion Project | 2018～ |
| 2-4 | Kanagawa Pref | Residential Development Project in Kamigo, Yokohama | 2006～ |
| 2-5 | Kanagwa Pref | Land Reclamation Project Mito, Miura City | 2008 |

**Table 4. Category 3: Conservation activities similar to Biodiversity Banking**

| No. | Place | Name of case | Year completed or published |
|---|---|---|---|
| 3-1 | Chiba Pref. | Practical Study on SATOYAMA Banking | 2010～ |
| 3-2 | Kanagawa Pref. | Practical Study on Mitigation Bank in City Park, Yokohama | 2018～ |
| 3-3 | Kanagawa Pref. | Practical Study on Creation of Ecological Network with Distributed Biotope | 2018～ |

Category 1: Ordinances

# Mino City Ordinance of Greening Tax on Development Projects

Characteristics

- ✓ Perspective 6 (Timing of offsets): Offset projects are executed after the approval of development.
- ✓ Perspective 8 (Operation sector): Offsets are conducted by a third-party
- Developers pay fees instead of conducting offsets by themselves (similar to in-lieu fee programs).
- The method to account for tax includes the volume of development area.

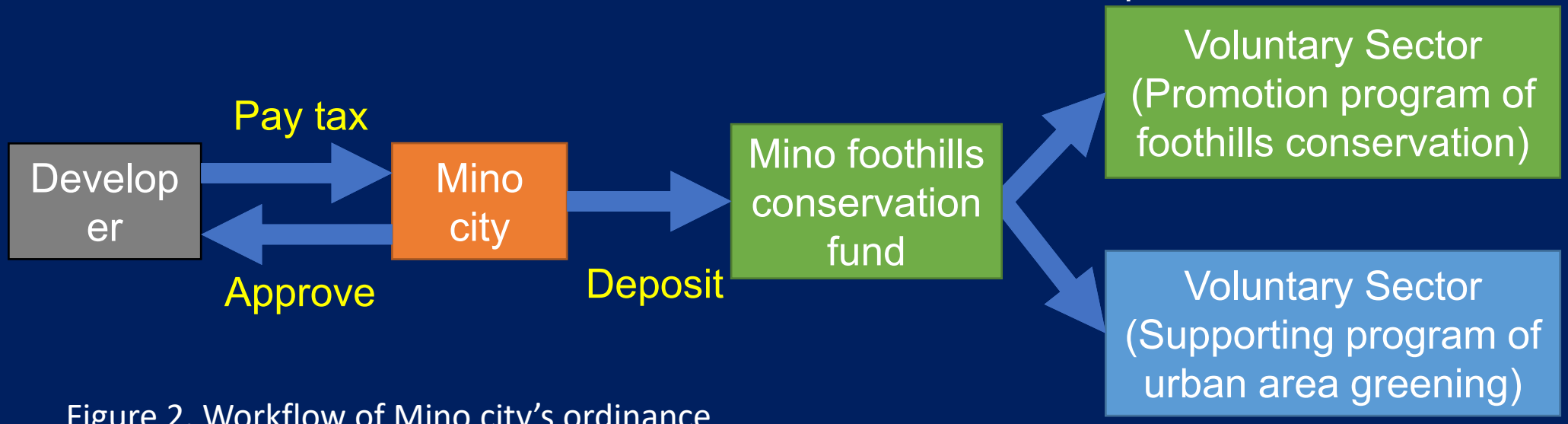



Figure 2. Workflow of Mino city's ordinance

Category 2: Development project

# Residential Development Project in Kamigo, Yokohama

Characteristics

- ✓ Perspective 6 (Timing)：Offsets are finished before the approval of development
- ✓ Perspective 7 (Quantitatively Evaluation)：The first case of HEP(Habitat Evaluation Procedure) implementation on EIA process in Japan (Tanaka et. ,2008)
- ✓ Perspective 10 (Mitigation Hierarchy): 4 alternative development scenarios are considered in the EIA process.

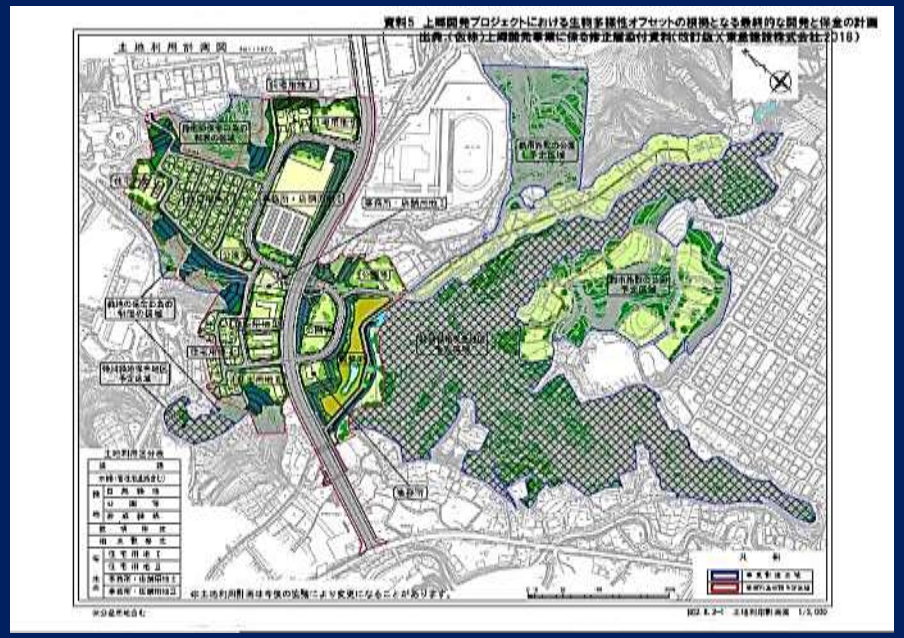


Figure 2. Land use plan of the Kamigo development project
Reference: Tokyu Construction LTD.(2018)


Figure 3. Signboard explaining offsets
Taken by the author

Category 3: Conservation activities

# Demonstration Experiment of SATOYAMA Banking

Characteristics

- ✓ Perspective 7 (Quantitatively Evaluation): There are case studies on quantitative biodiversity evaluation methods (Habitat Evaluation Procedure and Habitat Hectare Method)

Figure 4. SATOYAMA forests are conserved by NPOs

Figure 5. Paddy fields are conserved with rice cropping

# Trends and Obstacles on Policies Promote or Mandate Offset in Japan

**Table 3. Trends and Obstacles on Category 1 cases**

| Perspective | Trends | Obstacles |
|---|---|---|
| 1. Quality of Nature | ➢Undefined | ➢Threatened ecosystems may not be conserved |
| 2. Placement of restoration site | ➢Undefined | ➢There is threat of habitat fragmentation |
| 3. Relationship between Conservation area and restoration site | ➢Undefined | ➢Threatened ecosystems maynot be conserved<br>➢There is threat of habitat fragmentation |
| **4. Equivalence of Spatial Volume** | ➢Undefined | ➢Spatial shortage of green space |
| **5. No net loss or Net loss** | ➢Undefined | ➢Threatened ecosystems may not be conserved<br>➢Spatial shortage of green space |
| 6. Timing of offsets | ➢After the approval of development | ➢Temporal gap between gain and loss |
| 7. Utilization of Quantitative Biodiversity Evaluation Method | ➢Not required | ➢NNL attainment cannot be confirmed |

| | | |
|---|---|---|
| 8. Operation Sector | ➢Restoration by third-party permitted | ➢No consideration on operation sector's fund<br>➢There are risks of failing restoration |
| 9. Sponsor | ➢Developers | |
| 10. Mitigation Hierarchy and Multiple plans | ➢Not required | ➢There are risks of damaging critical habitats<br>➢There are risks of failing restoration |
| 11. Relationship between offset and EIA system | ➢Unrelated to the EIA system (related to development permission) | ➢There are risks of damaging critical habitats<br>➢There are risks of failing restoration |
| 12. Direct or Indirect Offsets | ➢Indirect (In-lieu fee) offsets are supported | ➢Effectiveness is not evaluated clearly |
| 13.Post-development Maintenance of restoration site | ➢Not required | ➢There are threats of degradation due to neglect after initial restoration |
| 14. Liability of Offsets | ➢Required | ➢Introducing mandatory offsets at a local level before a nation-wide implementation may lead to the outflow of development projects to other prefectures |

# Trends and Obstacles on Development Projects Similar to Offset in Japan

**Table 4. Trends and Obstacles on Category 2 cases**

| Perspective | Trends | Obstacles |
|---|---|---|
| 1. Quality of Nature | ➢In-kind mitigation is adopted in most cases<br>➢A case involved in-kind mitigation to support a city's biodiversity basic plan | ➢Threatened ecosystems may not be conserved by ignoring the conservation priority |
| 2. Placement of restoration site | ➢A case conducted mitigation on remote site | ➢Restoration in neighborhood is prone to the risks of failing restoration<br>➢There is a threat of habitat fragmentation |
| 3. Relationship between Conservation area and restoration site | ➢Private land | ➢Developer may sell restoration sites |
| 4. Area equivalence | ➢Aim for attaining equivalence at minimum or more | ➢Spatial shortage of green space may be occured as the restoration site area is not reported transparently |
| 5. No net loss or Net loss | ➢Net Loss is declared, or net impacts are disregarded | ➢Despite of Net Loss, additional actions are not undertaken.<br>➢There is no criteria for judging the success of offsetting |

| | | |
|---|---|---|
| 6. Timing of offsets | ➢After the approval of development | ➢Temporal gap between gain and loss |
| 7. Utilization of Quantitative Biodiversity Evaluation Method | ➢Utilized to evaluate the impacts of development | ➢Not utilized to evaluate the effectiveness of conservation activities |
| 8. Operation Sector | ➢Developer | ➢Developers have to arrange professionals and additional funds |
| 9. Sponsor | ➢Developer | |
| 10. Mitigation Hierarchy and Multiple plans | ➢Avoidance and Minimization are considered | ➢Determination of offsets is not strategic |
| 11. Relationship between offset and EIA system | ➢Offsets are executed as part of the EIA processes | ➢There is no criteria for judging the success of offset |
| 12. Direct or Indirect Offsets | ➢Direct offsets | ➢Developer have to arrange professionals and additional funds |
| 13.Post-development Maintenance of restoration site | ➢Long term Monitoring & Management | ➢Developer have to arrange professionals and additional funds |
| 14. Liability of Offsets | ➢Voluntary | ➢Restoration sites may not be secured |

# Trends and Obstacles on Activities similar to Biodiversity Banking in Japan

**Table 5. Trends and Obstacles on Category 3 cases**

| Perspective | Trends | Obstacles |
|---|---|---|
| **1. Quality of Nature** | ➢Not restricted | |
| 2. Placement of restoration site | ➢Support Remote Sites | |
| 3. Relationship between Conservation area and restoration site | ➢Not restricted | ➢Methods to secure lands have not been consolidated. |
| 4. Equivalence of Spatial Volume | ➢Undefined | |
| 5. No net loss or Net loss | ➢Undefined | |
| 6. Timing of offsets | ➢Supposed After the Approval of Development | ➢Temporal Gap between gain and loss |
| 7. Utilization of Quantitative Biodiversity Evaluation Method | ➢Evaluation Method based on HEP is utilized | ➢There is a need to develop Evaluation Method based on Conservation Effects |

| | | |
|---|---|---|
| 9. Sponsor | ➢Developers, Municipals, etc.. | ➢There is no incentive to purchase credits from biodiversity banks |
| 10. Mitigation Hierarchy and Multiple plans | ➢Not Required | |
| 11. Relationship between offset and EIA system | ➢Not Restricted | |
| 12. Direct or Indirect Offsets | ➢Indirect (In-lieu fee) offsets | |
| 13.Post-development Maintenance of restoration site | ➢Long term Monitoring & Management are planned but not enforced | ➢Threat of degradation over time with neglect |
| 14. Liability of Offsets | ➢Voluntary | |

# Conclusion

**Table 6. Trends, Obstacles and Solutions for mandating biodiversity offsetting in Japan**

| Type of cases | Trends | Obstacles | Solutions |
|---|---|---|---|
| Policies Promote or Mandate Offset in Japan | •Restorations are concentrated in remote area<br>•Implement offset requirements in development permission system like In-lieu fee programs | •Developer’ s compliance of NNL is unclear<br>•Developers may damage critical habitats due to the violation of mitigation hierarchy<br>•Local governments are concerned that introducing mandatory offsets at a local level before a nation-wide implementation would lead to the outflow of development projects to other prefectures | •Require Mitigation Hierarchy and impose penalty when violated<br>•Provide guidelines to achieve NNL<br>•Give opportunity of restoration in remote sites<br>•Develop and distribute Quantitative Biodiversity Evaluation Methods |
| Cases Similar to Offset in Japan | •Voluntary restoration projects have been executed by developers<br>•There is a case where offset was conducted in remote area | • There is threat of habitat fragmentation<br>• Threatened ecosystems may not be conserved by ignoring the priority of conservation<br>• There is no criteria for judging success of offset | •SEA(Strategic Environmental Assessment) and Strategic Offset Plan should be adopted<br>•Mitigation Hierarchy and NNL should be enforced |
| Activities similar to Biodiversity Banking | • Basic studies are underway<br>• In urban areas, studies focus on the creation of ecological network | • There is no study on the economic impacts of Japanese style biodiversity banking<br>• There is no concrete method to secure Lands<br>• We need to Develop Evaluation Methods based on Conservation Effects | • Test securing lands for banking<br>• Develop Evaluation Method based on Conservation Effects<br>• Conduct trial credit trading on actual sites |

# Further Studies

- Demonstration Experiment of Satoyama Banking
  - Location: Shisui town, Chiba Prefecture
  - Area: about 40ha
  - Ecosystem: Satoyama landscape (Paddy field, Secondary forest, etc.)
  - Condition: Degrading due to abandonment
- Contents of this study
  - Land securement
  - Credit issuance
  - Evaluation of Ecological and Economical impacts

**Photo. View of study site**

# Reference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