Asia Low Carbon City Design – the case of Iskandar Malaysia Eco Life Challenge-

- 1. If we cannot go to LCS,...
- 2. LCS offers higher QOL with less energy demand and lower-carbon energy supply
- 3. LCS needs good design, early action, and innovations



Designed by Hajime Sakai





Junichi FUJINO, Maiko Suda

NIES (National Institute for Environmental Studies), Japan LoCARNet 3rd Annual Meeting Bogor Indonesia, Nov 25, 2014

Low Carbon Society Scenarios for Iskandar Malaysia

Project Background



Site: Iskandar Malaysia



FLAGSHIP R

NUSAJAYA

- Kota Iskandar
- EduCity
 Medical Park
- International Destination Resort
- Southern Industrial & Logistics
 Clusters (SiLC)
- Puteri Harbour

LAGSHIP C

- WESTERN GATE DEVELOPMENTPort of Tanjung Pelepas (PTP)
- Tanjung Bin Power Plant
- 2nd Link Access to Singapore
- RAMSAR World Heritage Park
- Tanjung Piai Southernmost Tip of Mainland Asia
- Maritime Centre

LAGSHIP D

• Tanjung Langsat Industrial Complex

- · Johor Port
- Tanjung Langsat Port
 Pasir Gudang Industrial Park

LAGSITIF L

- SENAI-SKUDAI
 Senai Airport City
- Senai High-Tech Park
- Sedenak Industrial Park
- MSC Cyberport CityJohor Technology Park
- Johor Technology Park
 University Technology
 Malaysia (UTM)

(Iskandar Regional Development Authority)

Objective:

i. To draw up **key policies and strategies** in guiding the development of Iskandar Malaysia in **mitigating carbon emission**. *Transforming Iskandar Malaysia into a sustainable low carbon metropolis by adopting green growth strategies/roadmap*.

ii. To respond to the nation's aspiration for **ensuring climate-resilient development for sustainability**.

Target Year: 2025 (2005 – 2025)

Background

Development of Low Carbon Society Scenarios for Asian Regions



















Research Team: Universiti Teknologi Malaysia (UTM), Kyoto University (KU), Okayama University (OU), National Institute for Environmental Studies (NIES)

Joint Coordinating Committee: Iskandar Regional Development Authority (IRDA), Federal Department of Town and Country Planning (JPBD), Malaysia Green Technology Corporation (MGTC)

Sponsorship: Japan International Cooperation Agency (JICA), Japan Science and Technology (JST)

Period: 2011 - 2016

Research Output:

- i. **Methodology** to create LCS scenarios which is appropriate for Malaysia is developed.
- ii. LCS scenarios are created and utilized for policy development in IM.
- iii. Co-benefit of LCS policies on air pollution and on recycling-based society is quantified in IM
- iv. **Organizational arrangement of UTM** to conduct trainings on LCS scenarios for Malaysia and Asian countries is consolidated, and a network for LCS in Asia is established



The 10th SATREPS progress meeting, Oct 12-14, NIES





















Overall research procedure of our LC development approach

- Area
- Base year
- Target year
- Covered sectors
- Actors/Players
- LCS target

Quantifications of parameters:

- Population
- Final demand
- Transport parameters
- Energy service demand generation
- Energy device share
- Power supply assumptions

Setting framework

Qualification of Socioeconomic Vision

Quantification of Socioeconomic Visions and GHG emission

Try and error to keep consistency and unity among Socio-Economic policies and LCD targets

Analysis of Alternative
LCD scenarios and
measures

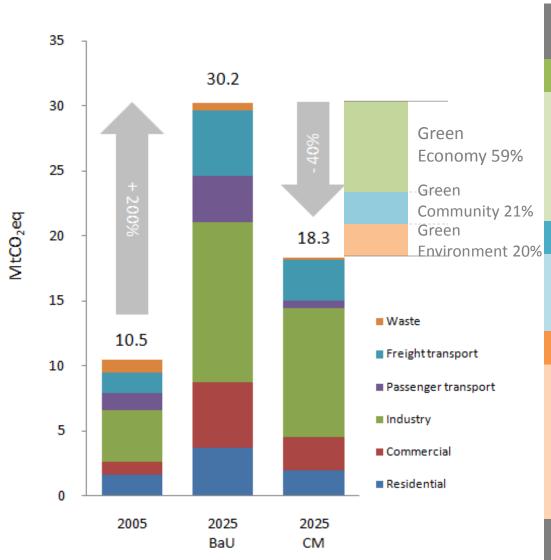
Design LCD Actions and Roadmaps from the analysis

- Demography
- Lifestyle
- Economy
- Transport
- Building
- Resource efficiency
- Energy strategy
- Power supply

Evaluation of Scenarios / measures:

- Transportation system
- Energy service demand generation
- Energy device share
- Power supply options
- Renewable energy
- Carbon sink
- etc.

Research: AIM model apply to Iskandar Malaysia Region to identify Potential Mitigation Options



Mitigation Options

Green Economy

Action 1 Integrated Green Transportation

Action 2 Green Industry

Action 3 Low Carbon Urban Governance**

Action 4 Green Building and Construction

Action 5 Green Energy System and Renewable Energy

Green Community

Action 6 Low Carbon Lifestyle

Action 7 Community Engagement and Consensus

Building**

Green Environment

Action 8 Walkable, Safe and Livable City Design

Action 9 Smart Urban Growth

Action 10 Green and Blue Infrastructure and Rural

Resources

Action 11 Sustainable Waste Management

Action 12 Clean Air Environment**

Total

Field Visit to Education Activities in Japan towards LCS (Sep 2012)



Ministry of the Environment Japan



Expert Workshop with MEXT, JST





Visit UNESCO school in Tama city, Tokyo



Exchange with education board in Tama city, Tokyo



Role of Education in Community in Shinjuku



Visit Miyako Ecology Center (Exhibition and Volunteer Training Space) in Kyoto



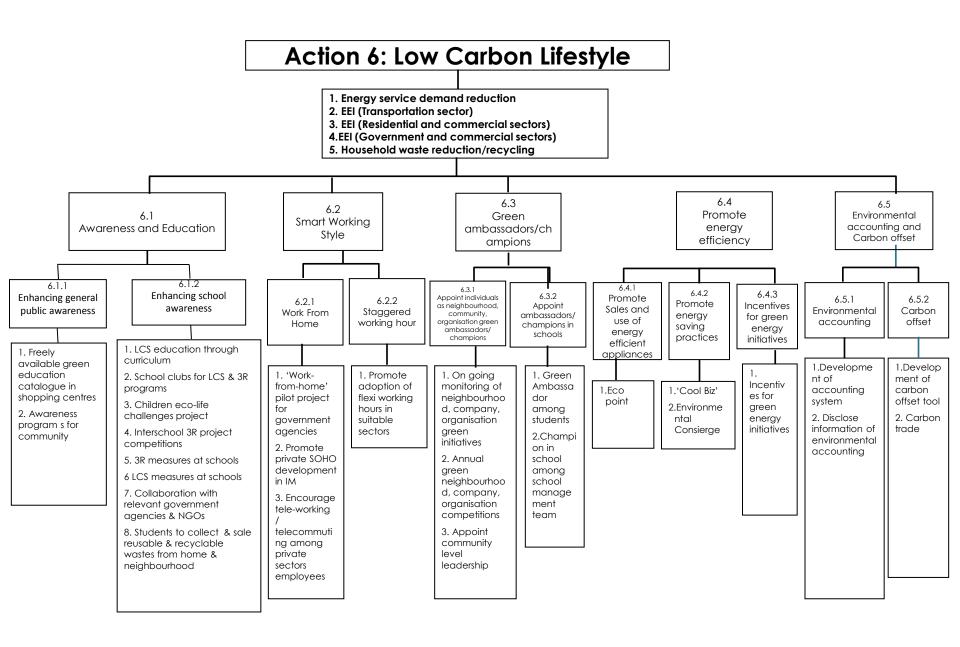


Eco education in nursery in Kyoto city





Join Eco Life Challenge Lesson in Kyoto primary school



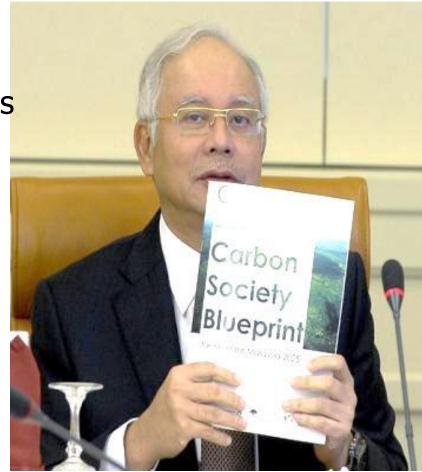
"Development of Low Carbon Society Scenarios for Asian Regions" In the case of "Iskandar Malaysia"

Japanese experience on Low Carbon Scenarios & Roadmaps

Malaysian challenge on Implementation of Low Carbon Visions



Premier of Malaysia provided permission in the 13th IRDA Steering Committee to start the Iskandar Low Carbon Society planning (December 11th, 2012)









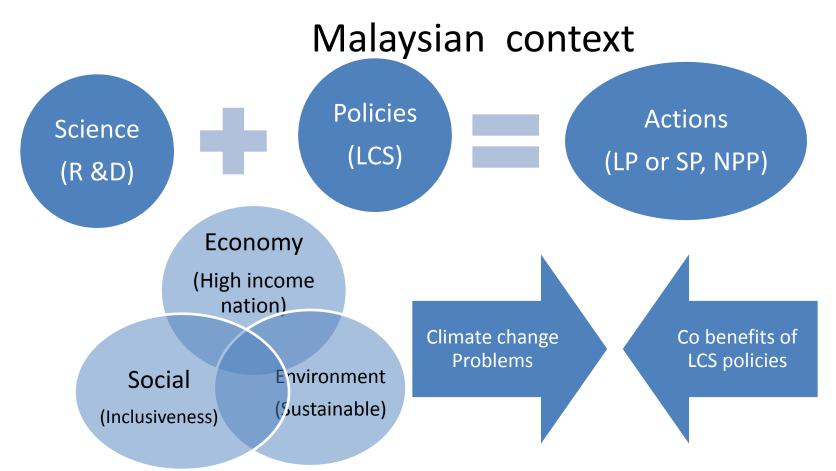












Quantification from LCS modeling assist better understanding on impact of proposed actions, sub actions and programs.

Good baseline study, consensus building & Low carbon blueprint plan will help to develop an integrated climate resilient, Low carbon framework for a rapid urbanised city or region.

Inclined to focus on co-benefits of LCS policies

Research to Policy: Policymakers launch LCS implementation plan based on scientific scenario study using AIM model

The LCSBPIM Booklet: "Actions for a Low Carbon Future"

1.	Mobile
	Manage
	ment
	System

2. Green Economy Guidelines

3. Eco-Life Challenge Project for Schools



4. Portal on Green Technolo gy

5. Trees for Urban Parks/Forests

6. Responsible Tourism and Biodiversity Conservation

The LCSBPIM Actions for Low carbon Future is a implementation report. This plan select 10 priority projects from a total of 281 programs to be

7. Bukit Batu Eco-Community

8. GAIA –
Green Accord
Initiative
Award

9. Low Carbon Village FELDA Taib Andak

implemented for the 2011-2015. Apart from Triple Base line actions, 3 special projects are also identified- Bkt batu Ec0-

10. Special Feature: Smart City –
Pasir Gudang 'NAFAS BARU': CLEAN
AND HEALTHY CITY



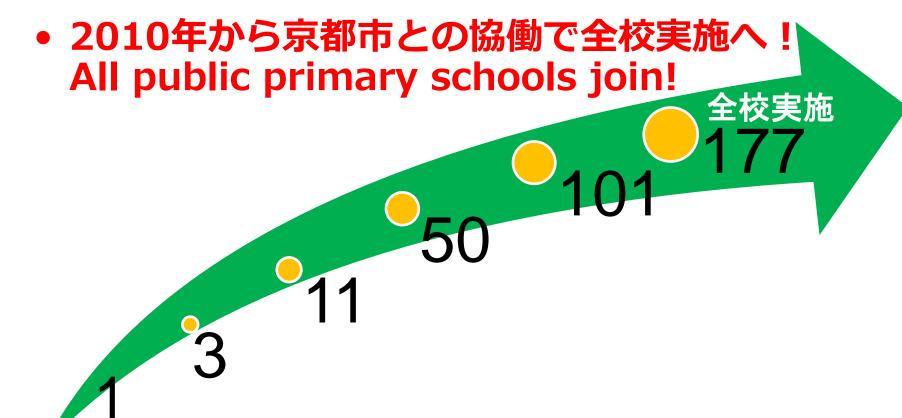
Community, LC Village FELDA Taib Andak and Pasir gudang Nafas baru

こどもエコライフチャレンジの経緯 History of Eco Life Challenge

• 2005年度より協働でスタート

2007年

- 京都青年会議所との協働事業として、小学校で地球温暖化・エコライフ についての学習会を開催。

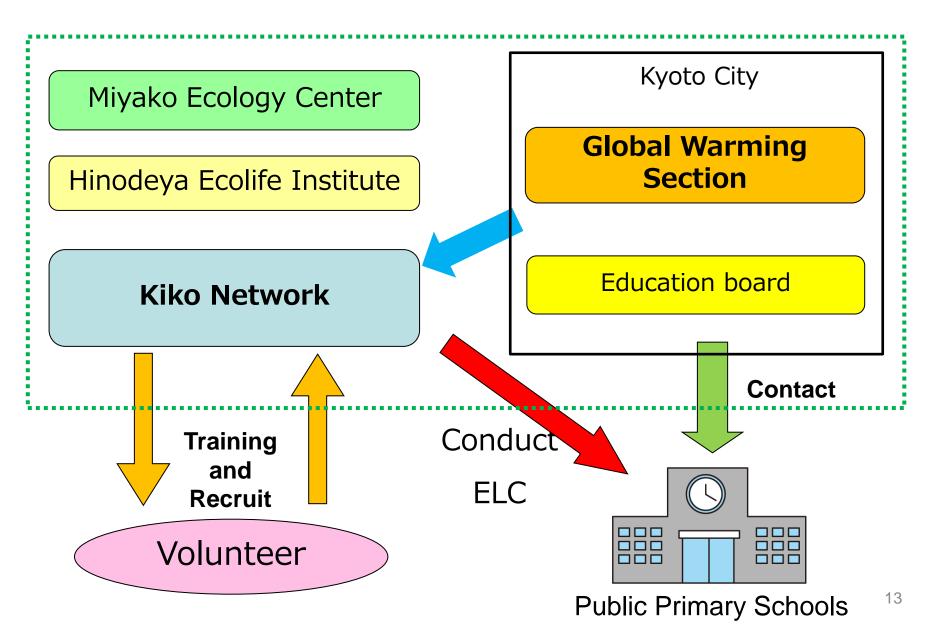


2008年

2009年

2010年~

Organizations in Kyoto for ELC



Workbook for pupils



- あなたやおうちの人が飲んだものは、 何に入っているかな?
- あなたやおうちの人が飲んだものは、何に入っていたかな?書いてみよう。



何を飲んだかな?	何に入っていたかな?		
列:牛乳	例:紙パック		
列:ビール	例:かん		

◇ 容器が作られてから、運ばれて、捨てられる までで、いちばん CO2 を出す量が少ないもの 出所:リュース可能な飲料容器及びマイカップ・ はどれ?

マイボトルの使用に係る環境負荷分析について 〈2011年4月容器包装リサイクル法〉



リユースびん



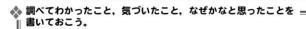








リユースびんとは、洗って返すと何度もくり返し使えるびんのこと。容器を作るとき、原料を 外国から運んできたり、高い熱でとかしたりするから、多くのエネルギーが使われて co2 がで



リユース容器に入った商品を選び、使い終わったらお店に持って行くよ うにすると、1ヶ月で減らせる CO2は45 l ごみ袋9個分だよ。





Learning Process

Next Step Pre-Study



Implementation
In summer/winter
vacation



Reflective group learning



Analysis of the factors enabling implementation in all schools in Kyoto

- (1) Leadership and its transfer
- enthusiastic leadership of Kyoto JCI (Junior Chamber International)
- transition of leadership to the Mayor of Kyoto City with its organizational capability was the key to achieving implementation in all the schools.
- (2) Ability to create and modify education programs
- Children's Eco-Life Challenge was being implemented in more or less the same format as today (pre-study, implementation, reflective learning session) since the beginning in the year of 2005.
- The strong program development capability of Kiko Network and Hinodeya Eco-Life Institute which were involved in the environmental housekeeping book system
- (3) Systems to foster facilitators and volunteers to conduct the program
- Children's Eco-Life Challenge is implemented in schools with one or two facilitators and two to five volunteers.
- More than ten facilitators and more than 80 volunteers are required.
- Miyako Ecology Center conducts training volunteers over three years, and the staff of the Kyoto Center for Climate Actions and so on.

Analysis of the factors enabling implementation in all schools in Kyoto

- (4) Involvement of key stakeholders in the education sector
- Since Kyoto City Board of Education has the most influence over elementary schools, its involvement made it possible to implement the program at all schools. With participation in the Association of Principals, the program would only have spread to schools whose principals took an interest. The election of former superintendent of education, Mr. Kadokawa, as mayor had a significant impact. In addition, the program itself evolved into something that fitted well in a school setting, making it more acceptable to the teachers at the schools.
- (5) Relationships among key stakeholders and the presence of coordinators
- The fact that the local government and NGOs in Kyoto had a long-standing partnership based on trust was another important point. The relationship of trust was reinforced when the members of Kyoto JCI visited Kyoto City Hall in late April 2005 and the local government introduced Kiko Network and Hinodeya Eco-Life Institute and contracted the project to these NGOs.

Field Visit to Education Activities in Japan towards LCS (Sep 2012)



Join Eco Life Challenge Lesson in Kyoto primary school Kyoto Shimbun May 2013

Kyoto ELC implement to Malaysia

第3種郵便物認可

玩艺

着图

京の環境教育 マレーシアへ

NPOなど考案「こどもエコライフチャレンジ」



「こどもエコライフチャレンジ」について意見を交わすNPO職員や、 イスカンダル開発地域の担当者(京都市中京区)

イスカンダル地域の担当 らがこのほど、京都を訪 らがこのほど、京都を訪 ズワンさん(4)は「環 ズワンさん(4)は「環 でやさしい一流のまちを 成するきっかけにした した話していた。

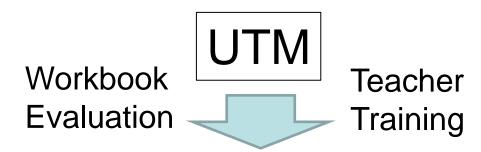
子校168校で実施してい 1答で、現在は市内の全小 1地域や家庭で実践する

山へ期待

指す新たなチャンス」と期待 化の4 にのは大などは「世界規模 年度に 年会業

と期待 と期待 にの仕組み、ごみ削 にの仕組み、ごみ削 にの仕組み、ごみ削 にの仕組み、ごみ削 にの仕組み、ごみ削 にの仕組み、ごみ削

Academia: Universiti Technologi Malaysia



Primary schools In Iskandar Malaysia



Coordinating Budget

Implementer:
Iskandar Regional
Development Authority

School Arrangement

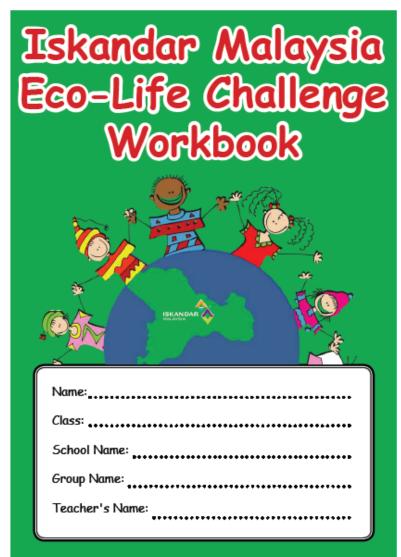
JPNJ

Educator:
Johor State
Departpment of Education



13 Iskandar Malaysia Ecolife Challenge **2013**

- Workbook designed by UTM
- 23 schools (2800 Y6 students)
- 1 months to complete individually & groups (October 2013)
- Final presentation
- No of workbooks distributed 3790
- No of workbooks returned 1807
- Return rate 47.68%
- Low rate because low awareness among teachers and lack of monitoring at the district level.



Iskandar Malaysia Ecolife Challenge 2013



















No	Item	Pre-ELC	Post-ELC	Diff.
1	Shut down TV when you do not watch it.	3.11	3.22	0.11
2	Turn off lights in a room where no one uses the room	3.15	3.22	0.07
3	Do not use too much of air conditioner.	1.28	1.93	0.65
4	Be careful in setting the temperature of air conditioner.	1.28	1.70	0.43
5	Close refrigerator soon after you use it. Do not open it when	2.65	2.98	0.33
	not necessary.			
6	Iron many clothes at one time.	2.25	2.57	0.32
7	Do not leave water running when washing teeth or face.	2.70	2.92	0.21
8	Washing school shoes using pail instead of running water.	2.54	2.83	0.29
9	Bring my own bag (eco bag) to shopping.	1.80	2.45	0.65
10	Collect plastic bags for other usage.	3.46	3.65	0.19
11	Use notebooks with recycled-mark.	1.75	2.36	0.61
12	Reuse unused side of paper.	2.76	3.26	0.50
13	Bring water bottle, instead of buying drinks.	2.86	3.08	0.21
14	Separate waste and recycle them.	2.23	2.93	0.70
15	Use bicycle or walk for short distance.	2.97	3.15	0.18
16	Leave no food. Do not waste food.	2.99	3.20	0.20
17	Discuss with your family about environmental issues.	1.67	2.52	0.85

Blog of Kyoto City Mayor, Mr. Daisaku Kadokawa



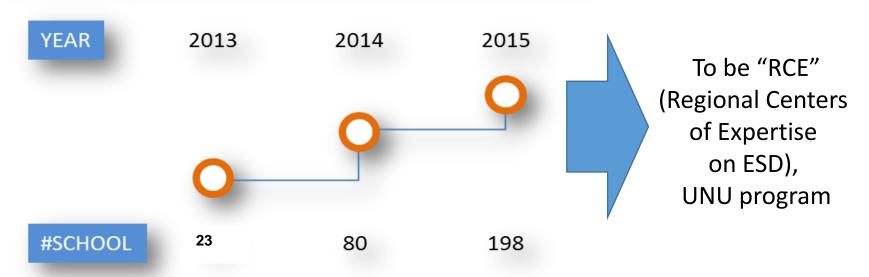
【マレーシア版「こどもエコライフチャレンジ」参加者の皆さんがお越しくださいました】



京都市の小学生向け環境教育プログラム「こどもエコライフチャレンジ」。このたび、マレーシアにおいて、本プログラムを元にした「マレーシア版こどもエコライフチャレンジ」が開発されました。

今日は、「マレーシア版こどもエコライフチャレンジ」に取り組まれているジョホール州イスカンダル開発地域の小学生の皆さんと、マレーシア・イスカンダル地域開発庁イズマ・アズワン副長官、国立環境研究所 藤野主任研究員らがお越しくださいました。

PLANNED COVERAGE FOR ECO-LIFE CHALLENGE IN ISKANDAR MALAYSIA PRIMARY SCHOOLS



- 23 schools as pioneering batch for ASPnet (Unesco) primary category in Malaysia
- Initial stage (2013) in competition format as a study platform
- To be scaled up by incorporating ELC as lesson component in all planned 198 ASPnet (UNESCO Schools) primary schools in Iskandar Malaysia.

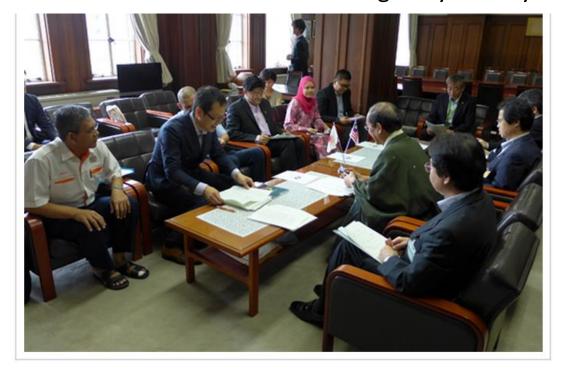
Blog of Kyoto City Mayor, Mr. Daisaku Kadokawa

【マレーシアの学校で京都の小学生教育環境プログラムの実践が大きく拡がっています ジョホール州イスカンダル開発地域訪問団の皆さんがご来庁】



Prof. Ho, Mr. Isma, Mr. Jalil, Mr. Razif, Ms. Aerma visited the Mayor Kadokawa on Aug 2014

Blog of Kyoto City Mayor, Mr. Daisaku Kadokawa



Eco-partnership between Kyoto city and JB Mentioned by Mayor Kadokawa

マレーシア・イスカンダル地域開発庁 アズワン副長官、マレーシア工科大学 シオン教授、ジョホールバル市の代表をはじめとする方々がお越しくださいました。国立環境研究所の藤野研究員らもご一緒。

当地では、環境保全と経済成長の両立を目指す取組を推進しておられます。

その一環として、京都市の小学生教育環境プログラムを基に、マレーシア版「こどもエコライフチャレンジ」を開発。現在、ジョホールバル市の小学校80校で実施され、来年には全198校に拡がります。6月には、同市主催の国際会議に、京都市の松浦課長が招聘を受け、地球温暖化対策について講演するなど、全面的に協力しているところ。「DOYOUKYOTO?」が拡がっています。

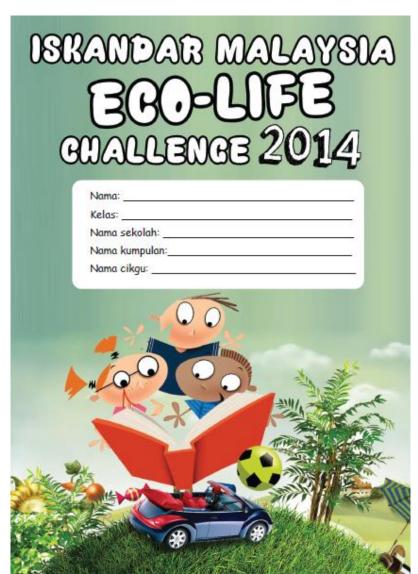
また、同市から環境問題について、パートナーシティ締結の申し入れがあり、相互で 検討することとなりました。

これからも「DOYOUKYOTO?」を合言葉に、実践を重ね世界中へ発信していきます。



ıskandar Malaysia Ecolife Challenge 2014

- Workbook designed by UTM in Malay
- 80 schools (15623 Y6 students)
- 1 months to complete individually & groups (October 2014)
- Final presentation for 15 schools – 10 Nov 2014
- Judges from Malaysia & Japan



Briefing to Principals

15 Sep 2014 @ Iskandar Malaysia Information Centre (IMIC)







Briefing to Teachers

24 Sep 2014 @ Ar-Razi Auditorium, T02, Faculty Bioscience and Medical Engineering (FBME), UTM







Carbon Fighters win Kvoto trip

YOUNG MODELS: SK Kempas primary school is winner of the second Iskandar Malaysia Eco Life Challenge

> PEGGY LOH KUALA LUMPUR streets@nst.com.m

THE team from SK Kempas primary school came out tops in the grand finals of the second Iskandar Malaysia Eco Life Challenge after beating 14 other schools in Iskandar Malaysla, on Nov 10.

· Calling themselves Carbon Fighters, the team of five students and two teachers clinched a study trip to Kyoto, Japan.

SJK (C) Masal was the runner-up while SJK (C) Foon Yew 1, took third place.

The Iskandar Malaysia Eco Life Challenge is a student version of the energy household accounting scheme to help households record and evaluate energy usage such as electricity, water and gas, with the aim of reducing consumption to contribute towards a low carbon

Modelled after a Kyoto City programme based on the original works of Kiko Network, a Kyoto-

based non governmental organisation (NGO), the Malaysian version is a joint development by University Teknologi Malaysia, Johor State Education Department, Kiko Network, Japanese National Institute for Environmental Studies and Iskandar Regional Development Authority (Irda).

Kyoto is a natural destination for the winners' study trip as it was the birthplace of the Kyoto Protocol the world's first international agreement on the reduction of greenhouse gases.

The visit to Kyoto will let the students observe and experience the Kyoto lifestyle as their citizens are exemplary of an eco-sensitive

As the students bridge the concept and application, they will be convinced that the eco-lifestyle can be defined, measured and is attainable over time, and should return to share their knowledge with others.

Irda's vision to implement the Eco Life Challenge as an extra curriculum activity in all schools based in Iskandar Malaysia by next year is being realised as the schools are promoting activities and counter-measures to bad habits with the aim to develop an LCS, starting with the students.

Since the inaugural event last year, the schools which took part in this year's finals pulled out all the stops to impress the panel of judges with their presen-



Pupils and teachers from SK Kempas receive the top prize in the Eco Life Challenge from Irda chief executive Prof Datuk Ismail Ibrahim (fourth from left). Pix by Peggy Loh

on the Kyoto Eco-Model City ex-

Using photos, charts and inter-

helped to reinforce the students'

Model City.

translation

develop an LCS.

of recycled materials, models of nior Research Associate Malko proposed eco-friendly townships, interesting presentations and articulate responses to the judges' questions, the winning teams deserved the merit.

The panel of judges must have been delighted to hear the SJK (C) Foon Yew I team's reply to a judge's question, that students understood the reasoning for adopting habits to live in a LCS and are motivated to become Eco Life Warriors like the

Similarly, the team from SKJ (C) Masai sent a clear message in their presentation that "small changes make a big difference".

Guest judge Koichi Shiba of Kiko Network was particularly impressed with the slogan presented by the team from SKJ (C) Cheow Min, Pontian, which reads: "Caring and sharing, Practice together, Do it together"

Shiba was at the event with City of Kyoto Global Environment Pollcy Office Environment Policy Bureau representative Takuya Matsuura and the National Institute for Environmental Studies Juhe emphasised that it is important to apply them in daily life.

"Iskandar Malaysia is your fu-Shiba and Matsuura observed ture," said Irda Social Development that most of the school teams made good presentations and ap-Division head Nor Hisham Huspear to have a strong grasp of the sein, as he challenged the students to adopt an eco lifestyle. From their enthusiastic respons-They were pleased to share with

es to his questions, the students their counterparts in Iskandar Malaysia the information and exwere motivated to change and adopt better daily habits to save perience garnered since 2009 when Kyoto City made the comwater and electricity at home and mitment to become an LCS and was selected as the Kyoto Eco-

They were encouraged to change their attitudes and model them While the judges deliberated on after the Japanese people, and to the results. Matsuura made a brief care for the environment. presentation to share information

The schools also took part in two other challenges for Recycling and perience with the audience while Energy Saving. SK LKKP Pasir Raja Suda helped with the English was awarded the top prize of RM1,000 for collecting 4195kg of recycled material, while SK Kota esting visuals, his presentation Masai 2 and SJK (C) Kulai Besar took second and third place, reunderstanding of what it means to spectively.

SK Taman Damai Jaya was As the information helped the awarded the RM1,000 top prize audience to realign their thoughts while SK Bandar Pontian took secand ideas for a unanimous comond place, and SK Kempas came in mitment to adopt an eco lifestyle.



researched PowerPoint presentation, a model of a building with eco-friendly features and effective presentation skills, helned the SK Kempas team win the Eco

A well-

11th Nov, 2014, New Strait Times

Final Presentation 10th Nov, 2014





UNESCO World Conference on ESD (Education for Sustainable Development) In Nagoya Japan on 10th Nov 2014

Japan International Cooperation Agency (JICA)

独立行政法人 国際協力機構(日本)



Next step

Timeline

Oct 12-14, SATREPS progress meeting@Tsukuba

Nov 24-26, LoCARNet annual meeting@Bogor, Indonesia

Nov 4-7, Global RCE (Regional Centers of Expertise on ESD)

[Iskandar Malaysia as candidate]@Okayama

Dec 1-12, COP20@Peru

(Dec 11 at 16:45-18:15, side event of NIES and UTM)

Jan 12-, Osaka-HCMC dialogue@HCMC

Feb 4-5, SATREPS progress meeting@Johor Bahru (JB)

Feb 7, Iskandar Malaysia Sustainable and Low Carbon Schools Exhibition 2015@JB

Feb 8, The first International Forum on the "FutureCity" Initiative by Cabinet Secretariat@JB

Feb 9-10, The 6th High Level Seminar on Environmentally Sustainable Cities by MOEJ@JB

International Forum on the "FutureCity" Initiative

by Regional Revitalization Office, Cabinet Secretariat, Government of Japan



The First Forum, Feb 21, 2012@Tokyo 10 名の海外招聘者をはじめ、JICA 主催の研修プログラムで参加されたアジア諸国等のオピニオンリーダー43 名の他、国内参加者を含め、合計約600 名の参加。

Prof. Ho and Mr. Boyd joined as experts of JICA FCI courses. Then 2-3 experts join continuously.



インドネシア環境省次官

The Second Forum, Feb 16, 2013

@Shimokawa, Hokkaido

坂本内閣府副大臣を始め、9名の海外招へい者、 JICA 主催の研修プログラムに参加したアジア諸国 等のオピニオンリーダー39 名、その他、国内参加 者を含め、合計27 か国、約300 名の方々が参加。 2月17日に森林サイドイベントを実施、 藤野が鼎談のモデレーターを担当 Dato' Ismail joined "econmy" panel discussion

Dr. Zaleha (JPBD) joined "evaluation" panel discussion. The mayor of MBJB joined at Asia Mayor Summit.



関ロ内閣府副大臣と国内外の招へい者

The Third Forum, Oct 19, 2013 @Kitakyushu

関口内閣府副大臣を始め、11名の海外招へい者、 JICA主催の研修プログラムに参加したアジア諸国 等のオピニオンリーダー51名、その他、国内参加 者を含め、合計43の国と地域から、約400名の参加。藤野がポスターセッション担当。 The fourth forum will be held in Higashi-matsushima, Japan in 6th Dec 2014. Cabinet office organize the first form outside Japan in 8-9th Feb 2015 in JB, Malaysia.

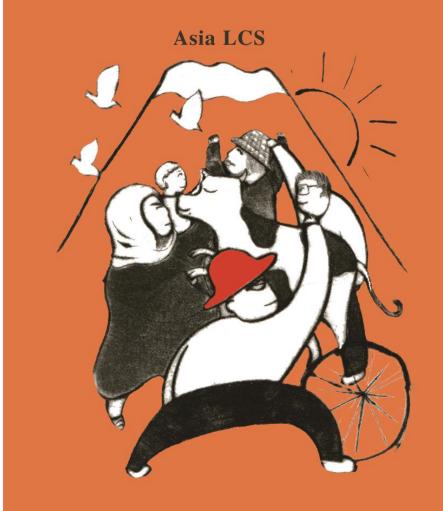
The 6th High Level Seminar on Environmentally Sustainable Cities will be held in *Johor Bahru on 9th and 10th Feb 2015* (mainly sponsored by Ministry of the Environment Japan (MOEJ))





Sustainable Low-Carbon Asia comes from design, imagination and co-working...

Let's work together!



藤野 純一 Junichi FUJINO **f**

fuji@nies.go.jp