The 15th Asia Impact Assessment Online Conference

AIC2022

"Environmental Impact Assessment in the Age of Transition"

16th – 18th September 2022

Japan Society for Impact Assessment

JSIA 20th Anniversary IAIA-Japan Ministry of the Environment IGES JBIC JAPAN BANK FOR INTERNATIONAL COOPERATION JEAS JETRO 日本貿易振興機構(ジェトロ) JICA TOKYO CITY UNIVERSITY

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JSIA 20th Anniversary

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AIC2022 online conference

"Environmental Impact Assessment
in the Age of Transition"

Contents

Conference schedule iii
Program vii
Opening addresses xix
Opening declaration xx
Host country address xxi
Special address xxii
Representative address xxiii
Co-host organization address xxv
JSIA 20th anniversary speech xxvi
Abstracts 1
Presentation abstracts 2
Poster abstracts 34
Closing addresses 45
Awards 46
Closing address 47
Announcement for AIC2023 48

AIC2022 online conference

"Environmental Impact Assessment
in the Age of Transition"

◆Conference schedule

ZOOM		
Date	**Time**	**Contents**
16th Sep.	10:00~10:50	**Opening plenary** **Emcee: Naoko GENJIDA (Japan)**
	10:50~11:05	Coffee break
	11:05~12:30	Presentation session A Chairperson: Yuta FUKUDA (Japan)
	12:30~13:30	Lunch break
	13:30~15:15	Presentation session B Chairperson: Myungjin KIM (Korea)
	15:15~15:30	Coffee break
	15:30~16:55	Presentation session C Chairperson: Jing WU (China)
	16:55~17:00	Announcements
17th Sep.	10:00~11:45	Presentation session D Chairperson: Yuki SHIBATA (Japan)
	11:45~12:45	Lunch break
	12:45~14:30	Presentation session E Chairperson: Juchul JUNG (Korea)
	14:30~14:45	Coffee break
	14:45~16:10	Presentation session F Chairperson: Chunsheng FANG (China)
	16:10~16:15	Announcements
18th Sep.	10:00~11:45	Presentation session G Chairperson: Jin-Oh KIM (Korea)
	11:45~12:45	Lunch break
	12:45~13:40	Poster session H Chairperson: Noriaki MURASE (Japan)
	13:40~13:55	Coffee break
	13:55~15:00	Poster session I Chairperson: Renzhi LIU (China)
	15:00~15:15	Coffee break
	15:15~15:40	**Closing plenary** **Emcee: Naoko GENJIDA (Japan)**

AIC2022 online conference

"Environmental Impact Assessment
in the Age of Transition"

Program

Each ID of a presentation is the same as that of the abstract.

Day 1 Friday, 16 September

Time	Session	No.	Presenter/Title	ID (Page)
10:00~ 10:50	**<Opening plenary>** **Emcee: Naoko GENJIDA** (AIC2022 Executive Committee/Institute for Global Environmental Strategies, Japan) **Opening declaration** Akira TANAKA (AIC2022 Executive Committee Chairperson/Tokyo City University, Japan) **Host country address** Hachiteru FUJITA (President of JSIA/Kurume University, Japan) **Special address** Hirofumi AIZAWA (Director of the office of EIA review/Ministry of the Environment, Japan) **Representative address** Youngsoo LEE (President of KSEIA/Korea Environment Institute, Korea) Wei LI (AIC2022 International Steering committee/Beijing Normal University, China) **Co-host organization address** Sachihiko HARASHINA (Representative of IAIA-Japan/Chiba University of Commerce, Japan) **JSIA 20th anniversary speech** Mitsuru TANAKA (Former president of JSIA/Hosei University, Japan) **Commemorative group picture**			
10:50~ 11:05	**Coffee break**			

11:05~	Presentation A	**Chairperson: Yuta FUKUDA (JAPAN)** **Assistant: Yuki INOUE (JAPAN)**		
11:10~ 11:30		1	Chaoxu LUAN, Renzhi LIU, Yushun QI (CHINA) Beijing Normal University, China **Multi-scenario land use and land cover simulation under the policy impact of territorial spatial planning** Keywords: Land use and land cover, Cellular automata, Patch generating land use simulation, Policy impact, Multi-scenario	A-1 (p.2)
11:30~ 11:50		2	Takehiko MURAYAMA (JAPAN) Tokyo Institute of Technology, Japan **Consideration on risk aspects in impact assessment procedures** Keywords: Risk assessment, Safety, Disaster, Accident, EIA systems	A-2 (p.3)
11:50~ 12:10		3	Thodsakhone RAZMOUNTRY, Takanori HAYASHIDA (LAO PDR) Vientiane Transport Master Plan Study Team Office, Lao PDR **Development of Participatory SEA Framework Case Study of Stakeholder Analysis for Updating Vientiane Transport Master Plan Study under COVID-19 Pandemic Situation** Keywords: SEA, Participatory, ILESK, Urban Transport Master Plan, Vientiane, Lao PDR	A-3 (p.4)
12:10~ 12:30		4	Gaeun LEE, Jin-Oh KIM (KOREA) Kyung Hee University, Korea **Assessment of Carbon Neutrality of City Plans Using AHP-based Weighted Indicators** Keywords: AHP, Carbon Neutrality, Comprehensive Plan	A-4 (p.5)
12:30~ 13:30	**Lunch break**			

13:30~	Presentation B	**Chairperson: Myungjin KIM (KOREA)** **Assistant: Takeru SHIROKI (JAPAN)**		
13:35~ 13:55		1	Leah HAN (KOREA) The University of Tokyo, Japan **Identifying the Bottleneck in the Adoption of Biodiversity Offsets in EIA Systems of Japan** Keywords: Aichi prefecture, biodiversity offset, environmental politics, survey	B-1 (p.6)
13:55~ 14:15		2	Rui YAN (CHINA) Beijing Normal University, China **Transition finance —— a powerful tool for the smooth realization of China's '30·60' decarbonization goal** Keywords: just transition, transition finance, green investment	B-2 (p.7)
14:15~ 14:35		3	Asahi ABE, Akira TANAKA (JAPAN) Tokyo City University, Japan **A Study on No Net Loss Goals in Environmental Field** Keywords: No net loss, Nature positive, Carbon neutrality, Mitigation hierarchy, Biodiversity offset	B-3 (p.8)
14:35~ 14:55		4	Hyeonjoung KIM (KOREA) Korea Expressway Corporation Research Institute, Korea **A Study on the Environmental Performance of Korean Public Organizations from the ESG perspective** Keywords: Environmental performance, Public enterprise, ESG	B-4 (p.9)
14:55~ 15:15		5	Zhonggui LU, Wei LI (CHINA) Beijing Normal University, China **Mainstreaming Environmental Impact Assessment into Environmental Governance along One Belt and One Road** Keywords: BRI, EIA, Environmental Governance, Environmental assessment system	B-5 (p.10)
15:15~ 15:30	**Coffee break**			

15:30~	Presentation C	**Chairperson: Jing WU (CHINA)** **Assistant: Chun CHEN (CHINA)**		
15:35~ 15:55		1	Kyungseo MIN, Sungjin KIM, Sewoong CHUNG (KOREA) Chungbuk National University, Korea **Comparison of GHG Emissions from Temperate Reservoirs according to Different Tier-Level Estimation Methods** Keywords: Greenhouse gas emission, IPCC, G-res Tool, Temperate reservoir	C-1 (p.11)
15:55~ 16:15		2	Yuri ASAMI, Akira TANAKA (JAPAN) Tokyo City University, Japan **Development of Hands-on Program to Educate People About Important Perspective for Habitat Conservation** Keywords: HEP, Hands-on program, Biodiversity Offset, Satoyama eco tour, no net loss	C-2 (p.12)
16:15~ 16:35		3	Hanzhong ZHENG, Linyu XU (CHINA) Beijing Normal University, China **Unbalanced $PM_{2.5}$ emission and happiness effect through cross-regional trade in China** Keywords: PM2.5 footprint, Multiregional input-output analysis, Sentiment analysis, Inequality, China	C-3 (p.13)
16:35~ 16:55		4	Sunmin JUN, Li MENGYING, Juchul JUNG (KOREA) Pusan National University, Korea **PM2.5 vulnerability negatively affects urban livability in South Korea and China** Keywords: Air pollution, PM2.5, Livability, GRA, Vulnerability, South Korea, China	C-4 (p.14)
16:55~ 17:00	Announcements			

Day 2 Saturday, 17 September

Time	Session	No.	Presenter/Title	ID (Page)
10:00~	Presentation D	**Chairperson: Yuki SHIBATA (JAPAN)** **Assistant: Keisuke GOTO (JAPAN)**		
10:05~ 10:25		1	Noriaki MURASE (JAPAN) Setsunan University, Japan **Status of disclosure of monitoring results based on JICA Guidelines for Environmental and Social Considerations** Keywords: JICA, Environmental and Social Considerations, Monitoring results	D-1 (p.15)
10:25~ 10:45		2	Jiaqi TIAN, Ju WANG, Chunsheng FANG (CHINA) Jilin University, China **Evaluation of $PM_{2.5}$ emission reduction measures in Changchun based on CAMx model** Keywords: PM2.5, WRF, CAMx, Changchun, Emission Reduction Scenario	D-2 (p.16)
10:45~ 11:05		3	Yuki INOUE, Alfonsus ABHIKAMA, Jialu WU, Akira TANAKA (JAPAN) Tokyo City University, Japan **Study on Biodiversity Offsets requirement of Multilateral Development Banks in Asia** Keywords: EIA, Biodiversity Offsets, Multilateral Development Bank, Mitigation	D-3 (p.17)
11:05~ 11:25		4	Chulhwan KIM, Hyejin KANG, Woongyong LEE (KOREA) Korea Expressway Corporation Research Institute, Korea **Highway Traffic Noise Mitigation Methods in Korea** Keywords: Road Traffic Noise, Noise Barrier, Noise Reducing Device(NRD), Low-noise Pavement	D-4 (p.18)
11:25~ 11:45		5	Yuna TAMAMURA (JAPAN) Hosei University, Japan **Translation of "Assessment" －Exploring the lexicon as a reflection of "our lives"** Keywords: Assessment, EIA, ESIA, 評価, アセスメント	D-5 (p.19)
11:45~ 12:45	**Lunch break**			

12:45~	Presentation E	**Chairperson: Juchul JUNG (KOREA)** **Assistant: Takeru SHIROKI (JAPAN)**		
12:50~ 13:10		1	Xingya YUAN, Ichita SHIMODA, Masahito YOSHIDA (CHINA) University of Tsukuba, Japan **Current Trends and Issues in Visual Impact Assessment of Wind Energy Facilities at World Heritage Sites** Keywords: Visual Impact Assessment (VIA), Heritage Impact Assessment (HIA), Wind Energy Facilities, UNESCO World Heritage	E-1 (p.20)
13:10~ 13:30		2	Yasuhiro NAGASAWA, Shigeo NISHIKIZAWA, Takehiko MURAYAMA (JAPAN) Tokyo Institute of Technology, Japan **Consensus building to promote renewable energies led by local governments** Keywords: consensus building, renewable energy, local government, consultation, zoning	E-2 (p.21)
13:30~ 13:50		3	Nanqi SONG, Wei LI (CHINA) Beijing Normal University, China **The effectiveness of the mitigation hierarchy in environmental impact assessment for marine reclamation: A case study in China** Keywords: EIA, Mitigation hierarchy, Reclamation, Biodiversity Offset	E-3 (p.22)
13:50~ 14:10		4	Youngsoo LEE, Subin LEE, Yujin KANG (KOREA) Korea Environment Institute, Korea **Climate Change Impact Assessment of Korea** Keywords: CCIA, Mitigation, Adaptation, EIA	E-4 (p.23)
14:10~ 14:30		5	Chun CHEN, Akira TANAKA (CHINA) Tokyo City University, Japan **A Study on the Trend of Biodiversity Offsets in China** Keywords: China, Environment Impact Assessment, Biodiversity Offset, Wetland, Forest	E-5 (p.24)
14:30~ 14:45	**Coffee break**			

14:45~	Presentation F	**Chairperson: Chunsheng FANG (CHINA)** **Assistant: Biyao LUO (CHINA)**		
14:50~ 15:10		1	Takafumi KAWAMURA, Takeru SHIROKI, Ayako YAMANE, Akira TANAKA (JAPAN) Tokyo City University, Japan **Study on Effectiveness of Japanese-style OECMs (Certification of Nature Symbiotic Sites)** Keywords: OECMs, No-net-Loss, Mitigation Banking, In-lieu fee Programs, Biodiversity Offsetting	F-1 (p.25)
15:10~ 15:30		2	Sungjin KIM, Kyeongseo MIN, Sewoong CHUNG(KOREA) Chungbuk National University, Korea **Combining CE-QUAL-W2 and LSTM to predict water temperature in a stratified reservoir** Keywords: Water temperature, Mechanical model, Deep learning, Process guided deep learning, Reservoir	F-2 (p.26)
15:30~ 15:50		3	Keisuke GOTO, Akira TANAKA (JAPAN) Tokyo City University, Japan **Disaster Risk Reduction Functions of Japanese Style Biodiversity Bank, "SATOYAMA Bank"** Keywords: SATOYAMA Bank, Biodiversity Offset, Disaster Risk Reduction, Spatial Plan	F-3 (p.27)
15:50~ 16:10		4	Rongwu YUE, Wei LI (CHINA) Beijing Normal University, China **Research on the driving factors and its interaction effects of ecosystem service value in Hohhot-Baotou-Ordos-Yulin urban agglomeration** Keywords: ecosystem service value, land use, driving factors, interaction effects	F-4 (p.28)
16:10~ 16:15	Announcements			

Day 3 Sunday, 18 September

Time	Session	No.	Presenter/Title	ID (Page)
10:00~	Presentation G		**Chairperson: Jin-Oh KIM (KOREA)** **Assistant: Keisuke GOTO (JAPAN)**	
10:05~ 10:25		1	Chenxia LIANG, Wei LI (CHINA) Beijing Normal University, China **Progress on the Environmental Impact Assessment of Inter-basin Water Transfer Project in China** Keywords: inter-basin water transfer projects, EIA, sustainable development, ecological compensation	G-1 (p.29)
10:25~ 10:45		2	Takeru SHIROKI, Akira TANAKA (JAPAN) Tokyo City University, Japan **A Study on Spatial Patterns of Compensatory Wetland Mitigation** Keywords: Compensatory Wetland Mitigation, Biodiversity Offset, Watershed, On-site, Off-site	G-2 (p.30)
10:45~ 11:05		3	Hyejin KANG, Chulhwan KIM (KOREA) Korea Expressway Corporation Research Institute, Korea **Improvement of Air Pollutant Emission Calculation Method for Air Pollution Impact Assessment near Highway** Keywords: CAPSS, Road Mobile Source, Air Pollutant Emissions	G-3 (p.31)
11:05~ 11:25		4	Peipei ZHANG, Nankun LI, Changbo QIN (CHINA) Ministry of Ecology and Environment, China **Technology and practice of water resource and environment in "Three Lines One Permit" policy in China** Keywords: Water resource and environment zoning, Water environmental quality standards, Upper limit of water resource utilization, Permit list for water environment, EIA	G-4 (p.32)
11:25~ 11:45		5	Yuta FUKUDA, Yukihiro KAWAGUCHI, Hisashi MORIWAKI, Hidekazu YOSHIOKA, Mai MURAMATSU, Tomo SHIBAHARA (JAPAN) Nippon Koei Co., Ltd, Japan **An interim report of the river restoration project by supplying sediment at downstream of Obara Dam** Keywords: River restoration, Sediment supply, Sweetfish, Asiatic brook lamprey, Periphyton	G-5 (p.33)

11:45~ 12:45	**Lunch break**			
12:45~	Poster H	**Chairperson: Noriaki MURASE (JAPAN)** **Assistant: Yuki INOUE (JAPAN)**		
12:50~ 13:00		1	Tae-Su KIM, Gi-Seong JEON (KOREA) Korea Expressway Corporation Research Institute, Korea **Introduction to the Evaluation Standard of Ecological Restoration at Unused Roads in Expressway** Keywords: Unused Road, Restoration Project, Environment Management, Invasive Species	H-1 (p.34)
13:00~ 13:10		2	Gi-Seong JEON, Tae-Su KIM (KOREA) Korea Expressway Corporation Research Institute, Korea **Analysis of Example of Revegetation Evaluation Result on Cutting Slope Revegetation Measures in Expressway: Focusing on Cheonan** Keywords: Revegetation Measures, Cutting Slope, Evaluation, Revegetation Design and Guidelines	H-2 (p.35)
13:10~ 13:20		3	Takafumi KAWAMURA, Akira TANAKA (JAPAN) Tokyo City University, Japan **Trends and Challenges of Area-based Biodiversity Conservation in Japan** Keywords: OECMs, No-net-Loss, Biodiversity Banking, In-lieu fee Programs, Biodiversity Offsetting	H-3 (p.36)
13:20~ 13:30		4	Hyeonjoung KIM (KOREA) Korea Expressway Corporation Research Institute, Korea **A Comparative Study on the Environmental Policies of Road Management Agencies** Keywords: EIA, SEA, Biodiversity Offset	H-4 (p.37)
13:30~ 13:40		5	Chulhwan KIM, Woongyong LEE, Hyejin KANG (KOREA) Korea Expressway Corporation Research Institute, Korea **Low-noise Pavement Estimation for Road-side Noise Impact Assessment** Keywords: low-noise pavement, porous asphalt pavement, acoustic performance, noise reducing performance	H-5 (p.38)
13:40~ 13:55	**Coffee break**			

13:55~	Poster I	**Chairperson: Renzhi LIU (CHINA)** **Assistant: Chun CHEN (CHINA)**		
14:00~ 14:10		1	Ju-Goang LEE (KOREA) Korea Expressway Corporation Research Institute, Korea **Derivation of Areas affected by Heatwaves on Highways in Preparation for Climate Change Impact Assessment** Keywords: Heatwave, Climate Change, Highway, RCP, Greenhouse Gas	I-1 (p.39)
14:10~ 14:20		2	Sle-gee LEE, Jeong Gwan LEE, Du Hee LEE, Hyun-jun KIM (KOREA) Chonnam National University, Korea **Improvement and application of IPCC Tier 2 method for quantification of carbon absorption in grassland biomass** Keywords: carbon absorption, climate change adaptation, grassland biomass	I-2 (p.40)
14:20~ 14:30		3	Qingyang WANG, Jing WU (CHINA) Nankai University, China **Analysis of American Environmental Policy Based on Multiple Streams Freamwork** Keywords: environmental policy, Multiple Stream Framework, policy analysis, USA	I-3 (p.41)
14:30~ 14:40		4	Hyejin KANG, Chulhwan KIM (KOREA) Korea Expressway Corporation Research Institute, Korea **Concentration Distribution of Heavy Metals from Road Dust Sediment on Highway** Keywords: Road Dust Sediment, Fine Dust, Suspended Solid	I-4 (p.42)
14:40~ 14:50		5	Heeman KANG, Byungduk LEE (KOREA) Korea Expressway Corporation Research Institute, Korea **Management Measures to Control Nonpoint Source Pollution from Expressway** Keywords: Nonpoint Pollution Treatment Facility, Management, Field Survey, Expressway	I-5 (p.43)
14:50~ 15:00		6	Sung-wook PARK, Gi-seong JEON, Eun-soo HONG, Sang-jun IM, Je-man LEE (KOREA) HBC Inc., Korea **Weathering Susceptibility of Rock Slope in Korea Expressway** Keywords: Weathering, Rock Slope, Expressway	I-6 (p.44)

15:00~ 15:15	**Coffee break**	
15:15~ 15:40	**<Closing plenary>** **Emcee: Naoko GENJIDA** **(AIC2022 Executive Committee/Institute for Global Environmental Strategies, Japan)** **Awards and ceremony** Naoko GENJIDA (AIC2022 Executive Committee/Institute for Global Environmental Strategies, Japan) **Closing address** Akira TANAKA (AIC2022 Executive Committee Chairperson/Tokyo City University, Japan) **Announcement for AIC2023** Chunsheng FANG (Jilin University)	

AIC2022 online conference

"Environmental Impact Assessment
in the Age of Transition"

◆ Opening addresses

Opening declaration.....xx
Host country address.....xxi
Special address xxii
Representative address..... xxiii
Co-host organization address xxv
JSIA 20th anniversary speech xxvi

Opening Declaration

Akira Tanaka, Dr., MLA

Chair, AIC2022 Executive Committee
Tokyo City University

I am Tanaka Akira, the chair of the AIC2022 executive committee.

Welcome to AIC2022!
Those who are participating for the first time, those who were able to resume their participation, thank you to all of you who are here with me today.

This year marks the 15th anniversary since the first AIC was held in Tokyo in 2003.

In fact, for this memorable 15th AIC, we have been preparing vigorously for two years to welcome you to Matsue City, Shimane Prefecture, the home of Japanese mythology and rich nature such as “Satoyama” Landscapes. I would like to take this opportunity to express my sincere thanks to Shimane Prefecture, Matsue City, and Kunibiki Messe (Shimane Prefectural Convention Center) for their cooperation in preparing for the unrealized Shimane-Matsue conference.

Unfortunately, as the covid-19 pandemic continues, we have decided to hold the event online, although it was a tough call. Still, we are thankful that AIC2022 was able to take place today; as the saying goes, "Great Power lies in Persistence."

Now, I declare that the 15th AIC 2022, "Environmental Impact Assessment in the age of transition," begins.

Thank you very much!

Welcome to the 15th Asia Impact Assessment Conference

Hachiteru FUJITA
The President of Japan Society for Impact Assessment
Professor Emeritus of Kurume University

Ladies and Gentlemen,

Good morning and I greatly welcome you all to the 15th Asia Impact Assessment Conference (AIC 2022). It is my great honor to represent the host country at the opening ceremony of the AIC 2022, held here in Japan.

I am Hachiteru Fujita, serving as the President of the Japanese Society for Environmental Assessment (JSIA).

A number of research presentations are scheduled for the AIC2022, and I believe this conference will provide a valuable platform for discussion and exchange of information. I would like to express my sincere appreciation to all the participants.

Here, I would like to introduce JSIA briefly. JSIA was founded in Tokyo in April 2002, and this year marks the 20th anniversary of its establishment. The history of the JSIA over the past 20 years will be reported later by the former President of the JSIA, Professor Mitsuru Tanaka, in a presentation entitled "The Progress of the Japanese Society for Environmental Assessment (JSIA) and an Overview of the 20th Anniversary Projects".

This year's AIC2022 was originally planned to be held at a venue in Matsue City, Shimane Prefecture. Shimane is located along the west coast of Japan, blessed with historical heritage and a beautiful natural environment. However, we had to hold the conference online due to the ongoing COVID-19 pandemic and the implementation of various restrictions on international travel to Japan. I would appreciate your understanding for those who had planned to come to Japan.
Today marks 15 years since the first Japan-Korea EIA Workshop was held in Tokyo in 2003, almost 19 years ago. Then, from 2011 China joined the meeting, and the three-country conference continued until 2017. In recent years, the conference has grown significantly with the participation of other Asian countries.

The theme of this year's conference is "Environmental Assessment in the Age of Transition." Recently, there has been an increasing amount of international efforts for nature positivity and carbon neutrality to realize a sustainable society. In this era of transition, the importance of environmental assessment must be reaffirmed. At this conference, research results regarding a wide range of topics in the environmental conservation field, such as EIA, SEA, conservation, habitat creation, and nature restoration, will be discussed. I truly hope that this conference will be fruitful for all of you.

Finally, I would like to extend my deep gratitude to everyone who helped organize the AIC2022. I have no doubt that the dedication and efforts of all the participants in this conference will make it a success.

Thank you very much.

September 16th, 2022

Welcome to the 15th Asia Impact Assessment Conference

Hirofumi AIZAWA, Ph.D.
Ministry of the Environment
Director of the Office of Environmental Impact Assessment Review

Good morning/evening, I greatly thank you for giving me such an opportunity today. I am Hirofumi Aizawa, Director of the Office of Environmental Impact Assessment Review, in Ministry of the Environment, Japan.

In Japan, the system for environmental impact assessment has been established for ports, power plants and other big infrastructures by 1980s, reflecting severe pollution we have encountered. Thereafter, efforts were made to establish legislation, and the Environmental Impact Assessment Act was enacted in 1999 which is in operation for more than 20 years.
Even after the enactment, we have been making improvements on the system, such as introducing primary environmental impact consideration on the early stage of planning; introducing impact mitigation report after projects were launched to compensate the uncertainty of prior assessment; and adding wind power plants and photovoltaic power plants subject to the Act.

This year's theme of the conference is 'Environmental Assessment in the Age of Transition'. Our society is facing the crisis of Climate Change, new infectious diseases like COVID-19, and energy, food, and commodity supply.
Confronting these crisis, Ministry of the Environment, Japan, advocates three transitions toward sustainable development: carbon neutrality, circular economy, and nature positive.

For carbon neutrality, Japan is going to address maximum introduction of renewable energy, which is independent and domestically produced. For circular economy, we have decided the 'Circular Economy Roadmap' on early September. In addition, for nature positive, a post-2020 global biodiversity framework is expected to be adopted on December at the CDB COP15. Japan is taking the initiative to secure 30% of protected areas on land and sea by 2030.

In order to integrate these three transitions, impact assessment is expected to play a major role. On this conference, I am aware that various presentations will be made on carbon neutral, SEA, biodiversity offset, etc.. I hope that this conference will provide a forum for valuable international discussion and exchange of ideas, and that it will further the development of research in impact assessment. I would like to conclude my remarks by wishing you a successful conference and further success in your endeavors.

September 16th, 2022

AIC2022 Greetings

Dr. Youngsoo LEE

President, Korean Society of for the 16th KSEIA.

Hello, I'm Lee Youngsoo, president of the Korean Society of Environmental Impact Assessment(KSEIA).

It's a non-face-to-face video conference due to COVID-19, but I'm very happy to meet and discuss the faces of people I haven't seen for a long time.

I would like to thank Professor Tanaka and other officials of the Japan Society for Impact Assessment for preparing well.

Also, I would like to thank Professor Li and other Chinese colleagues who attended the conference.

I believe that this AIC will be a pleasant place to share knowledge about environmental impact assessment of the three countries. I hope everyone will continue to exchange and protect the global environment through environmental impact assessment.

I hope you are always healthy and happy.

Thank you.

AIC2022 Opening Remarks

Prof. Wei LI
Beijing Normal University, China
weili@bnu.edu.cn
Beijing, 16 September 2022

Honorable conference hosts and delegates, distinguished speakers and guests, colleagues and friends, ladies, and gentlemen:

It is my great pleasure and privilege to participate in the 15th Asia Impact Assessment Conference on environmental impact assessment in the age of transition. I am in particular grateful to our Japanese hosts, after the successful online event organized by Korean colleagues last year, let me show the highly appreciate for your efforts for today's splendid meeting. Though COVID-19 distant us in miles, the joint collaboration from China, Japan and Korea makes the reunion reality.

Before giving the floor to speakers, I will take this opportunity to make some general remarks and touch briefly on Chinese significant work to mainstream EIA in 2022, which shows the progress of EIA for project, policy and planning in the age of transition and high-quality recovery.

The interests of administration and academia are clear in synergetic control of environmental pollution and carbon emissions. Following the international footsteps, carbon emission analysis was introduced into specific ecosystem services value and financial assessment, smoothly realizing the national decarbonization goal, especially in high pollution and high energy consumption industries and resource-based cities.

The pilot work of policy EIA in Beijing and surrounding provinces explored technical procedures and means of public participation which are suitable for Chinese characteristics.

The subjects of planning EIA ranges from watershed development, territory spatial planning, marine reclamation and inter-basin water transfer. After wide application of the three-line and one-permit model in all 31 provinces, SEA results have been transformed from relatively soft recommendations into hard restrictions or criteria.

While concluding, EIA has been presenting a significant role in this unprecedented special period, and I believe today's selected topics will provide you with a wealth of information and many opportunities for discussions. Also, I would like to thank warmly our hosts again for their carefully and effortless preparation and I wish you all the very best for a most successful meeting.

Opening Plenary, AIC2022, September 16, 2022

Welcome Address

The 15th Asia Impact Assessment Online Conference

Sachihiko HARASHINA *

Dear our colleagues,

Welcome to Japan through internet. We Japanese colleagues in the field of impact assessment heartily welcome you to join the 15th[t] Asia Impact Assessment Conference. Though we had very sad experience since 2020 by COVID-19, we learnt again that human beings have to be more precautious against disasters especially in the age of vast application of science and technology. It is my great pleasure to have this event even through internet as a founding member of AIC and as the Chair of the Japan Branch of IAIA. The first meeting of AIC had been held at the International House of Japan, Tokyo in 2003 as a Japan-Korea conference and our activities have been grew up to have more members from China, Vietnam, Lao PDR and so forth. The number of papers of this year is 43, which is marvelous.

For precautionary approach of human actions, impact assessment should have quite important role, sometimes it is critical. The colleagues of impact assessment studies and practitioners in eastern Asia gathered here will have intensive discussions based on rich information exchange crossing over wide scope of the fields. In this event, participants would have not only presentations and discussions but also exchange their ideas, opinions and experiences. Though it is in only two days, the participants from Korea, China, Lao PDR and Japan must have an opportunity to consider how impact assessment would contribute to sustainable development. And the result of our activity in these two days should be sent to the world afterword.

I put one more thing. The various discussions in these two days should be succeeded to the coming IAIA23 conference held at Kuching, Malaysia in May, 2023. Why not join IAIA23 and meet again there.

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Progress of JSIA (Japan Society for Impact Assessment) and Overview of the 20th Anniversary Project

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Keywords: JSIA (Japan Society for Impact Assessment),20th Anniversary, Progress, Activities

1. Overview of JSIA

JSIA was established in 2002, so this year is its 20th anniversary. The founding general meeting of the society was held at Chuo University in Tokyo on April 20, 2002. Members of JSIA, who are researchers and practitioners in various fields related to environmental studies, interact with each other both domestically and internationally. We promote the development and spread of science and technology, and foster a common understanding of EIA among all levels of the public. As of April 1, 2022, the number of JSIA members is 403. Breakdown: 338 regular members, 6 public organization members, 28 supporting organization members, etc.

2. Main activities of JSIA

At JSIA, researchers, consultants/companies, government officials, citizens/NGOs, etc. participate in various activities such as research projects and public awareness projects.

(1) Annual Research Conference is held in September- October every year.

(2) General Assembly is held in May every year.

(3) Committee activities:

- Academic Committee
- Editorial Committee
- Planning Committee
- Event Committee
- Information Committee
- Award Committee
- International Exchange Committee, etc.

(4) Symposium and seminars are held several times a year.

(5) International exchange activities: IAIA (International Impact Assessment Association), AIC Asian Impact Assessment Conference), etc.

(6) Publications: Publishing academic journals twice a year, "Fundamentals of Environmental Impact Assessment" in 2013, "Introduction to Environmental Impact Assessment" in 2019.

Figure 1: The 12th Asia Impact Assessment Conference in Shizuoka, Japan, in August 2018

3. 20th Anniversary Project

The 20th anniversary ceremony was held on May 21, 2022. Congratulatory addresses of guests, introduction of the history of JSIA's activities, recognition of permanent members etc. and commemorative lectures were presented. We compiled a booklet “Progress of JSIA” on May 2022 and distributed it to attendees of the 20th anniversary ceremony.

Figure 2: Booklet : "Progress of JSIA”

AIC2022 online conference

"Environmental Impact Assessment
in the Age of Transition"

Abstracts

Presentation abstracts 2
Poster abstracts.....34

Each ID of an abstract is the same as that of the program.

Multi-scenario land use and land cover simulation under the policy impact of territorial spatial planning

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Keywords: Land use and land cover, Cellular automata, Patch generating land use simulation, Policy impact, Multi-scenario

1. Introduction

Land use and land cover (LULC) change models are an effective tool for predicting future land use. Existing models lack the ability to simulate the detailed patch evolution of multiple land use types and consider the multi-level policy impact. In this paper, a policy impact-patch generating land use simulation (PI-PLUS) model is developed. For the policy impacts of urban development land use suitability (UDLS), capital farmland (CF), and the ecological protection red line (EPRL) in the context of territorial spatial planning, five scenarios are set. A rapidly developing city, Changchun, was chosen as the study area.

2. Methods

In this study, the spatiotemporal evolution of the LULC was analyzed, and the LULC changes were simulated under multiple scenarios based on the newly developed PI-PLUS model. For the analysis of the LULC changes, we built a land use transition matrix and calculated the rate of change of the LULC and landscape metrics. For the LULC simulation, the PI-PLUS model consisted of five modules. First, we analyzed the driving factors based on the LEAS. Second, the Markov model was used to simulate the land use demand. In addition, a CA model based on CARS was built to simulate the future spatial LULC changes. The overall probability was adjusted based on the policy impact of the territorial spatial planning. Finally, five simulation scenarios were set up in this study according to the policy impact of the UDLS, CF, and EPRL.

3. Conclusions

From 2010 to 2020, the area of built-up land increased the most, and it was mainly converted from arable land. The patches became more scattered, and the landscape fragmentation of the arable land and built-up land gradually decreased. In addition, the model has a high simulation accuracy. Finally, we get the simulation results for 2030 under five scenarios. This model can help policymakers better understand how policies will affect the various types of land expansion in the future.

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Consideration on risk aspects in impact assessment procedures

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Keywords: Risk assessment, Safety, Disaster, Accident, EIA systems

1. Introduction

While EIA mainly focuses on environmental impacts during ordinally situation, risk issues in emergency situation would another important aspect to consider the impacts generated by project implementation. Murayama (2017) pointed out a consideration of risk aspects as one of evaluation items of EIA system in future. While risk issues are not fully discussed in EIA procedures, some stakeholders may have their concerns on these kinds of impacts. This paper discussed how to be dealt with risk issues in Japan EIA procedures in terms of impact evaluation, conservation measures and opinions from stakeholders.

2. Methodology

Risk assessment is one of typical styles in impact assessment, and Japan national government has been conducting the assessment mainly for chemical management. Recently, this kind of activities have spread to the field of occupational safety management. While those activities have effectively contributed to manage those kinds of risks, risk assessment does not have any relation with EIA procedures. In the meantime, some of other countries such as China and India include risk issues as one of evaluation items of EIA. After summarizing overall system on risk aspects in Chinese EIA, Xu et al (2016) analyzed how to apply risk assessment and management for chemical industries in Shanghai City.

Considering the current condition in Japan, this paper tried to analyze how to be dealt with risk issues in actual implementations of EIA procedures from the following points: selection as one of evaluation items, consideration in conservation measures to manage impacts, and comments from stakeholders such as related government authorities and citizens. As a database of actual implementation cases of EIA, Environmental Impact Assessment Network, which is organized by Japan Ministry of the Environment, was applied. The database includes 4,062 cases of EIA procedures by national and local governments as of the end of July 2022.

3. Results

While risk issues were selected in a few cases, conservation measures in several dozens of cases considered risk issues from the viewpoints of safety, disasters, or accidents. In addition, cases stakeholders gave their comments on risk issues reached several hundreds. That suggests that for substantial levels of concern among stakeholders on risk issues, the evaluation and conservation measures may not be sufficient. It would be important to consider how to include risk issues in EIA procedures.

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Development of Participatory SEA Framework

Case Study of Stakeholder Analysis for Updating Vientiane Transport Master Plan Study under COVID-19 Pandemic Situation

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Keywords: SEA, Participatory, ILESK, Urban Transport Master Plan, Vientiane, Lao PDR

1. Introduction

Proper information disclosure, public involvement and consensus building across various stakeholders are important factors within Master Plan (MP) development process. Participatory strategic environmental assessment (SEA) implementation framework is developed, and then, implemented within Vientiane Urban Transport MP (VTMP) study in order to consolidate the public acknowledgment of VTMP and make understandable and acceptable for various stakeholders in Vientiane under Covid-19 pandemic situation in Lao PDR. Small workshops, targeted for several key stakeholders, were conducted while obtaining feedbacks through a series of interactions among them.

2. Stakeholder Analysis

2-1 Targeted Sector-wide Workshop

In general, many stakeholder meetings and/or workshops are conducted to disseminate relevant MP information among wide range of stakeholders [e.g., JICA, 2014]. However, due to the outbreak of Covid-19, selective stakeholder interaction scheme, targeted for Ministry of Public Works (MPWT)/DPWT, Lao Women Union (LWU), Lao Youth Union (LYU), Small and Medium Enterprise Promotion Association (SME). Besides, inter-ministry workshop at provincial level was organized, inviting 39 departments of line ministries of VTMP and in order to share common understanding of VTMP, encourage feedback at PPP formulation, and then, analyze possibilities to develop the integrated local environmental and social knowledge (ILESK) of VTMP.

2.2 Compatibility and Compound Matrices

Workshops, conducted within VTMP-SEA, consists of VTMP-related brain-storming discussion, development practices of compatibility and compound matrices. All participants were divided into several small groups, and then, entire sessions were initiated while assigning well-trained facilitators for each group to streamline discussions. VTMP-related questionnaire sheet, consisting of 25 – 30 questions summarizing key discussion points were prepared to make the entire workshop session smoothly. Also, “wrap-up” information sharing-presentations/discussion were conducted to deepen understandings and sharing of workshop results and findings.

3. Conclusions

VTMP and its SEA are still on-going and to be finalized in 2023. Various stakeholders and departments did not recognize VTMP until VTMP-SEA conducted. Through a developed participatory VTMP-SEA implementation framework, the liaision with line agencies and public involvement were strengthened greatly.

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Assessment of Carbon Neutrality of City Plans Using AHP-based Weighted Indicators

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Keywords: AHP, Carbon Neutrality, Comprehensive Plan

1. Introduction

Comprehensive plans established by local governments of South Korea are increasingly adopting a variety of measures to reduce carbon emission. This study aims to assess comprehensive plans by using the indicators for evaluating the carbon-neutrality of the plans. 12 cities in Gyeonggi province were selected and the plans were analyzed to assess the quality of measures for carbon-neutrality.

2. Research Methods

The study developed 24 indicators for evaluating carbon-neutrality of city plans based on the indicators proposed by Wei and Tang (2014). In order to assess relative importance of the indicators, a survey was conducted and 20 experts in the fields of urban and environmental planning responded. The weights have been derived from AHP method (figure 1).

Layer 1	Layer 2	Weights
Factual Basis	Population change and impact	2.692
	Land development and sphere of influence	3.140
	An inventory of existing resources and energy usage	4.485
	Climate change impacts and vulnerability	4.329
	Recognition of greenhouse gas emission	6.188
Goals and Objectives	City carbon emission reduction target	5.991
	Promote a compact or multicenter urban form	4.776
	Seek energy conservation and energy efficiency	5.082
	Support climate change vulnerable group	2.646
	Citizen participation initiatives	2.338
Infrastructure Plans	Carbon sink plan	3.452
	Green infrastructure system / Low impact development	5.928
	Green transportation system plan	4.860
	Preventive measures for climate change disasters	3.463
	Zero waste / high recycling strategy	2.971
	Plan for industrial technology and production system for carbon reduction	4.326
Energy Management Strategies	Building codes for energy and energy efficiency	4.797
	Funding and incentifying for energy efficiency and conservation	6.369
	Facilitating local renewable sources	3.134
	Establish cap and trade system / carbon tax	3.990
	Carbon point system	2.543
Implementation and Monitoring	Continuous monitoring, evaluation, update plan	5.393
	Public Participation program	2.077
	Make financial / budget plan	5.030

Figure 1: Indicators of carbon-neutrality plan assessment

3. Analysis and Discussion

The plans were assessed in terms of carbon neutrality performance using the 24 weighted indicators. As a result, the highest score was given to Gwangmyeong-si, followed by Yongin-si, Uijeongbu-si, Paju-si, Uiwang-si, Anyang-si, Icheon-si, Hwaseong-si, Osan-si, Yangju-si, Guri-si, and Seongnam-si. They received high scores mainly due to providing detailed ‘basic data’ and ‘infrastructure plan’. The indicators such as ‘promotion of a compact or multicenter urban form’ and ‘green transportation system plan’ received higher scores. However, the plans with lower scores have unclear or no description about carbon neutrality in ‘goals and objectives’ and ‘infrastructure plans’. The indicator of ‘making continuous monitor, evaluate and update’ was scored the lowest for all the city plans. Since most of the infrastructure plans and energy management strategies are superficial and unclear, detailed monitoring plans may not be possible.

4. Conclusions

Results showed that 12 cities’ urban plans present different levels of performance for carbon neutrality. In order to achieve carbon neutrality, step-by-step goals should be provided, with detailed measures of waste reduction and regulation of industrial systems. In addition, specific monitoring plans and step-by-step plans should be established to reflect the context of each city.

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※ This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2019S1A5A2A03049104).

Identifying the Bottleneck in the Adoption of Biodiversity Offsets in EIA Systems of Japan

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Keywords: Aichi prefecture, biodiversity offset, environmental politics, survey

1. Introduction

While the world has failed to meet the Aichi targets in 2020, Aichi prefecture in Japan was experiencing its own policy failure silently. In April 2009, the prefectural government established a new bureau, with a specific mission to devise a policy to be presented at CBD-COP10. The resulting Aichi Biodiversity Strategy 2020 introduced the voluntary biodiversity offsets scheme, the first and only prefecture to do so in Japan. From its design, the Strategy ticked all the boxes for the signals of lack of political will summarized by Brinkerhoff (2010). Eventually, the Strategy showed minimal achievements. Between 2013 and 2018, no single case of avoidance or offsets was reported. Meanwhile, 13 ha of forest areas were created while 185 ha were destroyed. Then, the prefecture dropped the offsets from its successive strategy. This study hence examines the case of Aichi prefecture to explain the barriers for biodiversity offsets policy adoption in Japan.

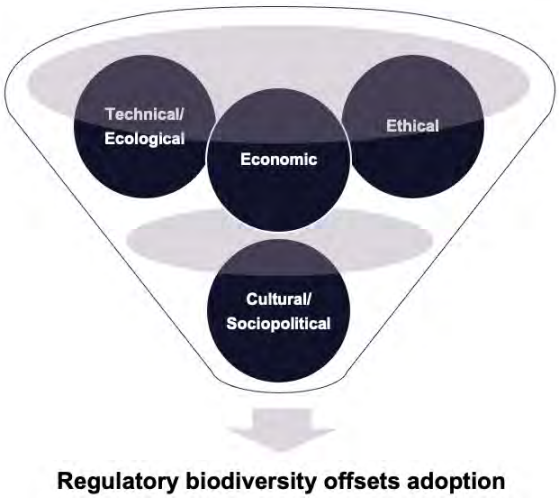

Figure 1: Four dimensions of barriers for regulatory biodiversity offsets adoption

2. Methodology

Based on literature review, government document review, and key informant interview, the four major dimensions of policy adoption barriers were identified (Figure 1). Then, a survey was conducted on 279 organizations in Aichi prefecture, yielding 65 responses (24% response rate).

3. Conclusion

The survey results suggest that the bottleneck of offsets policy adoption in Japan is its preference towards a voluntary regulation approach to environmental governance. Thus, this study reframes the non-adoption of offsets as the lack of political will to achieve biodiversity conservation. It contradicts the rhetoric taken up by the Ministry of the Environment Japan (2014) and existing literature that attribute the non-adoption to the debates in technical, economic, or ethical dimensions of biodiversity offsets. To elucidate the validity of arguments against offsets and to initiate changes in socio-political discourse, case studies on countries with similar political economy and ecological conditions, nationwide public consultation, and quantitative research on the economic impacts of offsets scheme and biodiversity banking in Japan will be required.

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Transition finance —— a powerful tool for the smooth realization of China's '30·60' decarbonization goal

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Keywords: just transition, transition finance, green investment

1. Introduction

The green transition initiated in response to the climate crisis may have a negative impact on social justice. Pathways towards a just transition are being explored at global, regional and national levels. Green finance only is not sufficient to support the energy transition across the real economy, and transition finance has become an important tool to support the transition of high-carbon sectors, but consensus has not been formed on the definition and standards.

2. Transition Finance and Just transition

2.1 Challenges of Just transition

The challenges facing the current just transition mainly include three aspects: 1) The rising cost of energy, food, etc. aggravates the living cost of vulnerable groups, which is easy to widen the gap between the rich and the poor; 2) The transition of carbon-intensive industries has led to the reduction of jobs in this field. The smooth transfer of labor force through retraining and other methods is a challenge facing the transformation; 3) There is an imbalance between regions in transition, and the economy, which is highly dependent on high-carbon industries, collapses with the withdrawal of fossil energy.

2.2 The Role of Transition Finance in Just transition

At present, China's energy structure is still dominated by fossil energy, high carbon industries will not disappear in the short term, and high emission industries are related to people's livelihood and national development. One of the important ways to achieve the goal of carbon neutrality is to enable brown assets (or high-carbon industries) to achieve a low-carbon transition, especially the eight high-carbon emitting industries included in China's carbon market, which require transition finance to support their low-carbon transition financing.

2.3 Case analysis of transition finance

Transition finance practices that promote just transition both internationally and in China are compared in terms of policy standards, research practices and specific cases.

3. Conclusions

Achieving a just transition still faces challenges. As an important tool to support just transition, transition finance needs to be explored in light of national and industry conditions. The relationship with green finance should be clarified and a good connection mechanism should be formed. A catalogue of projects supported by traansition finance should be launched as soon as possible. China has a broad space for development in transition finance development, and should seize new opportunities for transition and development under the incentive of the carbon neutrality goals.

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A Study on No Net Loss Goals in Environmental Field

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Keywords: No net loss, Nature positive, Carbon neutrality, Mitigation hierarchy, Biodiversity offset

1. Introduction

In recent years, climate change and biodiversity loss have been two of the most prominent international issues in the environmental field. For each of these issues, the goals of" Carbon Neutrality" and "Nature Positive" have emerged. In 2021, TNFD, an international initiative that requires financial institutions and companies to assess their own nature-related risks and disclose them in their financial disclosures, was launched. Since the 1980s, no net loss (NNL) policy has been in place in the United States. This has contributed to biodiversity conservation (Tanaka, Isoyama, 2011). In Japan, a study group on the state of OECM is being held to achieve 30 by 30. While there is a need for further nature conservation, it is difficult to achieve Nature Positive with the current nature conservation policy as it is. The purpose of this study was to organize NNL goals such as "Carbon Neutrality" and "Nature Positive" and to identify challenges in achieving these goals.

2. Methodology

We researched and organized the origins, objectives, and methods of the NNL goals from the Internet and literature.

3. Conclusions

Carbon Neutrality is the goal of achieving net zero CO_2 emissions by reducing CO_2 emissions and removing CO_2 through forests and other sinks. Nature Positive means restoring nature to a sustainable state by 2050. In summary, achieving carbon neutrality also requires the achievement of Nature Positive. In terms of Carbon Neutrality, efforts are currently being made to reduce emissions, and it will be necessary to address the conservation of forest ecosystems in the future. It is to compensate for the adverse effects of development on natural ecosystems by quantitatively assessing the adverse effects and following a mitigation hierarchy (e.g., biodiversity offsets). It also contributes to Nature Positive.

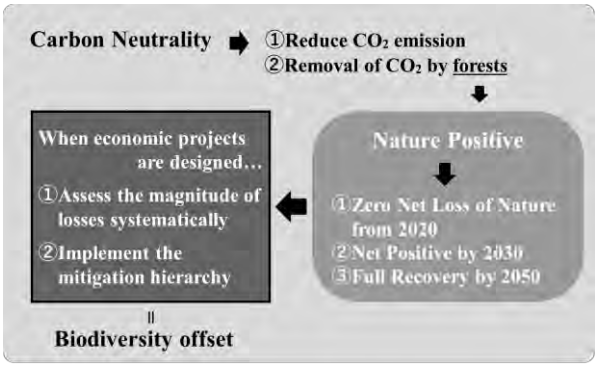

Figure 1: The connection between Carbon Neutrality and Nature Positive

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A Study on the Environmental Performance of Korean Public Organizations from the ESG perspective

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Keywords: Environmental performance, Public enterprise, ESG

1. Introduction

As ESG (Environment, Social, Governance) has emerged as a new investment paradigm, businesses have begun to develop management strategies that focus on sustainable development, including preserving the environment. Moreover, Korea's new government has included strengthening the ESG capabilities of public institutions in one of its national tasks. Against this backdrop, Korea's public enterprises are asked to formulate and implement ESG management strategies such as environmental protection. This study aims to investigate environmental performance of Korea's public enterprises based on ESG index and suggest environmental performance index for public enterprises.

2. Studying Environmental Performance of Public Enterprises in Korea

2.1 Environmental Index of ESG

It is known that there are about six hundred kinds of ESG evaluation tools. This section introduces various ESG index globally used in investment and K-ESG guideline.

2.2 Environmental Performance of Public Enterprises

In Korea, public institutions are evaluated for their management performance every year. In this section, first, we are going to analyze qualitative evaluation results of environmental performance of public enterprises based on K-ESG guideline. Second, we attempt to find out factors for higher environmental performance by conducting case study on public enterprises with higher scores.

2.3 Environmental Performance Index of Public Enterprises

Publication of sustainable management reports is not mandatory for most of public enterprises, but they began to disclose their activities of sustainable management by publishing reports. This section examines the publication status of sustainable management reports and compares environmental performance index across public enterprises. As a result, this study tries to provide environmental performance index universally used by public enterprises.

3. Conclusions

This study will provide the factors of higher environmental performance for public enterprises: establishing environmental management system, monitoring quantitative data of environmental performance, supporting ESG management of supply chain, and helping local communities environmentally sustainable. In addition, this study will suggest environmental performance index for public enterprises to use.

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Mainstreaming Environmental Impact Assessment into Environmental Governance along One Belt and One Road

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Keywords: BRI, EIA, Environmental Governance, Environmental assessment system

1. Introduction

The Belt and Road Initiative (BRI) is a development strategy proposed by Chinese President Xi Jinping in 2013 (Tian et al., 2010). Building a green B&R essential for achieving the United Nations 2030 Sustainable Development Goal. However, the economic growth goal of BRI may conflict with the sustainability of the BRI's impact on the environment and natural resources. Studies have pointed out that current B&R cooperation is not an actual "green action", which may have a significant environmental impact, such as climate change, over-exploitation of resources, air pollution, biodiversity and habitat loss, and reduction of ecosystem services (Hughes, 2019)

2. Environmental challenges and opportunities for the BRI

2.1 Environmental challenges

Environmental challenges for the implementation of BRI projects were identified through a literature review. The literature review reveals that the current research related to resources and environment of the Belt and Road mainly focuses on four aspects: current situation, impact, influencing factors, and the ways to promote green BRI. Water consumption and carbon emissions were identified as the main challenges of the BRI (Huang et al., 2017).

2.2 opportunities for the BRI

As an environmental management tool, EIA has generally been recognized by governments and scholars all over the world. However, there are still some problems and challenges in the EIA systems of BRI countries, including the differences in EIA systems and the weak implementation capabilities. Several recommendations on mainstreaming EIA into environmental governance are raised to improve the overall sustainability of BRI countries.

3. Conclusions

Most developing countries along the route are facing problems such as poor environments, high population burden, and weak environmental protection capacity. The study proposes to further improve the EIA system in four key areas: biodiversity, climate change, transboundary, and low carbon development. BRI countries need to strengthen the EIA legislative system, accelerate institutional coordination, and improve technical specifications, so as to further promote the construction of the green BRI strategy.

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Comparison of GHG Emissions from Temperate Reservoirs according to Different Tier-Level Estimation Methods

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Keywords: Greenhouse gas emission, IPCC, G-res Tool, Temperate reservoir

1. Introduction

While dam reservoirs provide economic values such as water supply and hydropower generation, they also cause environmental problems by influencing the local and global cycle of carbon, nutrients, and sediments. In particular, reservoirs play a key role in the carbon cycle between terrestrial and marine systems and are now considered significant sources of greenhouse gases (GHGs) such as CO_2 and CH_4 to the atmosphere. In the national GHG inventory, GHG emissions from dam reservoirs are estimated according to the Guidelines of the IPCC but the uncertainty is very large because the Tier 1 method is used. The objective of this study was to estimate the GHG emissions of Daecheong Reservoir (South Korea) using different estimation methods according to Tier 1 of 2006 and 2019 IPCC Guidelines and Tier 3 of the G-res Tool and compare the results.

2. Materials and Methods

Different tier levels use different quantity and quality data when estimating reservoir GHG emissions. According to the Tier 1 in 2006 IPCC, only ice-free periods and total flooded surface area are used for calculations. Meanwhile, Tier 1 of the 2019 IPCC additionally requires an annual average chlorophyll-a concentration in a reservoir to take water quality into account. And higher order methods, such as the G-res Tool, take into account the site-specific characteristics of individual reservoirs and their catchments. The G-res Tool is an online platform regarded as Tier 3 developed by UNESCO/IHA to estimate GHG emissions by taking into account various pathways (diffusion, ebullition, and degassing) and to characterize changes in GHG flux over 100 years based on the expected lifetime of dams. The catchment and reservoir data required for the G-res Tool were collected through the government's public portal.

3. Results and Discussion

The GHG emissions of Daecheong Reservoir were estimated to be 13,552 tCO_2e/yr and 19,828 tCO_2e/yr by Tier 1 method of 2006 and 2019 IPCC Guidelines, respectively. The difference is due to updated emission factors and more complex pathways included in 2019 Guideline. And using the G-res Tool, it is calculated to be 20,529 tCO_2e/yr. The GHG emission flux ($gCO_2e/m^2/yr$) results for the three methods were found to be similar to those for other reservoirs worldwide in the same climate zone. In Tier 3 (G-res tool), when site-specific data and multiple emission pathways are taken into account, annual total emissions increased by 51.5% and 3.5% compared to the 2006 and 2019 methods. Additionally, the G-res tool provides GHG emissions before and after impoundment, which better accounts for the net effect of converting rivers into reservoirs with dam construction. The G-res Tool applied in this study is expected to be useful to reduce uncertainty in the national greenhouse gas inventory of dam reservoirs.

4. Acknowledgment

This research has been performed as Project No Open Innovation R&D 21-CP-001 and supported by K-water.

Development of Hands-on Program to Educate People About Important Perspective for Habitat Conservation

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Keywords: HEP, Hands-on program, Biodiversity offset, No net loss, Satoyama eco tour

1. Introduction

The goal of carbon neutrality by 2050 has been declared in Japan. There is an increasing need to quantify greenhouse gases and natural ecosystems. It was important for citizens to understand what no-net-loss means. This study aimed to develop a program for citizens applying the principles of HEP, which was developed to evaluate no-net-loss in environmental assessment, and to identify the issues of the program through the demonstration of the program.

2. Method

In this study, the principles of HEP refers to two things. ①Evaluate ecologically and quantitively habitats in terms of "quality" x "space". ②For each ecosystem, make the conditions for conserving that ecosystem specific by targeting species or guilds that represent that ecosystem for evaluation. After developing the HEP exercise program, the program was implemented in a satoyama eco-tour to see if the principle could be communicated.

3. Results

3.1 Development of HEP exercise program

The HEP exercise program was based on the assumption that a HEP impact assessment was conducted on a proposed solar power plant development project in a satoyama located in the town of Shisui, Chiba Prefecture, using *Sasakia charonda* as the assessment species in the environmental assessment, and the four questions listed in Table 1.

Table 1: List of questions

No.	Question
1	Calculate THU of *Sasakia charonda* before development
2	Calculate THU of *Sasakia charonda* after development under proposal A
3	Calculate THU of *Sasakia charonda* after development under proposal B
4	Identify the solar deployment project proposal that would have the least impact on *Sasakia charonda* and explain why.

3.2 Verification in satoyama eco-tour

It became clear that the THU could be calculated very easily. In order to convey principle②, it was found necessary to provide many opportunities to learn about the flora and fauna of satoyama ecosystems and the characteristics of their habitats through fieldwork.

4. Conclusion

Through the development of the program, it was found that the calculation of THU and comparison questions could convey a method for quantitative comparison of ecological impacts. It was suggested that by applying the program to satoyama eco-tours, program participants were able to understand that no-net-loss means that the sum of negative THU due to develop and positive THU due to conservation activities, etc., to zero. The challenge for the program is to incorporate the THU calculation question for the compensatory mitigation proposal and to provide a better understanding no-net loss.

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Unbalanced $PM_{2.5}$ emission and happiness effect through cross-regional trade in China

Hanzhong Zheng[1] & Linyu Xu[1]*

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Keywords: $PM_{2.5}$ footprint, Multiregional input-output analysis, Sentiment analysis, Inequality, China

1. Introduction

Fossil fuel-oriented, energy-intensive economic structure has substantially degraded air quality in China, and air pollution reduction becomes one of the vital environmental issues for sustainable development. Increasing scholars pay attention to explore how socio-economic drivers such as trade activity would affect $PM_{2.5}$ emissions, which became a crucial factor for $PM_{2.5}$ emissions reduction and air quality improvement (Zhang et al., 2017; Geng et al., 2021). Air pollution has reported as a key factor affecting residents' happiness. However, related studies neglected how air pollution embodied in cross-regional trade would further impacts residents' happiness.

2. Methodology

This study aims to assess the impact of cross-regional trade on $PM_{2.5}$ emissions using different accounting methods, and further explore how these factors may affect residents' happiness. A comprehensive research framework is constructed based on the multiregional input-output model, $PM_{2.5}$ Gini coefficient, Chinese Sina Weibo posts, natural language processing (NLP) and regression analyses (Fig. 1).

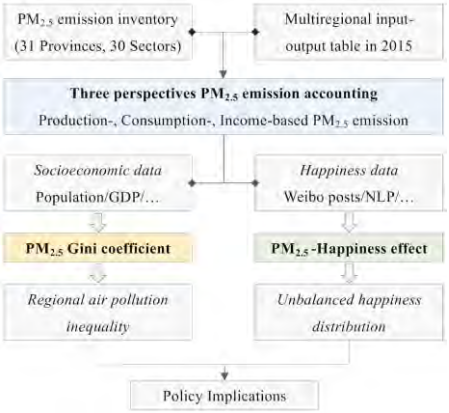

Figure 1. Methodological framework of this study.

3. Results & Conclusion

The results demonstrate that production-, consumption-, and income-based $PM_{2.5}$ emissions vary a lot among provinces and sectors. We present that the emission driven by final demand and primary input was not only from local consumption but also embodied in other regions' goods and services, which could better depict the transfer pathway of $PM_{2.5}$ emission. Lorenz curve and $PM_{2.5}$ Gini coefficient are employed to assess the unbalanced distribution of three perspectives of $PM_{2.5}$ emission via economic activities among 31 provinces in China, further illustrating that local producers are part of contributors to $PM_{2.5}$ emission, final consumers should share corresponding responsibility according to trace their transferred air pollutions. The geo-tagged Weibo posts and NLP analysis have the potential to complement traditional subjective well-being data so that to measure the impacts of $PM_{2.5}$ emissions on residents' expressed happiness, which reflects the burgeoning identity of the vital role that fresh air plays in human well-being.

The findings would not only contribute to trace consumption responsibility for $PM_{2.5}$ emission but also provide key insights for policymakers to formulate regional policies so as to reduce air pollutant emissions as well as strengthen residents' happiness.

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PM2.5 vulnerability negatively affects urban livability in South Korea and China

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Keywords: Air pollution, PM2.5, Livability, GRA, Vulnerability, South Korea, China

1. Introduction

This study aims to provide information for joint policy development by examining the effect of PM2.5 concentration, a transboundary air pollutant, on the livability of neighboring regions of Korea and China. In order to reduce PM2.5, not only the efforts of individual countries, but also transboundary consultations and joint responses with neighboring countries are required.

2. Materials and Methods

2.1 Study area and data

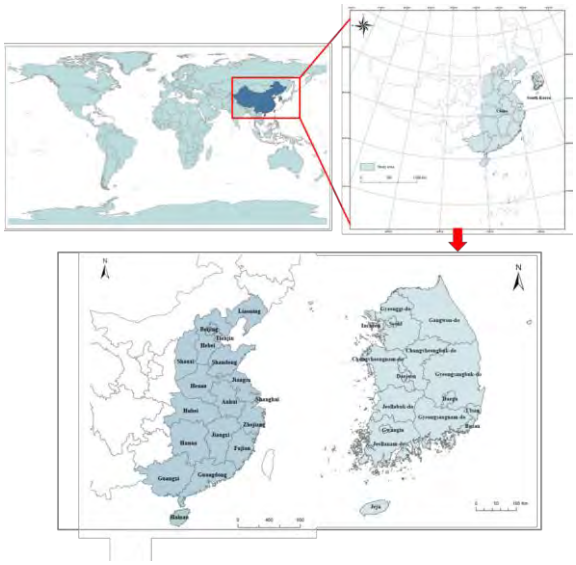

Figure 1 Study area

The study area(Figure 1) included the Chinese eastern coastal region, where industrial complexes and large cities are concentrated, and entire regions of South Korea. Annual data from 2015 to 2019 were used to analyze changes over time. For South Korea, PM2.5 data was established from 2015, and data from 2015 to 2019 were used to control the impact of the Covid-19 from 2020.

2.2 Method

First, we compare the correlation between PM2.5 concentration and the livability index in Korea and China. Second, spatially analyze the livability considering the vulnerability of PM2.5 according to the geographical and social characteristics of the country. Third, in order to see the causal relationship between PM2.5 and the highly related livability index, panel regression analysis is performed to identify the effect. Based on the relationship between the PM2.5 concentration and the livability index, it will contribute to the preparation of a joint urban policy for PM2.5 reduction and response between the two countries in the future.

3. Conclusions

As a result of the analysis, PM2.5 was found to have a clear negative effect on livability. Areas with particularly high vulnerability have shown a potential risk of reducing livability in the long run. In Korea and China, areas around large cities were found to be vulnerable. The results of this study can provide guidelines for policy establishment on PM2.5 concentration reduction and response at the regional or urban macro level.

Status of disclosure of monitoring results based on JICA Guidelines for Environmental and Social Considerations

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Keywords: JICA, Environmental and Social Considerations, Monitoring results

1. Introduction

Japan International Cooperation Agency (JICA) established the Guidelines for Environmental and Social Considerations (the Guidelines) in order to encourage project implementing organizations to conduct the appropriate considerations of environmental and social impacts. In order to ensure environmental and social considerations at the project implementation stage, JICA is confirming monitoring results according to the Guidelines.

The new Guidelines promulgated by JICA in January 2022 apply to projects requested after March 31, 2022. Therefore, this paper introduces the requirements for disclosure of monitoring results referring to the Guidelines in April 2010 and reports the status of disclosure of the monitoring results based on the requirements of the Guidelines.

2. Requirements of the Guidelines

In order to confirm that project implementing organizations in developing countries are ensuring environmental and social considerations in accordance with the guidelines, JICA, in principle, requests monitoring results from the organizations and confirms the results, not only for projects classified as Category A, which may have significant and negative impacts on the environment and society, but also for projects classified as Category B, where negative impacts on the environment and society are not considered to be significant.

After confirming the monitoring results, JICA discloses the monitoring results for projects that have agreed with the project implementing organizations to disclose the results on the following website.
<https://www.jica.go.jp/english/our_work/social_environmental/id/index.html>

3. Status of disclosure of monitoring results

Most of the projects for which monitoring results are publicly available are Category A projects. Although fewer than Category A projects, many projects classified as Category B also have published their monitoring results.

In most cases, the monitoring results seems to be submitted to JICA by the project implementing organizations on a quarterly basis, but there are projects that have delayed the disclosures of the results on the website.

Among the countries with a large number of projects listed on the website, some countries, such as Bangladesh and Indonesia, have a small number of projects for which monitoring results are available.

One of the issues is that the project progress is not clearly mentioned, so it is not clear whether projects are at the stage where monitoring on the environmental and society should be initiated or not yet.

References

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Evaluation of $PM_{2.5}$ emission reduction measures in Changchun based on CAMx model

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Keywords: $PM_{2.5}$, WRF, CAMx, Changchun, Emission Reduction Scenario

1. Introduction

With the continuous improvement of environmental quality for many years in China, the easily controlled high emission pollution sources have no longer had a significant impact. The natural object of environmental air quality management has been transformed from sulfur dioxide and nitrogen oxide produced by traditional coal combustion into particulate matter. Therefore, we plan to rely on Changchun as the research area, take $PM_{2.5}$ as the basic research index, use CAMx to establish air quality simulation system, verify the accuracy of model simulation, and explore the effect of emission reduction measures.

2. Model parameterization scheme setting

The WRF-CAMx simulations are conducted on one-way triple nesting domains, Domain 1 covers northeast China (27km * 27km), domain 2 covers Jilin Province (9km * 9km), and domain 3 covers Changchun (3km *3km). The vertical grid structure are 29 layers. Emission inventory adopts the Multiresolution Emission Inventory for China (MEIC) provided by Tsinghua University (Zheng et al., 2018; Li et al., 2017).

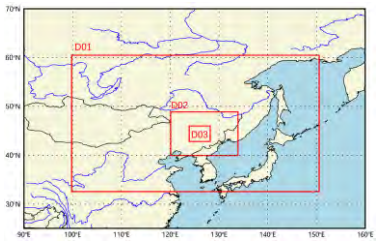

Figure 1: WRF simulation area nested grid

3. Conclusions

The simulation performance after CAMx localization is good, and the simulation results are generally low. Among them, the |MFB|<30% and MFE<50% of the simulation results in January, April and July indicate that the performance of the model is good. The three emission reduction scenarios can effectively reduce the $PM_{2.5}$ mass concentration in the study area. In January (October), the average emission reduction ratios of the three scenarios were 8.44% (9.66%), 16.92% (17.00%) and 25.45% (24.50%).

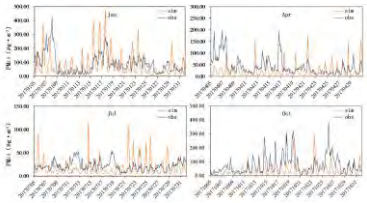

Figure 2: Comparison of $PM_{2.5}$ simulation and observation results

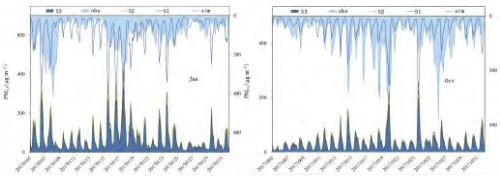

Figure 3: Changes of $PM_{2.5}$ concentration before and after emission reduction

References

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Study on Biodiversity Offsets requirement of Multilateral Development Banks in Asia

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[1]Tokyo City University, Japan

Keywords: EIA, Biodiversity Offsets, Multilateral Development Bank, Mitigation

1. Introduction

World bank group published biodiversity offsets user guide in 2016, finding that they require biodiversity offset as a financing policy. On the other hand, there are few studies about biodiversity offset systems in Asian multilateral development banks, and the actual state of requirements regarding biodiversity offsets is unclear. Therefore, we aim to clear the actual state of the Asian Development Bank (ADB) and Asian Infrastructure Investment Bank's (AIIB) policy of biodiversity offsets requirement. Then, the case studied each bank's financing that planned biodiversity offsets in Environmental assessment. This study deals with one case from ADB and ten other cases from AIIB.

2. Research methods

Cases were selected from development projects that fulfilled the below four conditions.

1. Approved project for financing
2. Not a co-financing with other multilateral development banks
3. Adverse effects on the natural environment
4. Category A project (development with the potential for significant impacts)

3. Result

3.1 ADB's case study of Biodiversity Offsets

Woodland used by the orangutan corridor is deforested by Sarulla geothermal power generation project in Indonesia. So, it is planned to offset at orangutan's habitat degradation area 40 km to the south. The offset activities are based on the Habitat hectare method following BBOP guidelines and designed to achieve net gain. The formula is "Habitat Condition Score x Habitat Type Area = Habitat Hector Score (Value)."

3.2 AIIB's case study of Biodiversity Offsets

Table1: Project overview in AIIB

Country	Sector	Development	Biodiversity offsets
India (2017)	Transport	Deforestation	Planting of 10 times trees transplantation, creation of green belts
India (2018)	Water	Deforestation	Planting of 5 times trees
Indonesia (2018)	Urban	Plants removal	Protection and conservation of habitats, restoration of vegetation on riverbanks
Sri Lanka (2019)	Urban	Deforestation	Planting trees
China (2019)	Energy	Water pollution	Marine species release to restore marine ecosystem
Bangladesh (2020)	Transport	Deforestation	Planting of 5 times trees
Bangladesh (2021)	Transport	Plants removal	Planting of 10 times trees
China (2021)	Transport	Deforestation	Planting trees
Vietnam (2021)	Energy	Changes in water flow in downstream areas	Forest conservation in the watershed
India (2022)	Transport	Deforestation	Planting of twice trees

Half of the projects were planned to plant several times as many seedlings of what same kinds of species with the loss against deforestation.

4. Conclusions and Consideration

It was found that ADB requires the developer to do biodiversity offsets with a quantitative evaluation method focusing on habitat quality and area (quantity). On the other hand, AIIB requires the developer to do biodiversity offsets focusing on habitat area (quantity).

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Highway Traffic Noise Mitigation Methods in Korea

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Keywords: Road Traffic Noise, Noise Barrier, Noise Reducing Device(NRD), Low-noise Pavement

1. Introduction

About 82% of urbanization rate and over 70% of population live in the apartment house in Korea. Because of this, we have many noise problems with apartment house and highways. From the government's report of Korea, about 86% of environmental complaints are related with noise and vibration. In regard to the highway, the noise complaints are increased year by year and over 200 complaints have received in every years

2. Noise Mitigation Measures

2.1 Noise Barrier

For mitigating road traffic noise to the residence houses near the expressway, noise barriers are the most common measure for mitigating road traffic noise and around 15dB planned by noise barriers.

2.2 NRD

For getting more shielding performance in addition to the noise barrier, NRD, the noise reducing devices are available. It can reduce the noise by reducing edge potential of the barrier. It can be expected additional 1~3dB to the noise barrier. Around fifteen types and shapes of NRDs have been used commercially in Korea and for the reasonable test of NRDs, a unique method has been suggested by the Korea Expressway Corporation which use noise spectra from different types of pavement.

2.3 Low-noise Pavement

Low-noise pavement is a good solution because the noise can be reduced regardless of receiver position. But, durability of noise reduction is the crucial point for field use. So, Long-term test have been carried out in Korean highways. The noise level from low-noise pavement is lower than that of cement pavement by around 6 dB at high frequency range. From the test results, the noise from asphalt noise is lower than cement pavement by around 3 dB and the noise from low-noise pavement is lower than asphalt pavement by around 3dB.

2.4 Noise Tunnel

. The noise tunnel is the most effective noise mitigation measure when if they are enough length. But, because of the safety and amenity, it is not be preferred to the maintenance authority. Expected noise reduction level is around 15~25dB.

3. Summary

Korea is one of most densely populated country in the world from the view of population and urbanization. So we have many noise problems in common life, such as construction noise and traffic noise. Especially, traffic noise is one of the most annoying problems today in Korea, because of highly raised apartment house around roads.

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Translation of “Assessment” －Exploring the lexicon as a reflection of “our lives”

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Hosei University, Japan

Keywords: Assessment, EIA, ESIA, 評価, アセスメント

1. Introduction

Today, the word, “Assessment” can be found every different development project and seemed changed its meanings according to the context. This research aims to clarify how the “Assessment” as a foreign language and concept has been translated and acculturated into the Japanese dictionary by examining chronological changes in the meanings of “評価 Hyou-ka” (“Assessment” in Japanese).

2. How “Assessment” transformed through language to language

2.1 Transformations of key components regarding “評価(Hyou-ka)” (“Assessment” in Japanese)

“Katakana”, which is one of forms of Japanese letters are often used as an expression tool in accordance with the pronunciation of foreign languages. Recently, “Assessment” is also expressed as “アセスメント(Asesumento)” especially in the context of Environmental Impact Assessment (EIA).

However, according to all editions of “Kojien”, which is well known Japanese language dictionary, there is a constantly used word in kanji; “評定”, but having two ways to interpret and pronounce, which might cause misleading and expanding the meanings of “Assessment”. One way to pronounce “評定” as Hyou-jo means a decision made by a group of people in council. Another way is to pronounce it as Hyou-tei, meaning to determine the value, goods in line with a certain scale in addition to the former meaning.

2.2 Comparison between “Assessment” in English and Japanese

With regard to the definitions of “Assessment” in the Oxford dictionary, there are differences in its meanings to what is translated into Japanese dictionary. Particularly, the table below implies that there are unique and original aspects of assessment in Japan; a decision-making process together with people and moral/value judgement.

Table: Comparison between the meanings of “Assessment” in English and Japanese

“Assessment” in Oxford Dictionary	“評価(Hyou-ka)” in Japanese Dictionary
1. The determination or adjustment of the amount of taxation, charge 2. Official valuation of property or income for the purposes of taxation 3. a. Figurative in general sense b. Education c. Attributive and in other combinations	・ Decision-making process together with people ・Moral and value judgement ・ Calculations based on the certain methods ・ Calculations for foresight ・ The systematical process of grading

3. Conclusions

Currently, the “Assessment” seems to get widespread and giving that, more power to understand phenomenon from a certain way. While it left some original aspects tied with each language, which reflect a lifestyle and beings. Since “Assessment” covers not only the natural environment, but also social aspects, it is now important to keep in mind that we are not still perfect to translate even one word without any problems.

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Current Trends and Issues in Visual Impact Assessment of Wind Energy Facilities at World Heritage Sites

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[1]University of Tsukuba, Japan

Keywords: Visual Impact Assessment (VIA), Heritage Impact Assessment (HIA), Wind Energy Facilities, UNESCO World Heritage

1. Introduction

Under the rapid energy transition, there are increasing World Heritage (WH) sites considered under visual impact of wind energy development and lack of appropriate impact assessment. This report shows the current situation of Visual Impact Assessment (VIA) under the international framework of Outstanding Universal Value (OUV) – centered methodology. It also provides a VIA study in Vézelay, a WH site of France to present references to State Parties facing the same issues.

2. HIA/VIA under the UNESCO World Heritage Context

Heritage Impact Assessment (HIA) has been requested by the World Heritage Committee when a WH site is considered under threats, and VIA, as a part of HIA, need to be implemented if there is any visual impact. According to current approach, OUV has been requested as one of the key factors in these impact assessments. However, this approach faces challenges for many State Parties due to the lack of appropriate guidance. Although tools have been developed and there have been successful cases of application to wind energy facilities according to the report by UNESCO in 2021, a specially focused guidance is still absent.

3. Case Study: Vézelay (France)

France has become a large wind energy nation since the impact assessment process of wind energy development was simplified in 2018. To support this policy, a guidance for EIA (including visual management) was introduced to ensure the legal certainty. This guidance also included WH sites into the general assessment requirement, to deal with issues of over 15 WH sites that have been or still are involved in wind energy issues.

In terms of assessment tools, the ‘Landscape Impact Area’ (LIA) was developed to support visibility analyse of WH sites. It aims to classify the impact on the OUV and define an area where development is not recommended. It is a more forward-looking area with far larger scale than WH sites’ buffer zone. LIA was applied to Vézelay where OUVs were clearly interpreted and were specially considered. For instance, contribution to OUV was considered as one of the key factors in determining the priority of viewpoints, and the orientation of viewsheds was settled towards the attribute conveys the OUV best (the church). Although this study was considered by UNESCO as representative, the scope of LIA was also considered too large to be feasible by some stakeholders.

4. Conclusions

Visual impacts of wind energy development can even be significant when facilities are planned outside WH sites and their buffer zones. The UNESCO’s current OUV – centered methodology is still in the exploratory stage. State Parties need to explore a more comprehensive approach in addition to taking OUV into account.

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Consensus building to promote renewable energies led by local governments

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Keywords: consensus building, renewable energy, local government, consultation, zoning

1. Introduction

In Japan, governments are eager to promote renewable energies as one of the main power source in future for pursuing a carbon neutral society. However, environmental conflicts and troubles have occurred between proponents and residents in various regions. Therefore, it is crucial for consensus building among stakeholders by the local governments. From this point of view, this research aimed to clarify the process of consensus building in the stakeholder meeting and roles of municipalities and prefectures in the case of renewable energy projects in community and regional scales.

2. Methodology

To achieve the purpose, we focused on renewable energy plans and consultations for those decisions under the Renewable Energy in Rural Village Act in community and roles of municipalities for deciding the zoning maps of wind energy in regional scale. Referring to previous studies (Baba et al. ,2009; Maruyama, 2014; Umezawa et al.,2019), this research analyzed both points of community benefits and environmental aspects.

3. Results

3.1 Process of consensus building for renewable energies by a municipality

In the targets, concrete measures for community benefits are shown in the plans rather than that of environmental aspects. And in the specific case, by the qualitative analysis on minutes and the quantitative analysis of text mining method, it was clarified that the consensus building process turned out to be shared promotive projects from those merits in the beginning phase. And then, measures for environmental issues were carefully discussed in the middle phase, and in the final one, it was confirmed both of issues to be decided and to be examined forward.

3.2 Roles of the prefectural government for the consensus building in regional scale projects

The case involved a prefecture and municipalities for deciding the zoning maps of wind energy was analyzed. As a result, the roles made those consultations possible to discuss by three ways: (1) the policy formulation with multi-layered discussion; (2) environmental aspects in the both one and over a wide area; (3) community benefits in each municipality.

4. Conclusions

These process and rolls of consensus building for introduction of renewable energy led by governments were clarified.

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The effectiveness of the mitigation hierarchy in environmental impact assessment for marine reclamation: A case study in China

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Keywords: EIA, mitigation hierarchy, Reclamation, Biodiversity Offset

1. Introduction

One of the most common tools used worldwide in the implementation of the mitigation hierarchy is Environmental Impact Assessment (EIA). China's coastal wetlands, with an area of 5.8 million ha, support abundant biodiversity and provide the foundation for regional development. To create extra land for the rapidly growing economy, coastal wetlands have been enclosed by thousands of kilometers of seawalls, whose length exceeds that of China's famous ancient “Great Wall” (Ma et al., 2014). This new “Great Wall” covering 60% of the total length of coast-line along mainland China, caused a dramatic decline in marine biodiversity and associated ecosystem services and will threaten regional ecological security and sustainable development. Thus, one might ask to what extent we have the capacity to tackle the impact of the new “Great Wall” formed by marine reclamation (Choi et al., 2018). Currently, scientific literature on marine biodiversity offset practices is scarce, focusing on highly productive and valuable coastal ecosystems, such as mangrove swamps, coral reefs or seagrass environments. This study aims to examine the effectiveness of the mitigation hierarchy in limiting the pressures and impacts related to marine reclamation projects.

2. Methodology

This study is based on the analysis of 35 Environmental Impact Assessment (EIAs) linked to marine reclamation projects (e.g., airport, port, heavy chemical industry) in China. The analytical-descriptive method was used to extract the information of the pressures, biological and physico-chemical elements, and proposed mitigation measures from EIAs.

3. Conclusions

An analysis of 35 recent EIAs showed that only 7% of the proposed measures had the aim of offsetting predicted degradation of sites of remarkable biodiversity. This can be partly explained by the lack of a clear definition of ‘significant impact’, which varies greatly depending on what is impacted, in turn allowing socio-economic activities to benefit more easily from offset. Furthermore, offsetting does not always constitute the final step of the mitigation hierarchy, highlighting the need to reinforce avoidance and reduction steps. Although we acknowledge the role of EIA in mitigating the negative impacts of reclamation projects, synergies with other marine environmental policies such as the Three-Line-One-List (TLOL) and the Maritime Spatial Planning (MSP) should be developed in order to improve current practices.

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Climate Change Impact Assessment of Korea

Youngsoo LEE, Subin LEE, and Yujin KANG

Korea Environment Institute, Korea
Keywords: CCIA, Mitigation, Adaptation, EIA

1. Introduction

In 2021, Korean government promulgated new act to prepare climate change and carbon net zero in 2050. One of important measures is the implementation of climate change impact assessment. In this presentation, we would like to implementation scheme and details for CCIA.

2. Target Plans and Projects of CCIA

2.1 Target plans

2-1- 1 Policy level plans

There are 5 categories for policy level plans.

1. Energy (from 25. Nov. 2022)
2. Water Resource development (from 25. Nov. 2022)
3. Mountain development (from 25. Nov. 2022)
4. Road Construction (from 25. Nov. 2023)
5. Waste Treatment Facility (from 25. Nov. 2023)

2-1- 2 Basic Development level plans

There are 7 categories for policy level plans.

1. Energy (from 25. Nov. 2022)
2. Industrial complex development (area : above 500,000m^2, from 25. Nov. 2022)
3. Urban development (area : above 1,000,000m^2,from 25. Nov. 2022)
4. Harbor development (from 25. Nov. 2022)
5. River development (length : above 20km, from 25. Nov. 2022)
6. Road Construction(length : above 12km, from 25. Nov. 2023)
7. Waste Treatment Facility (from 25. Nov. 2023)

2-1- 3 Projects

There are 7 categories for policy level plans.

1. Energy (from 25. Nov. 2022)
2. Industrial complex development (area : above 500,000m^2, from 25. Nov. 2022)
3. Urban development (area : above 1,000,000m^2, from 25. Nov. 2022)
4. Road construction(length : above 12km, from 25. Nov. 2023)
5. Airport construction (from 25. Nov. 2022)
6. Waste Treatment Facility (from 25. Nov. 2023)

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A Study on the Trend of Biodiversity Offsets in China

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[1]Tokyo City University, Japan

Keywords: China, Environment Impact Assessment, Biodiversity Offset, Wetland, Forest

1. Introduction

As China's influence around the world has grown in recent years, biodiversity conservation has also become more important internationally, and an increasing number of countries around the world are institutionalizing biodiversity offsets. In China, the term "Biodiversity Offsets," which balances development and environmental conservation, is not used, but there are several systems like the concept, such as the Wetland Conservation and Restoration System Scheme (2016) and the Forest Law of the People's Republic of China (2020). However, the specifics and their relationship to biodiversity offsets as used by the international community are not clear.

Therefore, the purpose of this study is to clarify the trend of biodiversity offsets in China.

2. Methodology

This study clarified the mitigation hierarchy in the environmental impact assessment system at the time of externality for China domestically and for the Asian Infrastructure Investment Bank. Furthermore, we organized policies and institutions in China that are like the concept of biodiversity offsets and clarified the position of biodiversity offsets in those policies and institutions based on the three perspectives of avoidance, minimization, and compensation.

Furthermore, through a case study conducted in Lian Jiang County, Fuzhou City, Fujian Province, China, we clarified the implementation status of biodiversity offsets in China.

3. Conclusions

Through this study, we found that China has introduced the concept of no-net-loss and is moving toward institutionalizing biodiversity offsets as a method to realize this concept.

Trend 1 was the establishment of a mitigation hierarchy in the order of avoidance, minimization, and compensation (biodiversity offsets) in China's domestic and external environmental impact assessment systems. However, the amount of domestic compensation for natural ecosystems that have been lost has not yet been specified.

Trend 2 reveals that Forest Law of the People's Republic of China (2020) and Wetlands Conservation Law of the People's Republic of China (2021) require no-net-loss compensation for lost ecosystems in accordance with the Mitigation Hierarchy. Each province in China is also promoting compensation for wetlands lost due to projects in accordance with the national wetland protection ordinance, and this was also observed through the case studies. For ecosystems other than forests and wetlands, there are no clear regulations on biodiversity offsets.

Based on the above trends, China has achieved no net loss in terms of area, but how to quantitatively evaluate the offset effect focusing on actual quality is a future issue.

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Study on Effectiveness of Japanese-style OECMs (Certification of Nature Symbiotic Sites)

Takafumi Kawamura, Takeru Shiroki, Ayako Yamane , and Akira Tanaka

Tokyo City University, Japan

Keywords: OECMs, No-net-Loss, Mitigation Banking, In-lieu fee Programs, Biodiversity Offsetting

1. Introduction

The CBD COP15 will set a target of 30 by 30 (30% of the land and ocean areas to be protected areas by 2030). OECMs (Other Effective area-based Conservation Measures) exist as a method to achieve these goals. In Japan, a demonstration project for the Japanese version of OECMs, " Certification of Nature Symbiotic Sites (the Japan's OECM)," has been started in order to achieve these goals. On the other hand, in the United States, Biodiversity Banking (the U.S.'s OECM), a precursor to OECMs, has been implemented since the 1990s. In this study, we compare the two and clarify the viewpoints necessary for the Certification of Nature Symbiotic Sites to become a system that contributes to the conservation of biodiversity in Japan.

2. Contents of this Study

Through the literature review, the following points were identified: 2.1 The background of the Japan's OECM and the U.S.'s OECM, 2.2 the differences between the process of the Japan's OECM and the U.S.'s OECM and 2.3 the differences between the proposed criteria for the Japan's OECM and the U.S.'s OECM.

3. Result

3.1 The Background of the Japan's OECM and the U.S.'s OECM

The background of their establishment is fundamentally different. The U.S.'s OECM is an efficient method of achieving No-Net-Loss mandates, while the Japan's OECM was established with the method of achieving 30 by 30.

3.2 The differences between the process of the Japan's OECM and the U.S.'s OECM

The Japan's OECM requires only one document to be submitted, while the U.S.'s OECM requires multiple documents to be prepared. In addition, only the Ministry of the Environment will be involved in the review process for the Japan's OECM, but for the U.S.'s OECM, ministries and citizens other than the Army Corps of Engineers will be involved.

2.3 The differences between the proposed criteria for the Japan's OECM and the U.S.'s OECM.

Some of the criteria for certification of the Japan's OECM were included in the proposed criteria for certification of the U.S.'s OECM, but some were not. In addition, the collection of information on biodiversity in and around a site over a wide area, such as a watershed, or chronologically, such as past, present, or future, was not included in the Japan's OECM.

4.Conclution

Based on the results to the present, we conclude that the perspectives required for the Certification of Nature Symbiotic Sites system to contribute to biodiversity conservation in the future are mandatory no-net loss, involvement of various stakeholders, recognition of spatial and temporal extent, and development of a financial management plan for the site.

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Combining CE-QUAL-W2 and LSTM to predict water temperature in a stratified reservoir

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Keywords: Water temperature, Mechanical model, Deep learning, Process guided deep learning, Reservoir

1. Introduction

Deep learning (DL) models are often used to interpret and predict patterns and relationships inherent in nature. However, the DL models may lead to prediction results that do not satisfy the laws of physics such as mass and energy conservation due to the nature of the black box model. Recently, as an alternative to solving the DL problem, a Process-Guided Deep Learning (PGDL) method that trains a DL model by reflecting the laws of physics has emerged. This study was aimed to develop a PGDL model that combines a two-dimensional numerical model (CE-QUAL-W2) and a deep learning model to predict water temperature by depth of Daecheong Reservoir (Republic of Korea) and evaluate its performance.

2. Material and Methods

CE-QUAL-W2 was used to simulate the water temperature and energy balance of the Daecheong Reservoir. The model was calibrated and validated using field data collected in 2017 and 2018, respectively. In addition, a recurrent neural network model, Long Short-Term Memory (LSTM) was developed to simulate water temperature by depth over the same period. The dependent variable was the water temperature by depth collected using thermistor chain, and the independent variables were air temperature, wind speed, relative humidity, precipitation, short wave and long wave radiations used as the meteorological boundary conditions of CE-QUAL-W2. Finally, the PGDL model was built using the same inputs as the LSTM model for the same period, and trained to satisfy the law of energy conservation by adding a penalty to the cost function if the energy balance obtained from the mechanical model was not satisfied. To evaluate the performance of the PGDL model, first, the satisfaction of the energy conservation law was evaluated, and the water temperature prediction performance was evaluated according to the use ratio of the field data.

3. Results and Discussion

The PGDL model showed better satisfaction with the energy conservation law than the LSTM model, and the energy balance of the CE-QUAL-W2 model calibrated with field data was well reproduced. On the other hand, in the LSTM model, the heat exchange in the boundary condition and the heat change in the reservoir often did not consistent. In addition, it was confirmed that the water temperature prediction performance of the PGDL model was maintained even when the number of field data was reduced. The results suggest that the development of a PGDL model using the pre-training technique enables rapid and accurate water temperature prediction even when high-resolution monitoring data are not obtained spatio-temporally.

4. Acknowledgements

This work was supported by the Korea Environmental Industry & Technology Institute (KEITI) through the Aquatic Ecosystem Conservation Research Program, funded by Korea Ministry of Environment (MOE) (Grant number 2021003030004).

Disaster Risk Reduction Functions of Japanese Style Biodiversity Bank, "SATOYAMA Bank"

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Keywords: SATOYAMA Bank, Biodiversity Offset, Disaster Risk Reduction, Spatial Plan

1. Introduction

The impact of the disasters has increased all over the world. Although a healthy ecosystem is an important factor in disaster risk reduction (DRR), development has continually affected it. The mitigation measures and biodiversity bank are considered in the environmental impact assessment (EIA). This study investigates the DRR functions of “SATOYAMA Bank” propounded as a Japanese-style biodiversity bank (Tanaka, 2010).

2. Methods

We reviewed the literature regarding flood mitigation and landslide prevention functions of ecosystems in Japan and the relationship between DRR, EIA, and spatial plan.

3. Results

3.1 DRR Functions of Ecosystems in Japan

The matters below were uncovered by a review of the literature. The peak runoff coefficient of initial phase of the soil regrowth after finishing forest regrowth is higher than the initial phase of the forest regrowth.

The infiltration of the wasted plantation ecosystem without human uses decreases due to the soil surface crust made by raindrop impact to the forest floor.

The vertical root of the tree increases length over the border of the soil layer and the bedrock layer and prevent landslides. The horizontal root prevents landslides by working like the net which extends in soil layer.

The cohesion of the lower stand density forest is higher than the higher stand density forest because the tree crown is larger and the more organic material is allocated to the tree trunk and root.

3.2. Relationship Between the DRR, EIA, and Spatial Plan

Disaster risks can be mitigated by integrating considering of the disaster into decision in all plans.

One of the roles of strategic environmental assessment in the context of DRR is preparing spatial plan integrated DRR.

Disaster risk reduction measures include Avoidance, Mitigation, and Acceptation (i.e., prohibit developments and restore healthy ecosystems in the high-risk areas and concentrate developments into low-risk areas).

4. Conclusions

The SATOYAMA Bank reduces disaster risks by designating high-risk areas as SATOYAMA Bank, restoring a healthy SATOYAMA ecosystem based on the “polluter pays” principle, and concentrating development into low-risk areas based on a watershed.

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Research on the driving factors and its interaction effects of ecosystem service value in the Hohhot-Baotou-Ordos-Yulin urban agglomeration

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Keywords：ecosystem service value, land use, driving factors, interaction effects

1. Introduction

Ecosystem service value (ESV) is an objective manifestation of the tangible or intangible benefits that humans obtain directly or indirectly from ecosystem functions, and is an important characterization of regional ecological civilization and sustainable development. The drivers of ESV can be divided into climate, soil, topography, land use and socioeconomic aspects (Luo et al., 2020). In recent years, machine learning models have been widely used for driving analysis of ESVs, because machine learning models can well characterize the nonlinear relationship between driving factors and ESVs. The Shapley Additive Explanation (SHAP) method can explain not only the contribution of drivers, but also the positive or negative effects of drivers on the outcome (Lundberg et al., 2020). This study attempts to apply a SHAP-based interpretive machine learning approach to explore the interaction of different drivers on ESV.

2. Methodology

The time-varying trend of ESV was analyzed using a univariate linear regression equation at the grid scale. Using the random forest model in machine learning to analyze the driving factors of ESV, combined with the SHAP method to explain the random forest model. In addition, the partial least squares path model was used to identify the interaction paths of meteorological, topographic, soil land use and socioeconomic factors on ESV.

3. Conclusions

The total ESV showed a fluctuating upward trend from 1990 to 2020, with an overall increase of 6.228 billion yuan. ESV has nonlinear response characteristics to driving factors. The most important driving factor is land use, which contributes 61.24%, topography and meteorology contribute 17.59% and 17.05%, soil and socioeconomic contribution 2.39% and 1.73%. The increase of water proportion weakened (enhanced) its positive effect on ESV when the precipitation was lower (higher), and the increase of slope was lower (higher) when the temperature was lower. Land use directly affects ESV, and other factors mainly affect ESV indirectly by directly affecting land use, and the indirect impact on ESV is greater than the direct impact.

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Progress on the Environmental Impact Assessment of Inter-basin Water Transfer Projects in China

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Keywords: inter-basin water transfer projects, EIA, sustainable development, ecological compensation

1. Introduction

Inter-basin water transfer projects (IBWTPs) can effectively alleviate the uneven distribution of water resources and the contradiction between supply and demand (Li et al, 2022), but also can affect land use, hydrological environment, surrounding landscape, vegetation and so on, which leads to changes in ecosystem evolution and ecological security (Lafreniere et al, 2013). EIA of IBWTPs is an effective means to evaluate and predict the impact on environment. However, the progress of EIA of IBWTPs in China in the past 50 years have not been systematically discussed. Therefore, facing with the actual needs of continuous construction of IBWTPs in China, it is necessary to summarize the existing achievements and optimize the current EIA of IBWTPs.

2. Research progress on EIA of IBWTPs in China

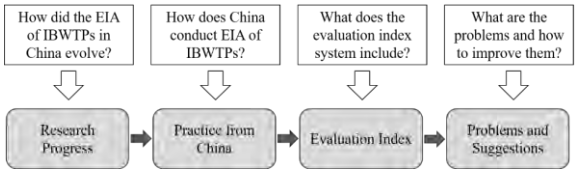

Figure 1: The framework of the research

2.1 Literature analysis

(1) Database: CNKI. (2) Methods: key words clustering, keywords with the Strongest Citation Bursts.

2.2 Developmental stage of EIA of IBWTPs

(1) Initial stage (1970s-1990s). (2) Rapid development stage (1990s-early 21st century). (3) In-depth stage (early 21st century to present)

2.3 Suggestions

(1) At the same time of EIA, the post-evaluation of IBWTPs should be carried out. (2) Develop new methods of EIA of IBWTPs. (3) Increase the consideration of climate change, biodiversity, carbon emissions of global concern. (4) Demonstrate the sustainability of inter-basin water transfer projects.

3. Conclusions

At present, EIA of IBWTPs is still a research field full of exploration and practice. However, China has not formed a unified technical framework for EIA of IBWTPs. In the future, we should comprehensively identify the environmental elements of the IBWTPs, determine the key evaluation contents, consider the indicators of global concern such as climate change, biodiversity and carbon emissions, and connect the evaluation results with the “Three Lines One Permit”.

References

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A Study on Spatial Patterns of Compensatory Wetland Mitigation

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Keywords: Compensatory Wetland Mitigation, Biodiversity Offset, Watershed, On-site, Off-site

1. Introduction

In Japan, a watershed scale plan is required in discussions on future environmental measures. The same is true for Compensatory Mitigation, which is expected to be introduced in Japan. The relationship between compensatory mitigation and watershed planning is discussed in the context of spatial patterns of compensatory mitigation (Tanaka, 2014).

In this study, we focused on the United States, where compensatory mitigation was born, and aimed to clarify the spatial pattern of Compensatory Wetland Mitigation and use it as a reference for the future compensatory mitigation system in Japan.

2. Results

Compensatory Wetland Mitigation requires consideration of where to place the compensatory site. If the compensatory mitigation takes place adjacent to the site where the development is to take place, it is referred to as on-site compensatory mitigation; if the compensatory mitigation takes place at a remote location within the same watershed, it is referred to as off-site compensatory mitigation.

The first mention of the spatial pattern of compensatory wetland mitigation was in the 1990 Memorandum of Agreement between the Corps and the Environmental Protection Agency. In this MOA, on-site compensatory mitigation was given priority and off-site compensatory mitigation was allowed only when on-site mitigation was not practicable. However, a report by the National Research Council in 2001 revealed that the Compensatory Wetland Mitigation goal of no net loss was not achieved. The NRC explained that the reason it could not achieve no-net loss was because of its insistence on on-site compensatory mitigation.

On-site compensatory mitigation always takes place adjacent to the development site, which constrains the quality and function of the wetlands that serve as compensatory sites. It is difficult to offset the negative impacts of development when the nature it compensates for is already degraded. As a result, the goal of maintaining the function of the wetland as a watershed could not be achieved. In response, the NRC explained that it is important to plan for compensatory mitigation on a watershed wide basis. This led to an increased preference for off-site compensatory mitigation methods, such as mitigation banking and In-lieu Fee programs, in the 2008 Final Rule on Compensatory Wetland Mitigation.

3. Conclusions

It is already recognized that environmental policy in Japan needs to be considered on the scale of watersheds. Therefore, the compensatory mitigation system in Japan should be considered as an off-site compensatory mitigation system that can consider where to place compensatory sites within the scope of the watershed.

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Improvement of Air Pollutant Emission Calculation Method for Air Pollution Impact Assessment near Highway

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Environment Research Institute, Korea Expressway Corporation Research Institute
Keywords: CAPSS, Road Mobile Source, Air Pollutant Emissions

1. Introduction

The government calculates air pollutant emissions every year and publishes the national air pollutant emission report. In the Clean Air Policy Support System(CAPSS), emissions from road mobile source are calculated and the contribution of mobile source to national air pollutant emissions can be identified and used as basic data to reflect this in policies. However, since it is not calculated separately for each road grade, there is a limit to using it as basic data for management in the case of roads that are managed separately from local government management areas such as highways. In this study, a plan for upgrading the calculation of air pollutants from road mobile sources was reviewed by limiting it to highways only.

2. Method

2.1 Methodology establishment and activity improvement

In this study, the applicability of activity data (traffic volume, vehicle type, speed, etc.) limited to highways was reviewed based on the methodology for calculating national air pollutant emissions and the suitability of the calculated emissions when applied. Activity data used to improve the emission calculation are road traffic volume statistical annual report (Ministry of Land, Infrastructure and Transport), monthly traffic volume by highway section and vehicle type (Korea Expressway Corporation), extension by section for each expressway route, and average driving speed by section. For this data, official data obtained from the MLIT and the KEC public data portal were used..

2.2 Program development

For the calculation of air pollutant emissions, an Excel-based tool was prepared as the first step. By applying the methodology established limited to expressways and improved activity data, it was checked whether the emissions were calculated smoothly. The first step tool was cumbersome for users, such as going through a data conversion step for data input. In the second stage, the first stage tool was programmed. As data from various fields were used, matching each was a big task. In the 3rd stage, more emphasis was placed on improving user convenience than the 2nd stage program. The upload method of materials and the matching method of each material were created in a way that users can use conveniently.

3. Conclusions

Based on the national air pollutant emission calculation methods, the emission calculation improvement method using only highway data was advanced in three steps. Although it is not yet a completed and verified method, it is considered a good step for deriving basic data for estimating air pollution emissions only from highways and understanding the impact of this on the surrounding area.

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Technology and practice of water resource and environment in “Three Lines One Permit” policy in China

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Keywords: Water resource and environment zoning, Water environmental quality standards, Upper limit of water resource utilization, Permit list for water environment, EIA

1. Introduction

Since 2017, China initiated the “Three Lines One Permit” (TLOP) as a source control policy prior to EIA to improve the environmental governance capacity (Wang et al., 2020), based on the environmental protection planning (Guo et al., 2001), functional zoning (Xu et al., 2020), and strategic environmental assessments (Daniel et al., 2019). TLOP is a comprehensive policy for ecology, water, air, soil, and other resources. In this study, we aim to introduce the TLOP in waters, exhibiting its use in Jinan and policy implications.

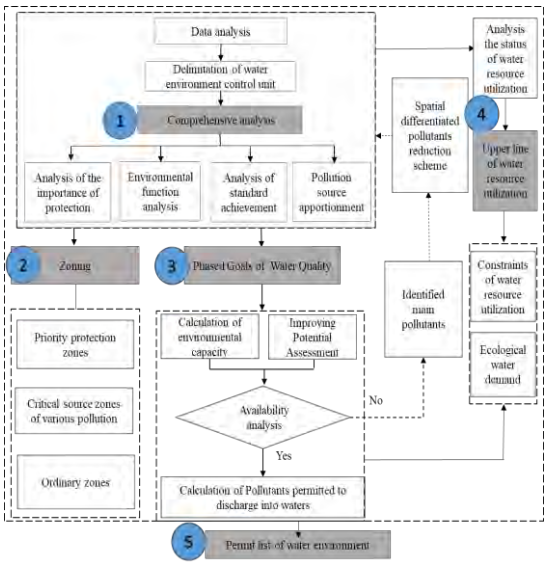

Figure 1: Framework of TOLP in waters

2. Methods and results

2.1 Methods

The framework of TOLP in water comprises of the bottom line for water environmental quality (BLWEQ), upper-limit for water resource utilization (ULWRU), and lists of water environmental permits for human activities (LWEP). The framework of TOLP in waters can be seen in Fig.1.

2.2 Results

This study integrate all water-related regulations and establish a countrywide water environmental zoning based on WECU in China. The main achievements of TLOP include WQ goals, zoning, full pollution source lists, indicator constraints, and LWEP for each WECU. As a product of EIA reform, TLOP can be used to simplify the preparation and approval of the EIA report and may even replace project parts of EIA. TLOP aids in decision-making on socioeconomic development.

3. Conclusions

TLOP is an integration of existing protection zoning, pollution control zoning, function zoning, and resource utilization policies. The main compilation process is to identify problems–set goals–zoning management–compile access lists. The main principles are problem orientated, goal orientated, and effect orientated. The framework and zoning approach of TLOP were described, which can also be applied to other similar regions in China.

References

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An interim report of the river restoration project by supplying sediment at downstream of Obara Dam

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Keywords: River restoration, Sediment supply, Sweetfish, Asiatic brook lamprey, Periphyton

1. Introduction

Downstream of Obara Dam constructed in 2010 and operated by the Ministry of Land, Infrastructure, Transport and Tourism (Fig.1) has been suffering from river-bed armoring (Figs.2 and 3) due to the lack of fine sediment supply from upstream. This is caused by the existence of Obara Dam itself trapping the transported sediment, triggering the reduction of the total number of fishes such as Asiatic brook lamprey (*Lethenteron reissneri*) whose life history is sustained by sediment grains.

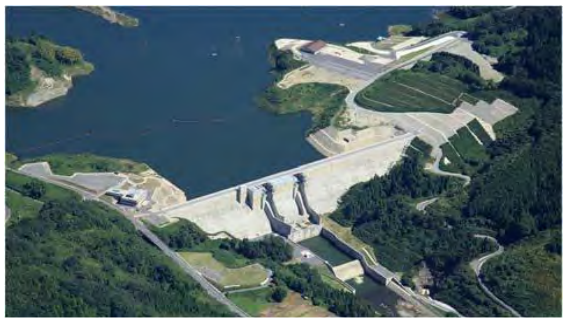

Figure 1: Obara Dam

Figure 2: Downstream of Obara Dam in 1987

Figure 3: Downstream of Obara Dam in 2022

Moreover, Yoshioka (2016) suggested that the existence of the dam causes the overgrowth of filamentous green algae, leading the river reach to an unsuitable habitat for Sweetfish (*Plecoglossus altivelis*) and possibly the other fish species.

Figure 3:Filamentous algae in Downstream of Obara Dam

In order to restore the undesirable situations reviewee above, Obara Dam started a river restoration project by sediment supply two years ago (Table .1). This is an interim report to explain the purposes and results for the trial project.

Table 1: Sand supply histroy table

Date	Sites	Amount
2020. 4	1	100m^3
2021. 3	1	300m^3
2022 .3	2	600m^3 (300m^3×2sites)

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Introduction to the Evaluation Standard of Ecological Restoration at Unused Roads in Expressway

Tae-Su Kim [1], Gi-Seong Jeon [1]

[1] Expressway and Transportation Research Institute, Korea Expressway Corporation Research Institute

Key Words : Unused Road, Restoration Project, Environment Management, Invasive Species

1. Introduction

There are 264 abandoned sections in Korean expressways with the total length of 362 km and the total area of 11,636,712 m^2 as of January 2022. Excluding sections for which accountability is transferred to the local governments or sections used for other purposes, 72 unused sections have a length of 86 km and an area of 2,925,061 m^2 in total. In this study, we will introduce the assessment criteria for abandoned road restoration project.

2. Material & Methodology

In this study, the objects of restoration environment management were divided into (a) flora and fauna, (2) ecological infrastructure and (3) facilities and landscape. Previous studies, papers, and reports on ecological restoration of abandoned roads were investigated and analyzed. Data from field surveys on restored areas were categorized and analyzed. The current state of abandoned expressways was investigated and assessed for their availability.

3. Results & Discussion

3.1 Assessment Criteria

Table 1. Assessment Criteria for Ecological Restoration of Unused Roads

Items				
Terrain Stability	Stability	Ground Collapse		
		Surface Course		
	Subsoil Features	Physical Properties		
		Chemical Properties		
		Biological Properties		
		Soil Horizon		
Ecology/ Naturalness	Planting	Plant Vitality		
		Tree Shape		
	Plant Growth	Fractional Vegetation Coverage (FVC)		
		Survival Rate		
		Vegetation Growth		
		Multi-layered Planting		
		Pest		
	Biodiversity	# of Growing Plants	Woody Plant/ Herb	
		# of Species Discovered	Woody Plant/ Herb	
Sustainability	Landscape	Harmony with Surrounding Landscape		
	Naturalness	Nature recovery		
Constructability	Feasibility	Construction cost		
		Procurement		
	Constructability	Efficiency		
		Stability		
		Maintainability		

4. Conclusions

With the literature review and filed study for areas where abandoned and unused roads, caused by highway construction and route changes, are being restored, the conclusions drawn based on the results of this study are as follows:

1. The assessment criteria include terrain stability (stability, subsoil features), ecology/naturalness (planting, plant growth, biodiversity), sustainability (landscape, naturalness), and constructability (feasibility, constructability).

References

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Analysis of Example of Revegetation Evaluation Result on Cutting Slope Revegetation Measures in Expressway: Focusing on Cheonan

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Keywords: Revegetation Measures, Cutting Slope, Evaluation, Revegetation Design and Guidelines

1. Introduction

In general, the slope revegetation process is selected on the site according to “Slope Revegetation Design and Guidelines” (2009) by the Ministry of Land, Transport and Maritime Affairs, by running a pilot project every 10 km and monitoring at least 3 times. The Asan-Cheonan Expressway is divided into five sections; the revegetation process was tested, monitored and finally selected for ripping rock slopes in Section 1. In this study, we would like to introduce a case of testing, monitoring, and evaluating the vegetation material hydroseeding (“VM”), soil fiber hydroseeding (“soil fiber”), and GMP (green protecting method for multi-planting on cutting slope) for a ripping rock slope in Section 1.

2. Material & Methodology

Revegetation pilot project was initiated in September 2017. Field surveys were conducted three times in total, in December 2017, August and November 2018.

3. Results & Discussion

3.1 Evaluation Results of Revegetation 3Types Measures

Table 1: Evaluation Results of Revegetation 3Types Measures

Marks (%)	Cutting Slope		
	VM	Soil Fiber	GMP
-	Acceptable	Acceptable	Acceptable
15	15	15	15
(0~ -5)	0	0	-3
5	5	5	5
5	5	5	5
10	10	7	7
15	10	15	10
(0~-5)	0	0	0
10	7	7	7
5	5	5	5
5	3	3	3
(0~-5)	0	0	0
30	30	30	30
100	90	92	84

3. Conclusions

1. Analyzing the physical and chemical properties of the soil on the cutting slope (ripping rock slope) for the Asan-Cheonan Construction Project, it was observed that the soil had a low content of nutrients as it showed low levels for organic matter, total nitrogen, effective phosphoric acid, and cation replacement capacity.

2. All of VM, soil fiber and GMP marked more than 75 points and were selected as the revegetation process applicable to the construction site of Section 1

References

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Trends and Challenges of Area-based Biodiversity Conservation in Japan

Takafumi Kawamura, and Akira Tanaka

Tokyo City University, Japan

Keywords: OECMs, No-net-Loss, Biodiversity Banking, In-lieu fee Programs, Biodiversity Offsetting

1. Introduction

The CBD/COP15 will set a target of 30 by 30 (30% of the land and ocean areas to be protected areas by 2030). Biodiversity offsets, which are considered effective in achieving these goals, are not mandatory in Japan. However, there is a new movement in Japan to achieve 30 by 30. The purpose of this study was to identify trends and future issues related to biodiversity conservation in Japan and perspectives in the Japanese version of biodiversity banking, which is being studied as one of the biodiversity conservation methods in Japan.

2. Method of this Study

Through a literature review, we summarized the systems and activities like biodiversity offsets in Japan since the CBD COP10 (Nagoya Conference). The results were used to identify issues related to biodiversity conservation in Japan, and to clarify perspectives on the Japanese version of biodiversity banking.

3. Results

3.1 The systems and activities like biodiversity offsets in Japan since the COP10

Since 2015, the Ministry of the Environment in Japan has been accumulating biodiversity offsets and similar cases in Japan and published a collection of case studies in 2017. In addition, the Fifth Basic Environment Plan proposed the concept of Regional Circular and Ecological Sphere, which is like a no-net-loss policy.

In the case of local governments, it is clear that they have established a system in which the local government acts as a proxy for compensatory mitigation using compensation payment paid by renewable energy power generation companies (Karumai town, 2015) and a system in which a tax collected according to the area of development is converted into a fund to benefit organizations that wish to conserve biodiversity (Minoh City, 2015).

3.2 Challenges of Biodiversity Conservation in Japan

In Japan, biodiversity offset banking has been discussed in the context of environmental assessment. From 2022, however, the discussion will be based on the mainstreaming of biodiversity and will involve actual land. This "shift in groundwork" may disregard techniques such as Public Involvement and Tiering that have been developed in environmental assessments. As a result, we may face the same biodiversity offsetting challenges in environmental assessment that other countries have experienced in the past.

4. Conclusion (Perspectives in Japanese-style Biodiversity Banking)

These findings suggest that the involvement of various stakeholders, the collection of biodiversity information with an awareness of spatial and chronological expanses (Tiering and the Watershed Approach), and long-term financial planning are important aspects of the Japanese-style biodiversity banking. Therefore, the Tsubaki - TC Satoyama Bank, the first biodiversity bank in Japan, which is currently undergoing a demonstration experiment, is preparing a prospectus based on these perspectives and the techniques cultivated in environmental assessments.

References

Karumai Town,Iwate Pref.(2015) : Karumai Town Basic Plan for Rural Area Promotion with Renewable Energy Generating.

Minoh City (2014) :Mino City ordinance of Tax on Development Projects for Greening

MOE (2022) The Draft scheme for certification of the Areas where biodiversity is being conserved through private sector efforts (OECM) in Japan.

A Comparative Study on the Environmental Policies of Road Management Agencies

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[1]Korea Expressway Corporation Research Institute, South Korea

Keywords: EIA, SEA, Biodiversity Offset

1. Introduction

The rise of ESG and global consensus on climate neutrality led many organizations to strengthen their environmental policy. Companies or agencies, in charge of road construction and maintenance, have also been required to focus on preserving the environment such as CO_2 emission reduction. In this context, this study will carry out case study to find out best practices of environmental policy.

2. Comparative study on the environmental policies of highway management organizations

2.1 U.S.

At the national level, the Federal Highway Administration (FHWA) aims to accomplish Environmental Justice (EJ). 'Federal Highway Administration Environmental Justice Reference Guide' stipulates that the EJ and citizen participation should be considered in all stages of projects. FHWA's highway environmental policy consists of resilience, sustainability, and energy and emission. At the state level, the Caltrans in California has six main goals in its 2020-2024 strategic plan. This organization publishes the environmental impact report according to the California Environmental Quality Act.

2.2 U.K.

Highways England, which was established for maintaining and renovating highways in 2015, created a department of environmental sustainability that is responsible for the net-zero policy. National Highways developed the long-term strategy of 'Net zero Highways: our 2030/2040/2050 plan,'

2.3 Japan

Japan has six highway corporations. Among them, NEXCO group consisting of three corporations, has continued CO_2 emission reduction by, for example, easing congestion. Shutoko highway corporation developed environmental policy in line with SDGs. JB corporation suggested specific measures for the realization of net-zero in "Action plan 2022-2024."

2.4 South Korea

Korea Expressway Corporation (KEC), a public enterprise in charge of constructing and maintaining highway, shows its environmental policy through social value indicators, ESG strategy, UNGC report, and net-zero strategy. From the ESG perspective, the KEC has several categories of environmental policy: CO_2 emission reduction, renewable energy, pollution/waste, recycling, environmental management, and bio-diversity.

3. Conclusions

This study will compare environmental policies of road management organizations. The findings will provide implication for eco-friendly highway.

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Department for Transport. (July 2021). Highways England's Performance Report to Parliament 2020-21.

Low-noise Pavement Estimation for Road-side Noise Impact Assessment

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[1]Korea Expressway Corporation Research Institute, Korea

Keywords: low-noise pavement, porous asphalt pavement, acoustic performance, noise reducing performance

1. Introduction

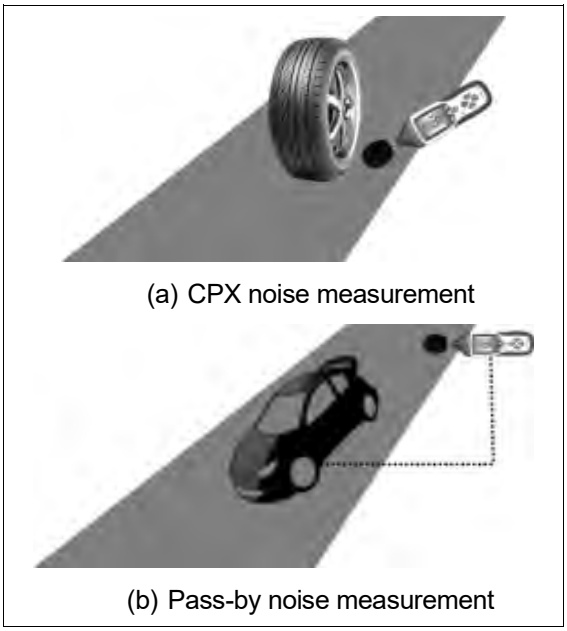
Low-noise pavement is a most preferable noise mitigation measure in Korea. Because of tremendous height of noise barrier there are many complaints from drivers and car passengers on highways, and also have big troubles with highway authorities for maintaining the noise barrier. For mitigating road noise and height of noise barrier, low-noise pavements provide good solutions. But, from the view point of noise mitigation planers, low-noise pavement has a problem with it's variable noise reducing performance, such as aging, traffic volume, running speed of cars and etc.. In this study, the acoustic performance of low-noise pavements have been measured by measuring of CPX(close-proximity) noise and Pass-by noise at highway road sides simultaneously with some different noise analysis manners, such as equivalent noise levels, maximum peak levels and exposure noise level with different time intervals. And, the most appropriate estimation method of low-noise pavements have been considered for road-side noise impact assessment.

2. Methods

Estimation method on noise reducing performance of the porous asphalt pavement or low-noise pavements have been considered by measuring of CPX(close-proximity) noise and Pass-by noise at highway road sides simultaneously with some different noise analysis manners.

3. Conclusions

In this study, several kinds of method for pavement noise estimation were considered and studied to analyze and to review the previous methods and noise reduction effect from low-noise pavement was evaluated by comparing with noise from the pavement which paved on Korean expressways generally under the same conditions. As the result, a significant estimation method was suggested for estimating noise reduction effect of low-noise pavement for noise assessment on the highway.



(a) CPX noise measurement

(b) Pass-by noise measurement

Figure 1: Concept of pavement noise measurement in this study

References

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ISO 11819-2 Acoustics – Measurement of the influence of road surfaces on traffic noise - Part 2: The close-proximity method.

Derivation of Areas affected by Heatwaves on Highways in Preparation for Climate Change Impact Assessment

Ju-Goang Lee

Korea Expressway Corporation Research Institute, Korea
Keywords: Heatwave, Climate Change, Highway, RCP, Greenhouse Gas

1. Introduction

Due to extreme climate caused by climate change, future climate change was predicted using RCP (Representative Concentration Pathways) scenario in order to predict areas that may cause heat waves damage to highway facilities. In order to compare scenario prediction results and current climate conditions, we used statistics on the number of heatwave days from 1973 to 2019 observed at 45 points across the country provided by the Korea Meteorological Administration's 'Open Meteorological Data Portal' to determine the national average annual heatwave days and the most Damage risk areas with long heatwaves were derived.

2. Results and Discussion

The RCP4.5 scenario assumes that the greenhouse gas reduction policy is substantially implemented. The national average number of heatwave days for the past 47 years (1973~2019) is 11 days, and as a result of comparing the quantitative size of the current average heatwave days and the scenario prediction result, it decreased by 32.66% in 2020s, increased by 58.98% in 2030s, and increased by 19.19 in 2040s. % increase, 42.62% increase in 2050s, 43.71% increase in 2060s, 76.00% increase in 2070s, 75.91% increase in 2080s, 136.44% increase in 2090s. The trend of change in the number of heatwave days (1.89) on the Korean Peninsula according to RCP4.5 is expected to increase by 2100, and the highest number of heatwave days (about 65 days) in the 2090s is predicted. In addition, the number of days corresponding to 55.5% of the current average number of summer days of 117 days, it was analyzed that the damage caused by the heat wave in the 2090s could be serious.

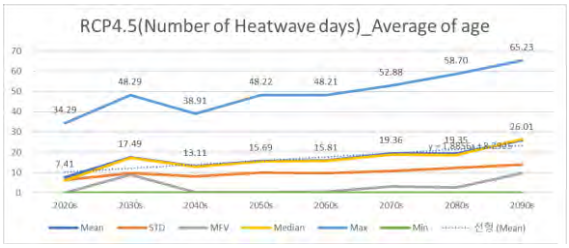

Figure 1: RCP4.5 number of heatwave days

3. Conclusions

In the case of abnormal climates, the tendency is particularly strong in the metropolitan area, Daegu, parts of Gyeongbuk, the southern coast, Jeolla-do, and Chungcheongnam-do. In Gangwon Province, many expressway lines are identified as dangerous areas except for parts of the Seoul-Yangyang Expressway, Yeongdong Expressway, Donghae Expressway, and Tongyeong-Daejeon Expressway. Therefore, the Metropolitan Headquarters, Chungbuk Headquarters, Daejeon/Chungnam Headquarters, Jeonbuk Headquarters, Gwangju/Jeonnam Headquarters, and Daegu/Gyeongbuk Headquarters require efforts such as pre-inspection and maintenance of facilities to reduce heatwave damage, and expansion of resting spaces.

References

FHWA (Federal Highway Administration) (2015)

Climate Change Adaptation for Pavement.

Improvement and application of IPCC Tier 2 method for quantification of carbon absorption in grassland biomass

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Keywords: carbon absorption, climate change adaptation, grassland biomass

1. Introduction

In each field of LULUCF (land use-land use change and forestry), greenhouse gas statistics are calculated and reported to the international community. Grassland biomass is an important carbon sink on the surface that fixes atmospheric carbon. However, Tier 1 method is applied in most countries. Therefore, the purpose of this study is to improve a formula for calculating the carbon absorption of grassland biomass using Tier 2 method.

2. Development of Tier 2 based calculating formula in grassland biomass

This study was conducted to understand the amount of growth and current status of grassland biomass at 16 sites according to climatic zones and soil types. Grassland is classified into grazing land and forage land types according to the purpose of use. Average above-ground biomass (B_{AB}), cultivation and grazing activity (n), annual loss (B_L), carbon fraction (CF), and area (A) were used to develop the equation in order to construct an equation applicable to grazing land and cultivated land.

$$\Delta C_{grass} = (B_{AB_{c,z,i}} \times n - B_L) \times CF_{c,si} \times A$$

In accordance with the standards of the IPCC guidelines, the ROK can be divided into cold and warm temperate climate zones. The carbon stock was calculated by applying coefficients derived from field surveys. Average above-ground biomass in cold temperate is 3.72 (±0.56) Mg/ha, and 8.48 (±0.86) Mg/ha in warm temperate was applied. In case of carbon fraction, 0.4170 in cold temperate and 0.4149 in warm temperate was used that is lower than the IPCC default factor (0.5). The number of yearly cultivation assumed 2 for cold temperate and 4 for warm temperate to identify the maximum carbon absorption. As a result, the total carbon stock was 366,041 Mg C through the country: 50,958 Mg C in cold temperate climate and 315,082 Mg C in warm temperate climate zone.

3. Conclusions

The maximum carbon absorption of grassland was analyzed to be 0.87 % of the ROK's carbon absorption of LULUCF in 2017 when the developed Tier 2 formula was applied. Compared with the Tier 1 method that assumes the annual carbon stock of grassland biomass is zero, the Tier 2 method quantifies the amount of carbon stock caused by human activities and can lead to the expansion of carbon sinks that were not previously considered.

Acknowledgement

This work was carried out with the support of cooperative research program for agriculture science and technology development (project No. PJ014923022022) by Rural Development Administration, the Republic of Korea.

Analysis of American Environmental Policy Based on Multiple Streams Freamwork

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Keywords: environmental policy, Multiple Stream Framework, policy analysis, USA

1. Introduction

Since the 1980s, the progress of the United States (US) environmental policy has been slow, especially when the Republican Party was in power, its environmental policy became more conservative. Using the Multiple Stream Framework, this paper analyzes policy trends and political motives in view of the major events of environmental and climate policy changes in the US in recent years, and points out how political trends affect the three sources of problems, policy, and politics, and thus affect the opening mechanism of the "policy window". The study believes that the core of decision-making such as the revision of the National Environmental Policy Act (NEPA) Regulation, the repeal of the Clean Power Plan and the withdrawal from the Paris Agreement lies in the Trump administration's political preference for economic priority, but it will undoubtedly cause damage to global environmental benefits and environmental governance.

2. Typical events of US environmental and climate policy changes

Since Trump took office as President of the US in 2017, he has successively revised NEPA Regulation, repealed the Clean Power Plan, and withdrew from the Paris Agreement. Promoters whose major environmental and climate policy change events have seriously affected the effectiveness of global environmental governance.

3. Policy analysis ideas based on Multiple Streams Framework

According to John Kingdon, in the process of policy formulation and agenda generation, there are three groups of sources that are independent, namely, problem stream, policy stream, and political stream. At a specific point in time, the three source streams converge and couple and open the "policy window".

4. Analysis results of US environmental policy

The change of American environmental policy stems from the endogenous contradictions of the American political system and the practical feedback of the unique social system. Among them, the opposition between the two parties between climate change and economic development is the core reason for the regression of environmental policy. The election cycle makes the US Politicians choose between the interests of their own group and their longer-term interests, leading to short-sighted behavior.

5. Conclusions and suggestions

The blind pursuit of productivity benefits, contrary to the objective law of development, has had a great impact on global environmental governance. Global climate and environmental governance in the absence of the US will lead to adverse demonstration effects, and confidence in world environmental governance will also be dampened to a certain extent.

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Concentration Distribution of Heavy Metals from Road Dust Sediment on Highway

Hyejin Kang, and Chulhwan Kim

Environment Research Institute, Korea Expressway Corporation Research Institute

Keywords: Road Dust Sediment, Fine Dust, Suspended Solid

1. Introduction

As the severity of air pollution caused by fine dust increases, national “fine dust management measures” are established, and interest in air environment improvement continues to increase. In the case of roads, automobiles pass through, and various air pollutants are generated by the combustion of automobile fuel, so it is an important place for monitoring and managing air pollution. Recently, interest in not only the generation of air pollutants due to fuel combustion but also the generation of pollutants due to wear of pavement surfaces and tires has been increasing. Therefore, in this study, the distribution of heavy metal components was analyzed by analyzing the sediments generated on the highway.

2. Materials & Methods

2.1 Sampling

As for the sampling sites for dust deposits generated on highways, after conducting a preliminary survey targeting 30 areas with a large amount of air pollutants (re-scattering dust), three locations with similar traffic volume and similar air pollutant generation conditions were selected.

Figure 1: Sampling sites

Sediments generated in an area of 1mx3m in each location were collected from the shoulder and used as a sample for analysis.

2.2 Instrumental analysis

In order to identify the heavy metal component in the sediment, it was analyzed using ICP-OES after pretreatment. The analysis conditions are as in the table.

Table 1: Analysis conditions

Auxiliary gas flow	0.5 L/min
Nebulizer gas flow	0.5 L/min
RF power	1350W
Flush pump rate	50rpm
Analysis pump rate	50rpm
Pump stabilization time	5s

3. Conclusions

As for the heavy metal components of sediments on highways, naturally occurring heavy metals were found to be high, and anthropogenic heavy metals were found to be relatively low. It is considered that the effect of substances introduced from the vicinity of the road is higher than that of substances generated on the highway.

References

Heeman K., Hyejin K. (2014) Evaluation of Non-Point Source Pollution by Expressway Sweeping, Korea Expressway Corporation Research Institute, pp.85-99.

Management Measures to Control Nonpoint Source Pollution from Expressway

Heeman Kang, Byungduk Lee

Korea Expressway Corporation Research Institute, Korea
Keywords: Nonpoint Pollution Treatment Facility, Management, Field Survey, Expressway

1. Introduction

Pollutants accumulated in expressway RDS(road deposited sediments) generated are intensively discharged into the water system during rainfall, affecting water quality and aquatic ecosystems. Since the enforcement of legal regulations on nonpoint pollution, the number of expressway nonpoint pollution reduction facilities has increased rapidly from 9 in 2009 to 1,505 in 2019. It is expected to reach about 4,000 by 2025. This study was conducted to provide fundamental data for establishing a management system.

2. Contents

2.1 Methodology

In this study, a database of 1,505 facilities nationwide was established through GIS analysis, and 1,138(75.6%) of the total 1,505 facilities were inspected. These were classified into reservoirs, sand filter, infiltration ditches, grassed waterway, and device types. Field survey was conducted focusing on the evaluation of problems and aging for each reduction facility type.

2.2 Results

As a results of field investigation, among 1,138 facilities, 310 facilities (27.2%) had clogged inlet, 352 facilities (30.9%) had sediment deposited on pre-treatment tank and 421 facilities (37.0%) had overgrown vegetation. Problems with each type of facility were shown as follows. Filtration materials of sand filter were blocked (28.3%), infiltration ditch have reduced infiltration performance (61.3%), the amount of sediment for detention basin was exceeded (30.9%), vegetation for vegetation swale was insufficient (29.4%), and filter replacement is required for device type facilities (60.0%). Overall, 45.1% of facilities need cutting vegetation, 12.6% of facilities need cleaning, 50.6% of facilities need dredging and 33.8% of facilities require repair.

Figure 1: overgrown vegetation and soil inflow

3. Conclusions

As a result of on-site investigation of nonpoint pollution reduction facilities, the current maintenance status is evaluated to be poor, and maintenance and management system need to be supplemented. It was intended th enhance the professionalism and efficiency of nonpoint pollution managers by publishing the management manual of nonpoint pollution reduction facility.

References

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Weathering Susceptibility of Rock Slope in Korea Expressway

Sung-wook Park[1], Gi-seong Jeon[2], and Eun-soo Hong[1], Sang-jun Im[3]

, Je-man Lee[3]

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[2]Korea Expressway Corporation Research Institute, Korea
[3]Seoul National University, Korea
Keywords: Weathering, Rock Slope, Expressway

1. Introduction

Cut slopes have been inevitably formed along hillslopes as a results of public road conctruction. Soil-media hydroseeding measures is the most widely employed techniques among different 20 revegetation methods of exposed slopes published in the expressway design manual of Korea. we performed the weathering susceptibility test of mud stone in cut slope along Daegu-Pohang expressway in Kyungnam province. The slake durability test, swelling strain test and freeze-melting test show that soil-media hydroseeding measures prevent wethering process rather than non measured rock slope.

Figure 1: study area

2. Test of Weathering Susceptibility of Rock

2.1 Slake Durability Test

Slake durability test were conducted respect to soil-media hydroseeding measured samples and none-measured one. The test result shows that soil-media hydroseeding measured slope tend to retard weathering process compare to none applied slope.

2.2 Swelling Strain and freeze-melting Test

Swelling Strain and freeze-melting Test were conducted and shows similar result as that of previous one. The change rate of respect to soil-media hydroseeding measured samples and none-measured one shows that soil-media hydroseeding measured slope tend to delay weathering process compare to none apllied slope.

3. Conclusions

1) In the test for weathering susceptibility analysis, a slake durability test, an expandability test, and a freeze-melting test were performed on 5 soil-media hydroseeding measured slope samples, none applied 5 slope samples and a total of 10 samples.

2) All of test shows that the rock tends to be higher in durability on the slope of soil-media hydroseeding measures sample rather than none applied, so it is judged that the application of the measures delays the weathering progress of the rock.

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AIC2022 online conference

"Environmental Impact Assessment
in the Age of Transition"

◆ Closing addresses

Awards 46
Closing address 47
Announcement for AIC2023 48

AIC2022 Presentation Award Winners

Presentation session A

Thodsakhone RAZMOUNTRY, Vientiane Transport Master Plan Study Team Office, Lao PDR (Lao PDR) "Development of Participatory SEA Framework Case Study of Stakeholder Analysis for Updating Vientiane Transport Master Plan Study under COVID-19 Pandemic Situation"

Presentation session B

Leah HAN, The University of Tokyo, Japan (KOREA)

"Identifying the Bottleneck in the Adoption of Biodiversity Offsets in EIA Systems of Japan"

Presentation session C

Hanzhong ZHENG, Beijing Normal University, China (CHINA)

"Unbalanced $PM_{2.5}$ emission and happiness effect through cross-regional trade in China"

Presentation session D

Yuki INOUE, Tokyo City University, Japan (JAPAN)

"Study on Biodiversity Offsets requirement of Multilateral Development Banks in Asia"

Presentation session E

Chun CHEN, Tokyo City University, Japan (CHINA)

"A Study on the Trend of Biodiversity Offsets in China"

Presentation session F

Rongwu YUE, Beijing Normal University, China (CHINA)

"Research on the driving factors and its interaction effects of ecosystem service value in Hohhot-Baotou-Ordos-Yulin urban agglomeration"

Presentation session G

Yuta FUKUDA, Nippon Koei Co., Ltd, Japan (JAPAN)

"An interim report of the river restoration project by supplying sediment at downstream of Obara Dam"

Poster session H

Takafumi KAWAMURA, Tokyo City University, Japan (JAPAN)

"Trends and Challenges of Area-based Biodiversity Conservation in Japan"

Poster session I

Sle-gee LEE, Chonnam National University, Korea (KOREA)

"Improvement and application of IPCC Tier 2 method for quantification of carbon absorption in grassland biomass"

AIC2022 Closing Address

Akira TANAKA, Ph.D., MLA
Chair, AIC2022 Executive Committee
Tokyo City University

First of all, thank you to all who participated in AIC2022.
We are now at the end of this three-day conference. During these days, I hope you have enjoyed lively discussions inspired by 43 presentations and more than 100 participants.

Now, I would like to share a few thoughts on the theme of this year's conference, "transition". Much of the current environmental policies were formulated upon recognizing climate change and biodiversity loss as global environmental problems at the 1992 Rio Summit. Unlike climate change countermeasures, however, biodiversity conservation–the conservation of natural areas that are the foundation of life, including human beings–has not progressed as well as it could have.

Recently, terms like “carbon neutrality”, “no net loss”, and “nature positivity” have gained in popularity. In fact, the essence of these concepts does not lie solely in reducing CO2 emissions. Instead, it also directs us to the necessity of spatial restoration and reconstruction of natural ecosystems and habitats. The bottom line is “no net loss of natural habitats spatially”. Natural ecosystems will then function also as carbon sinks and green infrastructure, to protect us against climate change hazards, such as flooding and sediment runoff in watersheds, which occurred recently in Atami, Japan, Busan, Korea and Xining, China.

Without such a “transition to ecological restoration”, "plus–minus zero" as in carbon neutrality, will never be achieved. I hope that EIA will play such a transitional role in achieving “30 by 30 target,” the worldwide initiative to 30% of land and ocean area should be spatially protected by 2030. And I hope this AIC will continue to be a place of academic and professional interaction for improving EIAs in Asia.

I would like to thank all the presenters, speakers, chairpersons, MC Ms. Naoko Genjida, and all participants. Furthermore, I extend my gratitude to the AIC2022 international steering committee members, Professor Juchul Jung from Korea and Professor Wei Li from China, and Professor Youngsoo Lee, President KSEIA.

This year, we had all the presentations pre-recorded and sent to the committee in advance, so we could finish the conference smoothly without the problems that usually occur at online meetings. On the other hand, I personally found it a bit unfortunate that some presenters misunderstood that they did not have to participate in the Q&A session either. We are all learning new ways of life through trial and error, including new modes of conference in the age of “digital transformation” hastened by COVID-19. I hereby acknowledge all the efforts behind the scenes from my students at Tokyo City University, who managed the complex operation of this virtual conference.

Now, I am going to invite Professor Chunsheng Fang, Jilin University to announce the hosting of AIC2023 in China in the coming year. With this, I declare the official closing of the AIC2022.
Thank you very much.

Announcement for AIC2023

Prof. Chunsheng FANG
Jilin University, China
fcs@jlu.edu.cn
Changchun, 16 September 2022

Dear colleagues of AIC2022,

We are very glad to take part in AIC2022, the 15th ASIA IMPACT ASSESSMENT CONFERENCE and we found that AIC2022 is a very successful conference.
First, we would express our thanks to the organization host of Japan. The contents of AIC2022 are rich and varied, we learned a lot in this conference.
Second, on behalf of the 16th AIC2023 which should be hosted by China, we hope we could get the continuous supporting from Japan and Korea sides as before. So that we can realize the sustainability of the environment impact assessment of Asia.
Third, it is our great honor that the organizing committee of AIC chose Jilin University as the organization host of AIC2023. I would like to introduce some background information of the organization host of AIC2023. Jilin University is very famous in China for its chemistry, law and many other majors, it is included by 985 and 211 projects of the education department of China, it locates at Changchun city in the northeast China. Changchun city is the provincial city of Jilin Province, is known by its car industry. We all know that the first Hongqi car of China is produced in Changchun in 1956, that was 66 years ago. And the city flower is Clivia, a kind of very beautiful flower. People in Changchun are very hospitable and we are looking forward to see you all in the coming AIC2023 in Changchun.
The topic of AIC2023, 16th ASIA IMPACT ASSESSMENT CONFERENCE, could be "Sustainable Development of Metropolitan Area and Environmental Impact Assessment".
We would like to express our thanks again for the host of AIC2022 and the arrangement of AIC2023. We would do our best to ensure a successful conference of AIC2023.

Best regards,
Fang Chunsheng

Secretary and Vice chairman of Department of Environmental Science,
College of New Energy and Environment, Jilin University,
Changchun, P.R.China
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The 15th Asia Impact Assessment Online Conference

AIC2022

"Environmental Impact Assessment in the Age of Transition"

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20220927

Cover Photo:
The first biodiversity offset bank in Japan,
"Tsubaki-TC Satoyama Bank", Shisui Town, Chiba Pref.