

Iskandar Malaysia

# ACTIONS FOR A LOW CARBON FUTURE









← Iskandar Malaysia →

# ACTIONS FOR A LOW CARBON FUTURE



## Acknowledgement

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This first Book on the Implementation of the Actions For A Low Carbon Future would not have been possible without the tireless work by a number of people within IRDA and outside, especially from Japan.

IRDA would therefore like to say a very big Thank You to the following persons, universities and agencies involved at some stage during the preparation of the document.

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### **Iskandar Malaysia: Actions For A Low Carbon Future**

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**Y.A.B. DATO' SRI MOHD NAJIB  
BIN TUN ABDUL RAZAK**

**PRIME MINISTER OF MALAYSIA  
CO-CHAIRMAN OF ISKANDAR REGIONAL DEVELOPMENT AUTHORITY**

I am extremely encouraged by this effort by the Iskandar Regional Development Authority (IRDA) in setting targets for low carbon footprint for Iskandar Malaysia, one of our fastest growing economic regions. The proposed target reduction of 50% GHG emissions intensity reduction by 2025 is commendable, and must be strongly supported by both the Federal Government and by the Government of the State of Johor. This reduction is in line with my speech at COP16 in Copenhagen in 2009, when I shared Malaysia's voluntary commitment to reduce our greenhouse gas emissions intensity by up to 40% by 2020, based in 2005 levels. I am very pleased with this Implementation Book, which shows IRDA's strong and committed focus on the implementation of Actions since the LCS Blueprint's global launching at COP18, Doha, Qatar. We now need to show the public, investors and developers that we mean what we say.

I wholeheartedly support this move and the fact that IRDA has already started implementing the LCSBP programmes is the right way forward to creating a strong and sustainable Iskandar Malaysia. Such strong commitment should serve as a working model for the development of similar efforts at national, state or regional levels.



**Y.A.B. DATO' KHALED NORDIN**

**MENTERI BESAR OF JOHOR  
CO-CHAIRMAN OF ISKANDAR REGIONAL DEVELOPMENT AUTHORITY**

The global launching of the Actions For A Low Carbon Future (LCSBPIM) at COP18 in Doha is a strong move by IRDA into going low carbon, whilst at the same time achieving high economic growth. I understand there are over 280 programmes listed for implementation, and that this Book is the first in a series, which are intended to chronicle what has been done so far in reducing GHG emissions in the economic region.

In my Foreword for the LCSBPIM, I stated that the key to sustainable development is the astute and careful management of natural resources. I strongly believe that environmental policies must be sound, supported by solid research and strong buy-in from all stakeholders; and the implementation must be done through collaboration with the local communities, whose knowledge of their environment are critical to a well-planned and climate-resilient economic region. This will enhance

the value proposition of such developments, without sacrificing the future.

The continuing commitment by the research teams from Japan (Kyoto University, the National Institute for Environmental Studies and Okayama University), University Technology Malaysia (UTM) and IRDA is very much appreciated. The State Government would like to thank you for your support and generosity. I hope that our combined efforts will achieve significant results in reducing Iskandar Malaysia's GHG emissions as the region reaches maturity in 2025.



**Y.BHG. DATUK ISMAIL IBRAHIM**

**CHIEF EXECUTIVE  
ISKANDAR REGIONAL DEVELOPMENT AUTHORITY**

Iskandar Regional Development Authority addresses economic growth, societal development and well-being as well as environmental protection and management in Iskandar Malaysia in a holistic manner. Following my launching of the Low Carbon Society Blueprint at COP18 in Doha last November, IRDA has now started implementing the over 280 programmes. This Book contains some of the programmes that have been started or have been completed since Doha. We are extremely proud to share these programmes and we of course hope that the others can make use of some of the ideas.

This 1st book of a series could not have been completed without the international support and continuing commitment from many people notably from Japan and Malaysia. I would therefore like to sincerely thank the researchers from University Technology Malaysia (UTM), Kyoto University, the National Institute for Environmental Studies (NIES) and Okayama University, Japan; and of course to the funders of this important

Research project – the Japan International Co-operation Agency and Japan Science and Technology Agency for your invaluable research efforts, support and continuing commitment to the growth of Iskandar Malaysia. We hope this Book will be the start of a comprehensive record of work done in reducing our GHG emissions and towards the realisation of Iskandar Malaysia as a "strong and sustainable metropolis of international standing".

Finally I would like to thank IRDA's Environment Division in particular, and the various other divisions, who contributed time and effort in writing the chapters of this Book and getting it completed in time for our global launching at COP19 in Warsaw Poland.

The formulation of Actions For A Low Carbon Future shows that IRDA recognises the importance of climate resilient development and is committed to low carbon green growth pathway. This Actions For A Low Carbon Future is a follow up action plan for the Low Carbon Society blueprint which was launched last year in Doha during the COP18. This plan outlines ten (10) priority projects which will be implemented throughout the Five Year Malaysian Plan (2011-2015). It looks into the details of project activities, the stakeholders and actors, duration and costs.

This Implementation Plan is part of an overall Roadmap towards Low Carbon Iskandar Malaysia 2025 which will be launched in November 2013 during the COP19 in Warsaw, Poland. The Actions For A Low Carbon Future and the Roadmap towards Low Carbon Iskandar Malaysia are the major collaborative research outputs of our SATREPS (Science and Technology Research Partnership for Sustainable Development) project on the Development of Low Carbon Society for Asian Regions sponsored by Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST).

We strongly believe that the Actions For A Low Carbon Future, Roadmap towards Low Carbon Iskandar Malaysia 2025 and Low Carbon Society blueprint 2025 which embraces the 12 Actions Plan to guide development towards climate resilient urban development for Iskandar Malaysia will support the vision of Iskandar Malaysia towards building a strong sustainable metropolis of International Standing.

We would like to thank the Johore State Government, IRDA and all the five (5) local authorities for the close collaboration given to our research activities in which we hope to develop a sustainable low carbon society in Iskandar Malaysia. In addition, we would also like to express our sincere appreciation to Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST) for the generous support given to us under the SATREPS program.

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The Iskandar Malaysia economic region in southern Peninsular Malaysia is being seen as an excellent example of rapid development following a holistic approach towards green economic growth. Iskandar Regional Development Authority (IRDA), as the key driver in this process, is working with its partners in government, private sector, institutions of higher learning, schools and local communities to implement more than 280 programmes to move the region towards a low carbon future. The approach is through the Actions For A Low Carbon Future (LCSBPIM), officially launched by the Prime Minister of Malaysia and by IRDA in 2012.

In this first book of a series, IRDA is documenting 10 of 281 programmes that are currently being implemented in Iskandar Malaysia. The 10 programmes cover several components of the themes of Green Economy, Green Community and Green Environment, as mandated by IRDA's Comprehensive Development Plan (2nd Review, 2013) and its Green-focused Agenda.

In adapting towards a low carbon future, managing mobility systems is an important aspect. The Iskandar Malaysia Mobility Management Systems (MMS) is a start towards optimising effectiveness of urban transportation. It is an online platform connecting the various modes of travelling within the economic region through ride-sharing, para-transit, integrated rider-matching system enhancing accessibility and thus improving the lifestyle of users.

In moving towards a strong and sustainable region, adapting and changing ways of doing business to be "greener" is a necessity, and green growth is about making processes more resource-efficient. The Green Economy guidelines (GEG) will look into providing a checklist that addresses areas of procurement, operations, and supply chain management in order to minimise impact on the environment, adapting or improving current policies to support green growth and incorporating solutions for lifestyle changes to move towards a low carbon future. To complement the GEG and other Actions of the LCSBPIM, the sharing of information and its accessibility on green technologies and the natural environment are important aspects. The Green portal is a website or online platform where communities, government, private businesses, developers, investors and other can access for all types of information on green technologies and the natural environment in Iskandar Malaysia. This is an indirect innovative approach towards reducing carbon emission through improvement of portal users' knowledge.

In encouraging and promoting changes towards a green economy, soft incentives or innovative initiatives to

recognise and award worthy companies and businesses are the intent of the Green Accord Initiative Award (GAIA). In its first phase, GAIA will look at the green building development to highlight the use of innovative technologies implementing renewable energy attributes and being energy-efficient. Starting with buildings, GAIA will ultimately cover other areas that have implemented green technologies in the development. Recognised international rating tools such as GBI, Green Mark, BREEAM and CASBEE will be used as the bases to evaluate and recognise such efforts. This is an indirect means to reduce the carbon emission in all types of development projects that are practising green.

In mitigating the effects of climate change at a local level, promoting the restoration of forest areas through replanting in urban parks and city forests is one such programme. The aims of retaining and re-introduction of endemic species in urban parks and forests are to provide green lungs for our cities and urban areas, places of recreation and relaxation, and a place for attracting biodiversity back into urban settings. Related to the restoration of urban spaces is the community-led focus on responsible tourism through biodiversity conservation. This project began in 2012 with the active involvement of a coastal village surrounded by mangroves forests. The villagers of Sungai Melayu brought visitors into the mangroves, telling them about the importance of mangrove preservation as their livelihood as fishermen depended on the mangroves. The permanent protection of such mangroves is important not only for providing livelihood to coastal communities but also for the fact that they are carbon sinks for the economic region.

In creating a green community, it would need to start at the roots i.e. working with the younger generation through education programmes whether through the current school curriculum or non-curriculum approaches. The Eco-Life Challenge programme is a supplementary to provide contextual learning, systems-thinking to changing personal and family lifestyles and mindset-change towards a low carbon future. Modelled on a Kyoto City programme, the ELC covers energy consumption, waste generation and using renewables.

In working within a framework of green community, an eco-community is one that carries out economic activities to improve village life styles and the local economy via employment opportunities, entrepreneurship and co-ownership through adoption of suitable green technologies. The Bukit Batu Eco-Community project is viewed as a good example of community-led projects balancing economic





development, social status and environment management. The on-going work in Felda Taib Andak is another example of a development led by the community themselves. This is a low carbon eco-village, which incorporates the application of low carbon mitigation measures and low carbon lifestyles including the use of energy-saving appliances, implementing the concept of 3R, creating green products. This pioneer project started as a pilot in 2012, and engages all levels of community in the village and inculcates an inclusive decision-making process.

A special look at the development in Pasir Gudang, an industrial city to the east of Iskandar Malaysia, is one of the key components of the economic region with the aim of developing a green economy, improving the carbon sequestration potential and creating a green community that implements concepts of greener lifestyles. The industrial and manufacturing development hub covers a total area of 34,434 hectares with a population about 229,309 people (2012). Pasir Gudang is one of Malaysia's most rapid industrial areas,

built in the 1970s. The main industries are transportation and logistics, ship-building, petrochemicals, oleo-chemicals and other heavy industries, a power station and a gas turbine power plant.

IRDA, together with Majlis Perbandaran Pasir Gudang (Pasir Gudang Municipal Council), mooted the initiative to rejuvenate Pasir Gudang through the Nafas Baru Pasir Gudang (NBPG) programme, with the aim to rejuvenate Pasir Gudang to become a Green and Healthy City by 2025. Nafas Baru is in line with both the Low Carbon Society Blueprint and the Iskandar Malaysia Smart City Framework. It is envisaged that by being "smarter" in resource-planning and management, the residents, the municipal council, industry and others can work towards transforming Pasir Gudang into a clean, green, healthy and vibrant city in the near future. Among the four areas that will be looked at are green industry, solid waste management, carbon sequestration and creating a green community.



Iskandar Malaysia is the first of 5 economic regions created by the Malaysian Government with the purpose of focusing and spear-heading Malaysia's economy. The creation of such economic zones or regions is not new; many countries have done so in order to attract foreign and local investments into an area. Such concentrations can transform an area and successes are apparent in many countries notably in developing economies, as well as in developed ones.

In the case of Malaysia, the Federal Government, looking towards 2020 (where it envisions Malaysia to be of developed status) and beyond, saw that concentrating economic development in certain areas can powerfully speed-up development towards achieving its Vision 2020. Thus, other than continuing to pursue its objectives through concerted approaches, the Government also created between 2006 and 2010, 5 economic regions (called corridors) – Iskandar Malaysia, Northern Corridor Economic Region, Eastern Corridor Economic Region, Sabah Development Corridor, and Sarawak Corridor for Renewable Energy.

Iskandar Malaysia, the first of these corridors is the fastest growing region in Malaysia, even though actual new land use developments only took off about 6 years ago. Such very rapid development is due to several factors notably the completion of the Comprehensive Development Plan 2006-2025 (CDP), 24 Blueprints and a Regional Authority – IRDA – created through an Act of Parliament (Act 664), which is solidly guiding the development. The economic region's transformation from a mainly manufacturing base, agriculture and food processing is rapid by world standards, and is seen today as one of the fastest growing regions not only in Malaysia but also in East Asia (sources: OECD, Japan and others). With such rapid land use and other developments, driven by a major influx of FDI and significant local investments, it became even more critical that such developments are closely monitored so that the plans, policy and programmes stated in the CDP are carried out properly. Iskandar Malaysia's transformation clearly adheres to its vision of a 'strong and sustainable metropolis of international standing'.

### Iskandar Malaysia's Green-focused Agenda

Globally, it has been accepted that human activities are causing a rapid build-up of carbon dioxide and other greenhouse gases (GHG) in the atmosphere (less than 300 parts per million in pre-industrial times to 433 ppm in 2005), and that this build-up is causing a rise in global average temperatures and impacting the climate. While the global consensus recognises the uncertainty over what scenario will unfold, the risks are deemed great

enough today to warrant concerted, coordinated global action to mitigate climate change and global warming.

In this regard, Iskandar Regional Development Authority (IRDA) planned that there must be a comprehensive and holistic approach on the development of Iskandar Malaysia, so as to ensure that growth is maintained in a sensible, timely and sustainable manner. As such, setting targets for a low carbon future, enabling positive support and promotion of a green economy through increased investments in environmental assets and green technology and production must all be properly planned and managed.

Through IRDA's overarching strategic environmental policy – the Green-focused Agenda – the Regional Authority makes a commitment that a green economy, green community and green environment are properly balanced. IRDA strongly believes that the astute management of natural resources is the most important aspect of sustainable development; and sets the context within which all other factors – from land use proposals and development to social engineering and service provision – must be considered. As stated by the Regional Authority's Chief Executive, when launching the Low Carbon Society Blueprint at COP18 Climate Change Conference in Doha in November 2012, "Without the 'green', there is no sustainable development". Thus, through strong policies (backed by science), IRDA has planned and will manage and develop the region's natural resources through close collaboration with all stakeholders and especially the local communities, whose knowledge and intimate experiences of their environment are critical to a well-planned economic region. After the COP18 launching, the LCSBPIM was subsequently endorsed by the Prime Minister of Malaysia in December 2012. The strategic green growth policy approach is supported by sound science, and IRDA is fortunate to have local and international partners, UTM and Japan universities (Kyoto and Okayama) and the National Institute for Environmental Studies of Japan, that strongly support its Green-focused Agenda through the Low Carbon Society Initiative.

This blueprint is one of the main outputs of SATREPS (Science and Technology Research Partnership for Sustainable Development) on the Development of Low Carbon Society Scenarios for Asian Region, sponsored by Japan International Cooperation Agency (JICA) and Japan Science and Technology Agency (JST). IRDA strongly believes that its strategic green-focused agenda will help achieve its vision of "a strong and sustainable metropolis of international standing". This will be through the implementation of 12 over-arching actions based on 3 themes of Green Economy (covering

Transportation, Green Industry, Green Buildings, Use of Renewable Energy); Green Community (such as Green Lifestyle and Consensus-Building); and Green Environment (Smart City Concepts, Smart Growth, Sustainable Waste Management, Clean Air Management).

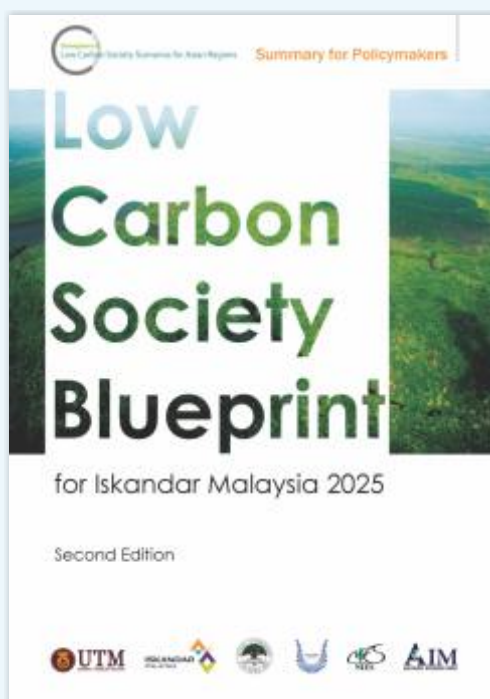
### Low Carbon Society Blueprint For Iskandar Malaysia, 2025

IRDA plays a key role to ensure that Iskandar Malaysia is developed in a sensible, timely and sustainable manner. In this regard, the LCSBPIM is one of the various mechanisms that have been deployed to achieve these objectives. A low carbon society aims to minimise carbon emission in all sectors, shift to a simpler and quality life and better coexistence with nature.

Towards fulfilling Malaysia's voluntary commitment in reducing the country's carbon intensity by 40% by year 2020 (based on 2005 level), IRDA strongly foresees that the implementation of a low carbon society is the way forward. The goal is to reduce Iskandar Malaysia's carbon emissions by 40% as it reaches maturity in 2025. The LCSBPIM contains future society scenarios based on socio-economic and environmental development variables, quantitative modelling of CO<sub>2</sub> emissions and 12 major Actions merged under 3 pillars - Green Economy, Green Community and Green Environment. These 12 Actions consisting of 52 Sub-actions, 97 Measures and 281 programmes have been formulated to transform the Iskandar Malaysia economic region into a low carbon society. It covers wide-ranging but inter-related aspects including urban planning, smart growth, transportation, industry, building, energy efficiency, renewable energy, lifestyle change, education and awareness, urban governance, forest conservation, waste management and air quality. There is also a strong element of consensus-building, education and awareness so that prime focus is given towards ensuring the community is deeply involved in transforming Iskandar Malaysia into a low carbon green growth region.

The researchers and IRDA have measured the total Green House Gases (GHG) emissions of Iskandar Malaysia in year 2005 to be 11.4 MtCO<sub>2</sub>eq (million tonnes of carbon dioxide equivalent). Simulation has been carried out to project future scenarios of IM's GHG emissions by 2025, in both the Business as Usual (BaU) and Countermeasure (CM) scenarios. The results suggest that with proper countermeasures being introduced into various sectors, the GHG emission of the region can be significantly reduced by 40%, from 31.3 MtCO<sub>2</sub>eq of the BaU Scenario to 18.9 MtCO<sub>2</sub>eq in

the CM Scenario. The estimated emission reduction by sectors is based on countermeasures that are viable and can be implemented in the Iskandar Malaysia region within the targeted year of 2025.



## Iskandar Malaysia Actions For A Low Carbon Future

LCSBPIM 2025 is the first cut look at how Iskandar Malaysia can grow into a low carbon emission region for all sectors and with that shifting to a better quality of life. The programmes that have been listed to be implemented form the main bulk of the work in Iskandar Malaysia. This book entitled "Iskandar Malaysia's Actions for a Low Carbon Future" is the first of a series that details out 10 out of the 281 programmes of the LCSBPIM and shows how actions supported by science can be used to ensure reduction in carbon emission. In fact, before the adoption of the LCSBPIM, IRDA has already been implementing many projects and programmes recommended by its 24 adopted Blueprints. The inter-connection of the LCSBPIM and the IRDA's Blueprint, lies in the fact that the LCSBPIM further strengthens the existing blueprints through allowing for a scientific approach to measure the programmes implemented. Such implementations are envisioned to attain a low carbon green growth region, and thus achieve the Iskandar Malaysia vision of a "strong and sustainable metropolis of international standing" by 2025.

The book on "Actions for a Low Carbon Future" will describe the 9 programmes being implemented with a special feature on Pasir Gudang, a heavy industry area in the south-eastern region of Iskandar Malaysia. Each chapter will explain what the programme is all about, its relation to the LCS, what the intended outcomes are, and the stakeholders that are involved. Among others, it is hoped that the book can reach out to a wider audience on what IRDA is working towards, in collaboration with other agencies. The programmes are as follows:

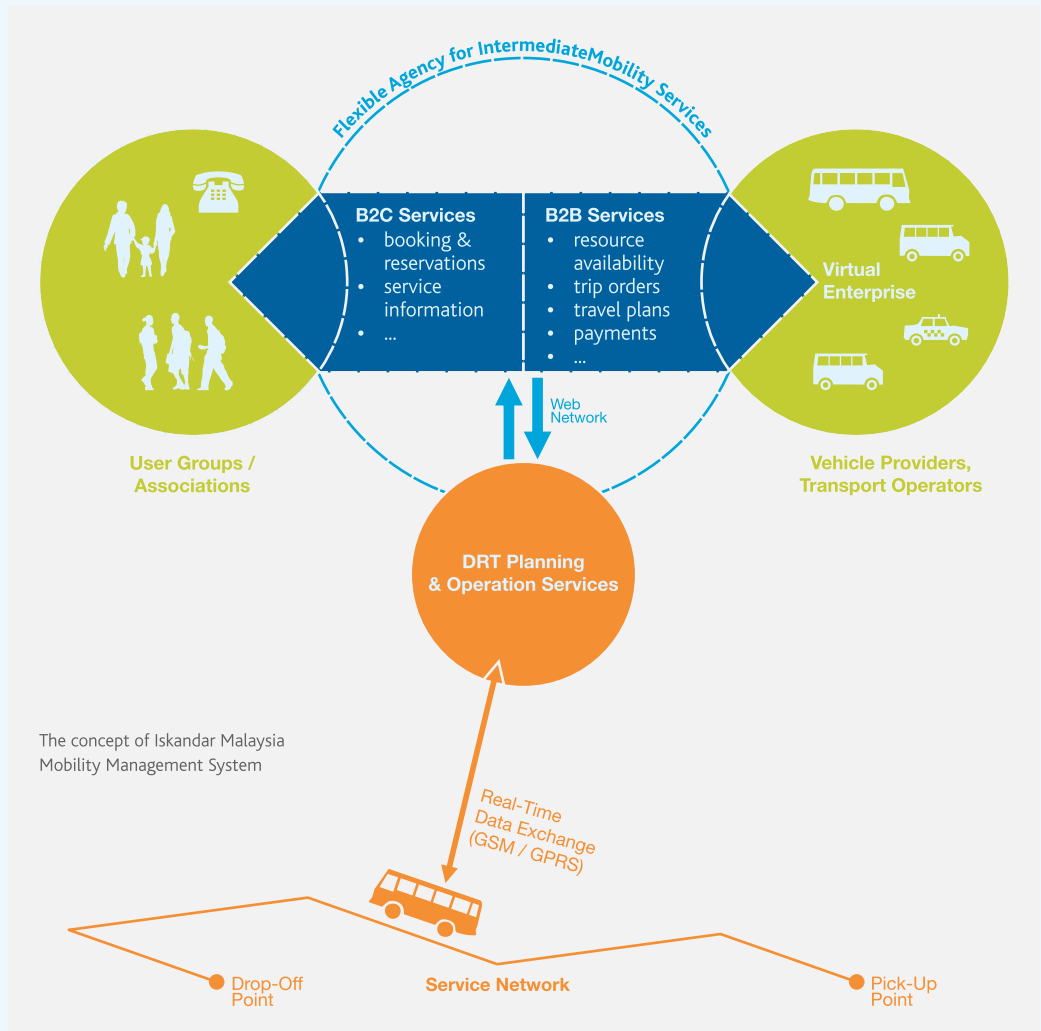
1. Integrated Green Transportation – Mobility Management System
2. Green Economy Guidelines
3. Eco-life Challenge Schools Project
4. Portal on Green Technology
5. Trees for Urban Parks
6. Responsible Tourism and Biodiversity Conservation
7. Bukit Batu Eco-Community
8. GAIA – Green Accord Initiative Award
9. Low Carbon Village FELDA Taib Andak

Special Feature: Smart City-Nafas Baru Pasir Gudang-  
Green and Healthy City





### Integrated Green Transportation: Mobility Management System (MMS)



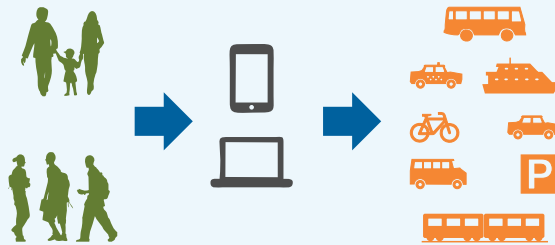
### What Is The Mobility Management System?

Iskandar Malaysia Mobility Management System (IMMMS) promotes sustainable transport and manages the demand for car use by changing travelers' attitudes and behaviour.

MMS coordinates information, services and activities to optimise the effectiveness of urban transportation. It is an innovative approach in managing and delivering

coordinated transportation services to customers, including the elderly, people with different abilities and low income population.

It is an online platform accessible through computers and smartphones connecting citizens and visitors to the various modes of travelling within Iskandar Malaysia.



Coordinate and connect people to various modes of transport

### What Is The MMS's High Level Architecture?

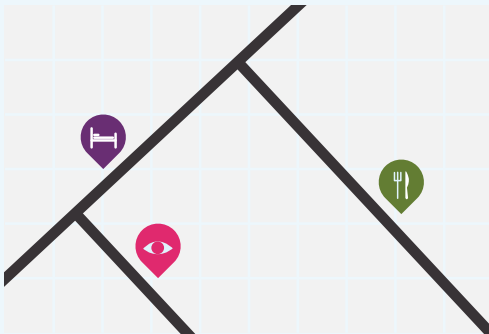


MMS provides information and advice, consultation, organisation and coordination, products and services, sales and reservation, and awareness and education

### What Are The Features Of The MMS? What Can It Deliver?

#### Trip / Journey Planner

The MMS is a transit navigation system that provides information on routes, schedules and fares. It allows people to access transportation information that can be viewed via any web-enabled computers and mobile device from any location. It also provides real-time information, including recommendations that allow citizens to reduce the cost of travel and find the best route and transportation method.



### Trip Planner

#### 1 I am starting my trip from:

in 

#### 2 I am going to:

in 

#### 3 ☒ I am leaving at:

☐ I want to arrive by:

#### 4 Optional Preferences:

Minimize My 

I want to Walk No More Than 

I want to Travel by:

Subway ☐ Bus ☐ Express Bus ☒ Any ☐

Accessible trip required? yes ☐ no ☒


Feature	Description
Route and schedule information	Provides public transportation (bus, subway, etc), route maps and schedule information using easy search features.
Current travel conditions, alerts and avoidance	Offers real-time information on roadway and transit conditions; provides alerts when special problems develop on intended routes and recommends alternatives.
Travel optimisation	Optimizes travel planning to minimize time and transportation/environmental costs based on user profile and context.
Transit vehicle arrival	Provides real-time information on when the next transit vehicle will arrive at a stop or station.
Mapping and guidance	Offers information about nearby parking (automobile and bicycle), public transportation stops/stations and destinations.
Real-time location information	Uses electronic maps to tell individuals where they are; provides a record of personal mobility carbon footprint.
User travel analysis	Inform users of their travel activity in kilometers/miles, costs and impacts (CO2 emissions).
System analysis	Provides information on when, where and how people travel to facilitate transportation planning.



### Ride Sharing

MMS allows a near real-time ride-sharing reservation where travelers going to the same destination may share their ride whether by taxi or carpool. The ride-sharing/ride-matching capability includes arranging connections to transit or other multimodal services. Campaigns such as points and rewards system as well as carbon emission calculators are among the number of ways to promote and encourage the use of ride-sharing.

### Para-transit

Alternative mode of flexible passenger transportation may vary considerably consisting of taxi or small bus that will run along a more or less defined route and then stop to pick up or discharge passengers on request. The MMS also offers flexible on-demand call-up door-to-door service from any origin to any destination within a service area.

### School Bus

The MMS also offers an integrated rider matching system that focuses on school children and school buses. MMS optimises the efficiency of school bus operations. Parents will now have the option of pre-arranging their children's school journey by matching their needs with other parents in the same area or same school or matching the journey with other modes of public transport if a suitable school bus is not available.

### Lifestyle

List of restaurants, hotels, retail stores, recreational centres and local attraction within certain vicinity becomes available whenever a search related to the area is requested. It encourages people to do multiple things in a single trip.

### Other Features of the MMS



### Social media integration

Since it's a social change effort, social marketing works at its best

### Event Transit Planner

Specially for Events / Tourist Attraction / Theme Parks  
reduce traffic congestion and parking stress

### Green Lifestyle Reward Points

Track journey with public transport and collect points for taking part in saving the environment

### What Do We Hope To Achieve?

The MMS targeted to be launched in December 2013 aspires to shape the way in which people travel by focusing on trip optimisation, thus leading to carbon reductions. It will increase public awareness on climate change and global warming, measures to reduce their carbon footprints and in turn promotes a healthier planet. The MMS will enhance public understanding on the roles they must play in order for Iskandar Malaysia to achieve a Low Carbon Society by 2025.

### Carbon Reductions

The MMS is seen as an integrator and coordinator of various transportation modes and travel activities and a core component in the list of counter-measures identified under Action 1: Integrated Green Transportation.

## Actions For A Low Carbon Future

### Integrated Green Transportation: Mobility Management System (MMS)

#### What Is The Connection With LCS?

The MMS is being developed and implemented within Iskandar Malaysia to enhance the efficiency and the effectiveness of other counter measures including:

- Bus Rapid Transit System along with supporting initiatives such as route expansion and rationalization, service level and infrastructure improvement, park n ride and transfer facilities. LRT and MRT may eventually be implemented to support the increase in density and people movements in the future;
- Use of low carbon vehicles such as hybrid and electric cars

- Transport Demand Management focusing on Traffic Zoning, Intelligent Parking System, Intelligent Transport System and more.

It is important to shape behaviour and create awareness on issues relating to transportation. Implementation of identified measures and efficient coordination by MMS is expected to cut level of air pollutants from transportation such as nitrogen oxides (NOx), Hydrocarbon and Volatile Organic Compounds (HC/VOCs), Particulates, CO<sub>2</sub>, SO<sub>2</sub> and others.



The connection of Mobility Management System (MMS) with Low Carbon Society Blueprint





### Green Economy Guidelines



#### What Is Green Economy Guidelines?

Green Economy is defined as “fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies” (OECD, 2011) and “one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP 2011). Both definitions are in line with what IRDA believes in which is a sustainable development as

an ultimate objective and with green growth or a green economy as a means to reinforce its economic and environmental pillars without ignoring social aspects.

In the short run, green growth policies are most likely to produce local benefits in improved environmental management through sustainable waste treatment, better access to water and energy, and more desirable health outcomes from controlled pollution.

Environmental protection can contribute directly to the economic growth because the environment, which can be considered as a natural capital, is an input to the production function and environmental conservation can increase the natural capital which eventually will lead to a boost in income.

### What Is The Connection With LCS?

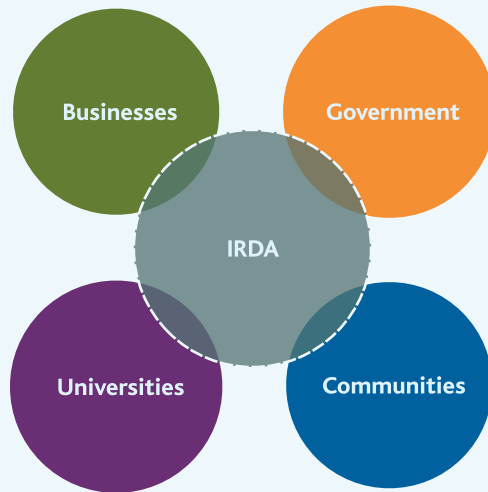
The Guidelines for growing green in Iskandar Malaysia is

a programme under the LCS Blueprint, which encapsulates all the efforts stated in the 12 agreed Actions towards achieving a low carbon Iskandar Malaysia, specifically for Actions 1 - 5. It is a checklist of how to grow green in all the sectors within Iskandar Malaysia which includes construction, transport, manufacturing in the business sector, local government and authority in the government sector as well as urban and rural communities. It will be a practical and pragmatic guide on how to run businesses in a sustainable manner as we move towards a greener economy for Iskandar Malaysia and beyond.



The connection of Green Economy Guidelines For Iskandar Malaysia with Low Carbon Society Blueprint

#### Who Will Be Involved In Greening The Growth In Iskandar Malaysia?



An illustration of the stakeholders involved in Green Economy Guidelines development and implementation

In Iskandar Malaysia, the way to grow sustainably is by having a holistic outlook on Green Economy and how we can co-exist with the surrounding environment. IRDA aims to internalise the process with our partners including businesses, local government agencies, universities, NGOs and communities living within the region. With the preparation of the guidelines to growing green, we are hoping to engage and work with our partners in this journey ahead in a consultative and constructive manner to achieve the vision for Iskandar Malaysia to be a strong and sustainable metropolis of international standing.



#### What Do We Hope To Achieve?

The Green Economy Guidelines will look into areas of procurement, operations, supply chain management for businesses in order to minimise its impact on the environment. The government will have to look into the prospect of developing, adapting or revising current policies to support green growth through tax breaks, reducing perverse incentives, and the promoting and rewarding of good practices for going green.

Within communities, a low carbon lifestyle will be promoted through clear actions on reducing, reusing and recycling in tandem with the Local Agenda 21 programme. This will greatly support the act of managing sustainable waste system and ensuring cleaner air in the environment as well as promoting conservation of forest areas or green lungs within Iskandar Malaysia. This will lead to a sustainable urban growth with higher quality of life for all.

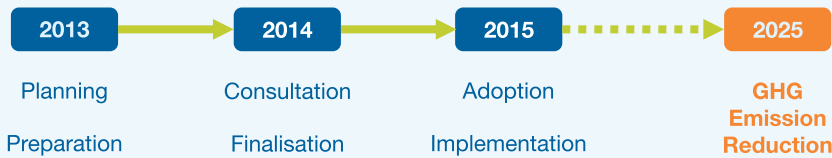
Once it has been developed and adopted by the various sectors within Iskandar Malaysia, the Green Economy Guidelines will help to enhance the economic growth. This will be in tandem with the environmental protection and conservation supported by a green work force i.e. informed communities which will generate a positive impact towards achieving Iskandar Malaysia's vision as well as contributing to a significant reduction in GHG emissions in Iskandar Malaysia.



What Is The Timeframe?

The work towards preparing the actual Guidelines to grow Green has started with the final document set to be completed by mid-2014. The preparation of the guidelines will be carried out through engagements and consultation with all relevant parties within Iskandar Malaysia. The adoption of the guidelines for full

implementation by all parties is envisioned to be in 2015, making it possible for the measuring and quantifying such changes in industrial and commercial behaviors through lower carbon emissions leading to 2025.





### Eco-Life Challenge Schools Project



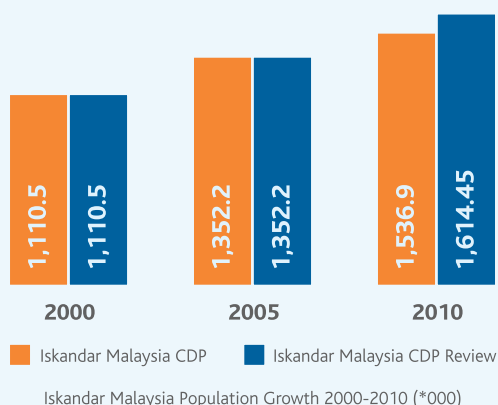
#### What Is The Iskandar Malaysia Eco Life Challenge?

Education and awareness are vital in achieving a Low Carbon Society in Iskandar Malaysia. Envisioned as a strong and sustainable metropolis of international standing, the development of Iskandar Malaysia is based on the Comprehensive Development Plan (CDP) which covers the social, environmental and economic dimensions.

What is significant to the environmental dimension, the population figure tells a rather compelling story of the

need for immediate actions to manage our carbon production in the face of rapid population rise over a relatively short time. The Iskandar Malaysia region has seen a population of 503,950 (45%) over the last 10 years from the period of 2000 to 2010. The average annual growth rate of 3.8% indicates that the present population has exceeded the CDP target by over 5% or equivalent and all indicators point towards a constant trajectory.





Based on a study commissioned by the local development authority on the population projection by age group, 27.26% of IM's population (2010) are made up of children and teenagers between age 5 to 19. The projection reveals that one fourth of the total population are made up of school students, making them a significant target group for low carbon (green) education. Emphasis on this group is crucial to ensure a legacy (culture) of reasonable and responsible consumption to secure the future of generations to come.

Towards that end, education and awareness are important to achieve the aspirations of a Low Carbon Society. Its significance in Malaysia is highlighted in the National Policy on the Environment where 'Education and Awareness' is specifically addressed in the first area of the Green Strategies. The Iskandar Malaysia LCS promotion strategy in schools is designed with alignment to the national policies for ease of execution and to achieve the intended impacts.

In enhancing the national policies to meet the aspirations of Iskandar Malaysia LCS, raising the awareness of school children can be systematically achieved through the centralised nature of the educational system authorised by the Johor State Education Department (JPNJ). Awareness among school students can be fostered through (i) formal curriculum (i.e. school syllabus and subjects taught) and (ii) co-curriculum programmes (i.e. school club activities, campaigns, competitions) as a directive order.

### What Is The Connection With LCS?

In the Low Carbon Society Blueprint For Iskandar Malaysia 2025: Summary for Policymakers, 2012), the Children's Eco-Life Challenge project is one of the programmes proposed under "Action 6: Low Carbon Lifestyle" to increase awareness among school children.

It is recommended as a supplement to the existing formal curriculum as a form of contextual learning, promoting systems-thinking through its activities. As it cuts across several subjects in formal curriculum, students will be able to apply knowledge and skills learned during the year in real-life context (as required by the project).

Through ELC, students will be able to monitor their own behaviour pattern as well as their families' in moving towards a low carbon lifestyle.



Iskandar Malaysia Eco Life Style Process

Besides energy consumption, waste generation and management, travelling choices, frugal consumption and the use of renewable energy resources (from the sun) are also incorporated in the project. This contributes towards increasing the awareness level on other low carbon aspects.



The connection of Eco-Life Challenge Schools Project with Low Carbon Society Blueprint

### Who Will Be Involved In The Project?

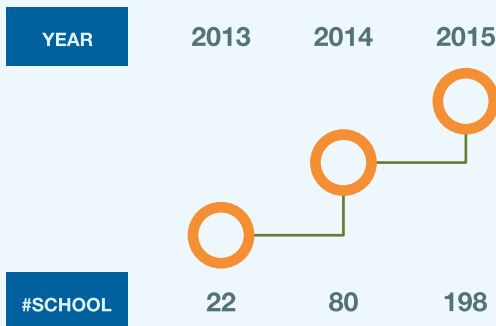
The Children's Eco-life Challenge project (ELC) is an eco-household accounting project designed for students. Eco-household accounting includes recording and evaluating household energy usage such as electricity, water and gas (Utaka et al., 2009).

In Japan, Children's Eco-Life Challenge project was first introduced by KIKO Network in 2005 to students of 4th grade to 6th grade in primary school in Kyoto City. As of today, Children's Eco-Life Challenge project is conducted in all 173 primary schools in Kyoto City. It has been proven to be successful in increasing the awareness about climate change issues among school children and also educates students on how individual contribution is vital to mitigate the effects of climate change by making conscientious changes in the daily life. The accelerated introduction of the Eco-Life Challenge in Iskandar Malaysia was made possible in collaboration with KIKO Network and the support of

Kyoto City.

In total, there are 198 primary schools in Iskandar Malaysia with a student population of over 184,000. The overall strategy is to prepare the primary schools for a much larger agenda aligned with the UNESCO Associated Schools Project Network, or ASPNet for short. It is a programme established to encourage schools worldwide to educate students on issues pertaining to international understanding.

The first batch of 22 Iskandar Malaysia-based ASPnet primary schools - pioneers for primary schools category in Malaysia - will run the ELC project in a competition format. It will then be scaled up by incorporating ELC as part of the lesson component in all planned 198 ASPnet (UNESCO Schools) Primary schools in Iskandar Malaysia.



Planned Coverage For Eco-Life Challenge  
In Iskandar Malaysia Primary Schools

## What Do We Hope To Achieve?

The introduction of ELC in competition format is consistent with the interschool competition agenda stated in LCS Blueprint for Iskandar Malaysia 2025. A comprehensive study has been commissioned to evaluate the effectiveness of Eco-Life Challenge in raising awareness on LCS among school students and teachers with the following objectives:

- 1 Produce Eco-Life Challenge module and lesson plans for 2015 rollout;
- 2 Conduct Eco-Life Challenge to 22 pilot primary schools in Iskandar Malaysia;
- 3 Train 50 school counsellors to conduct Eco-Life Challenge;
- 4 Measure the LCS awareness of students before and after conducting ELC;
- 5 Measure the LCS awareness of counsellors/ teachers before and after conducting ELC; and
- 6 Evaluate the effectiveness of ELC in inculcating LCS among school students and teachers in Iskandar Malaysia.

Subsequently, the data from the comprehensive study will be used to design and implement a region-wide rollout of ELC. Updates on the implementation of the Eco-Life Challenge project can be found on [www.sustainableiskandar.com.my](http://www.sustainableiskandar.com.my)

### Green Portal for Iskandar Malaysia



#### What Is The Green Portal?

The Green Portal is a website or an online platform where communities, government, private businesses, developers, investors and the public can access for information related to green technology and the natural environment. The portal is a one-stop centre providing the latest news and information on green technology and green-related topics, strategies, policies and guidelines on the natural environment. It is also a website where a "carbon literate" workforce is made available for employment to meet the growing needs of

local, national and international industries, notably those located within Iskandar Malaysia. The portal contains both historical and recent information on the natural environment such as policies on spatial/land use, shoreline planning, energy, waste management which will improve the knowledge of viewers and industry practitioners in both green technology and natural environment. The Green portal can be found through IRDA's Iskandar Malaysia website at <http://www.iskandarmalaysia.com.my/>.

## What Is The Connection With LCS?

As an information-based entity, the Green Portal contains a number of themes pertaining to the Low Carbon Society Blueprint, notably under Action 2 (Green Industry), Action 4 (Green Building and Construction), Action 6 (Low Carbon Lifestyle), Action 7 (Community Engagement and Consensus Building), Action 10 (Green and Blue Infrastructure), Action 11 (Sustainable Waste Management) and Action 12 (Clean Air Environment).

In itself, the portal will not directly result in reducing GHG emissions but its indirect impact could be significant if one considers the potential improved knowledge of portal users. If users subsequently act on the acquired knowledge in their industrial planning and management practices, the reductions could be very significant, especially when coupled with actual changes in their industrial buildings (e.g. retrofitting to green), designing and constructing new buildings by adopting



The connection of Green Portal for Iskandar Malaysia with Low Carbon Society Blueprint

green principles (and get GAIA-certification – see Section on GAIA) and so on. It is expected that with the most up-to-date information and data found in this Green Portal, users especially industry players, will understand IRDA's aim to reduce carbon emissions within Iskandar Malaysia, and that they will begin to align their industrial planning and management practices to follow the LCSBPIM. It is also expected that the public will have better access and well-informed understanding on green technology and environment-related information, thus encouraging them to live a more low carbon lifestyle.

The detailed measures are as follow:

- 2.2.2 Carbon-reduction and environmental standards/rules/regulation
- 2.3.1 Promote the ecological and economic benefits of greening existing industries
- 2.4.1 Upgrading and retraining existing pool of professional and semi-professional workers
- 4.3.1 Developers to promote green design
- 6.1.1 Enhancing public awareness
- 6.3.2 Promote energy saving practices
- 7.2.1 LCS progress through mass media
- 11.1.1 Reduction at source
- 11.1.2 Recycling of MSW
- 12.1.3 Promote low-emission vehicle and public transportation

### What Is The Content Of The Green Portal?

#### Home Page

The Home page contains important information and further updates on news and events within and outside Iskandar Malaysia. The website aims to become a platform for IRDA to highlight current issues, new ideas and the latest news on green technology happening in Iskandar Malaysia. Information seekers, for example, can access the Green Portal for updates on the Low Carbon Society Blueprint implementation programmes, the announcement of important local and global events on green technology, climate change-related events and the environment. The public will have an opportunity to play an active part in building LCS in their communities by sharing information, initiating events and taking part in organised events such as Earth Hour, World Environment Day, World Wetlands Day and much more.



Cycling campaign in Iskandar Malaysia

#### Resources

The Portal offers downloadable versions of published IRDA blueprints and guidelines such as the Low Carbon Society Blueprint, Environmental Planning Blueprint, Renewable Energy and Energy Efficiency Blueprint, Green Economy Guidelines, Solid Waste Management Blueprint. It also provides other guidelines and policies relating to green technology and green industry from government agencies. This includes article and information for eco-labeling, energy, transport, pollution monitoring, waste and natural conservation. The portal is also hyperlinked to other useful and related national and international portals where other relevant information may be useful to users.

#### Human Capital Development

The portal provides information on green technology-related education, incentives, lists of companies and experts in the green industry. Green education is a learning process that helps to enhance the knowledge and skills in green technology and environment which leads to an increase in the number of "carbon literate" workforce. IRDA strongly believes that the importance of having knowledge and skills in green technology and innovation will increase to meet the needs of a rapidly growing economic region, which focuses on green growth and the promotion of a green economy (see section on Green Economy Guidelines). The right technology and innovation in green products and services, paired with suitable talents, is vital for Malaysia's fastest growing economic regions.

### **Green Directory**

The green directory offers a variety of attributes including a list of experts in green technology, low carbon green growth development and management, information on green technologies and products, service providers and re-sellers including supply chain management (such as company name, address, website, contact number, contact person). There is also a purchasing guide for environmentally conscious consumers to help them make informed decisions when buying products and services. It is a platform where the green industries can promote their green products and services to consumers.

### **What Do We Hope To Achieve?**

Continuing engagements and consultations with various government agencies, businesses, NGOs and the public are important in order to continually improve the green portal. It is critical that the information displayed in the portal is current and updated so that it can truly provide a much-needed one-stop service to users.

The content of IRDA's Green Portal is progressing with a fully functioning website available in early 2014. The information in the portal will be updated daily, with continuous structural improvements of the website from time to time. With a full-fledged Green portal, IRDA aims to increase public awareness on environmental issues and green technology and indirectly encourage the public to shift towards a more low carbon lifestyle.



### Trees For 'Urban Parks'



#### What Are Trees For Urban Parks?

The 'Trees for Urban Parks' is one of the 281 programmes under Green and Blue Infrastructure of the Actions For A Low Carbon Future. The aim is to retain as well as reintroduce endemic tree species in urban parks and forests in the Iskandar Malaysia region, in order to ensure continuing existence of such parks. It is felt that many parks and urban trees are lost through road and other developments, the re-use of previously zoned areas as green spaces on residential developments, and

the emergence of non-endemic species in our parks which are essentially ornamental. The proposed tree-planting programme also aims to cover urban forests such as Hutan Bandar (City Forest) and Taman Merdeka in the Johor Bahru city limits. These are permanent urban forests covering several acres of land dedicated to public use for recreation and leisure as well as acting as green lungs for cities.





Source: IRDA Photo Library, 2010 – Ledang, Nusajaya

What Is The Connection With LCS?

This programme is identified under Action 6 (Low Carbon Lifestyle), Action 10 (Green and Blue Infrastructure) and Action 12 (Clean Air Environment) of the LCSBPIM.



The connection of Trees for 'Urban Parks' with Low Carbon Society Blueprint

Trees play a significant role in the following ways:

1. As green lungs for our cities and urban areas;
2. As places for people to visit, exercise, rest and relax; and
3. As places for attracting birds and small animals back into urban settings.

IRDA has carried out a fairly comprehensive documentation effort to identify tree and plant species that are endemic to Johor and particularly to Iskandar Malaysia (sources: FRIM data; on site surveys; TPOs by LAs [PG and MPJBT]). Ultimately, it is felt that such reintroduction of endemic trees will attract birds and other small species to return to urban settings. This proposal is tied to greener urban settings, reducing temperatures and heat islands and provides more conducive urban living.

The reintroduction of such species could ultimately contribute to heat reduction in Iskandar Malaysia's urban environments, especially when these areas are coupled with water areas. It will also be important to protect existing trees, especially through enacted Tree Preservation Orders, and the protection of large green and blue areas, to assist in carbon reduction.

The State Government, IRDA and others will continue to work together to complete the campaign, and on top of that, IRDA continues to advise developers and others that more endemic trees should be planted in existing urban parks and forests as well as encourage developers to plant more trees in their current and new developments. IRDA will continue to monitor the planting of such trees and ensure that it is reported annually.

### What Do We Hope To Achieve?



I Malaysia 1 Tree campaign in Johor Bahru. The EXCO for Environment YB Tan Kok Hong, kicks-off the campaign in 2010.

Several million trees have already been planted through the '1 Malaysian 1 Tree' project, a central government campaign to plant trees for each person to mark the Nation's 26 million people in 2010. Johor State's commitment was 1.6 million trees and to date some 1 million has already been planted.



### Responsible Tourism Development And Biodiversity Conservation



#### What Is Responsible Tourism Development And Biodiversity Conservation?

IRDA plans to go green in terms of tourism development in Iskandar Malaysia. The overall theme is eco-tourism under the label of 'Responsible Tourism' by involving businesses, agencies and in particular local communities in developing and promoting tourism under 4 main objectives:

- Biodiversity conservation
- Environmental education
- Community-led projects
- Promotion of a strong and resilient local economy

Following the successes of the 1st and 2nd Eco-Tourism summits and related events in 2012 and 2013, IRDA,

working closely with local communities, is now looking at various ways to get the communities actively involved in projects. IRDA's aim to promote community-led projects is to try and ensure that such communities become champions of their areas. Local communities know their areas intimately and ultimately they should be the ones who must conserve and protect their areas. IRDA, working together with agencies such as the Department of the Environment and the Forestry Department as well as local authorities, will play a role to ensure that the villagers' aspirations are realised and that their economic livelihood continues.



Starting as an IRDA-led project through by focusing on birding, by taking advantage of the migratory birds' session between Sept-March, the project has taken its own momentum, which local villagers look forward to each year. The broader aims of the tourism development through biodiversity conservation are to raise awareness of local and migratory bird species, the biodiversity of natural locations within Iskandar Malaysia (notably the 3 Ramsar sites, the wide expanse of mangrove and other forests, mudflats and riverine systems that stretch deep into Iskandar Malaysia), and promotion of community-led projects.



### What Is The Connection With LCS?



The connection of Responsible Tourism and Biodiversity Conservation with Low Carbon Society Blueprint



Identified under Green Community (Action 6 - Low Carbon Lifestyle), Action 10 (Green and Blue Infrastructure and Rural Resources) and Action 12 (Clean Air Environment) of the LCSBPIM. A significant part of biodiversity conservation is the conservation and permanent protection of the coastal mangroves in Iskandar Malaysia 128-kilometre coastline. In that regard, the objectives are therefore the same as those outlined in the Shoreline Management Plan for Iskandar Malaysia, which are:

1. To conserve, protect and enhance the natural beauty of the coastline, including their terrestrial, littoral and marine flora and fauna, and their heritage features of architectural, historical and archaeological interest;
2. To maintain, and improve where necessary, the environmental health of inshore waters affecting the coasts and their beaches through appropriate remediation works and management measures;
3. To facilitate and enhance their enjoyment, understanding and appreciation by the public through improving and extending opportunities for recreational, educational, sporting and tourism activities that are consistent with, the conservation and protection of their natural beauty;
4. To identify areas at risk of coastal erosion, marine pollution and other negative environmental impacts and to consider mitigation measures to protect coastlines that have existing settlements;

5. To take account of the economic, social and cultural needs of the numerous communities that live along Iskandar Malaysia's coast, through promoting sustainable forms of social and economic developments.
6. To take account of the needs of agriculture, fishing and forestry.

### What Do We Hope To Achieve?

The success of two previous events is a strong indication that local communities are beginning to take stronger responsibility and pride in their natural environment, viewing it more than just a source of livelihood. Similarly, local authorities and agencies can now see a stronger and lasting potential of protecting such areas not only keeping their outstanding natural beauty for our future generations but also the fact that such permanent preservation will ensure continuing carbon sinks for a fast developing economic region.

Nevertheless, it is important to take note that the success in one coastal community needs to be duplicated elsewhere in Iskandar Malaysia. Thus, all agencies and especially IRDA and the local authorities, must play an active role as advisers – at least for now, in ensuring that local communities continue to lead, to engage with visitors, to get educated about their natural environment and financially benefit from biodiversity conservation and mangrove preservation.





### Bukit Batu Eco-Community



#### What Is The Eco-community?

The Eco Community concept is a way to showing how village communities carry out economic activities within a low carbon society context. Kulai Eco Community aims to improve villagers' life styles and financials within and surrounding the Kulai District in a sustainable manner via employment, entrepreneurship and co-owning the business. The area will implement suitable green technologies and blueprints recommendation and become a showcase and education centre, from design, construction and operations.

#### Where Is The Location For The Eco-community Facility?

Strategically located, surrounding the PLUS Expressway's Sedenak Toll Plaza at KM 40, first exit into Iskandar Malaysia (IM) and last exit out of Iskandar Malaysia. The proposed facility is about 3,000 acres currently planted with oil palm and rubber trees, and surrounded by predominantly oil palm oil plantations and scattered villages. Phase 1 of the proposal is 10 acres.



Area location with respect to Johor Bahru city and Singapore



Area location with respect to PLUS Highway and Sedenak Toll Plaza

## General Development Strategies

The area will be developed in phases. Each phase will have specific goals to be achieved before moving on to the next phase. The development will mainly be complementary and not compete directly with existing players such as Johor Premium Outlets and Legoland Malaysia. It is intended that the facility must benefit villagers surrounding the area in terms of:

- Employment & continuous training opportunities
- Outlets for SMEs to provide quality products and services. The SMEs will also be linked to various

agencies for funding and training to bring up their level

- No loss of land ownership
- Improved quality way of life

## What Is The Connection With LCS?

The development to embrace low carbon society and green technologies and uses as many relevant IRDA blueprints recommendations as possible. Educational and awareness for various target groups (university students, PBTs, Property Developers, foreign interested parties, etc.) of these IRDA blueprints as the implementation is on the ground for all to see.



## Actions For A Low Carbon Future

### Bukit Batu Eco-Community



The connection of Bukit Batu Eco-Community with Low Carbon Society Blueprint

### IRDA and Community Collaboration

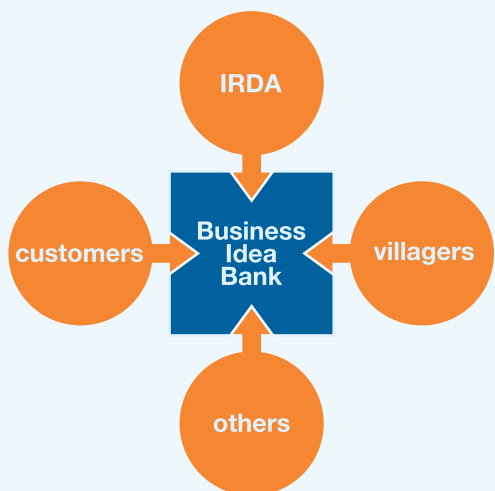
IRDA Project Team will provide:

- Initial funder via Social Project Fund (SPF)
- Project Manager
- Communities Facilitator
- Manage Collaborations with Stakeholders (federal and state government, agencies, education centres, companies, etc.)
- Setting up of an SPV as the business entity

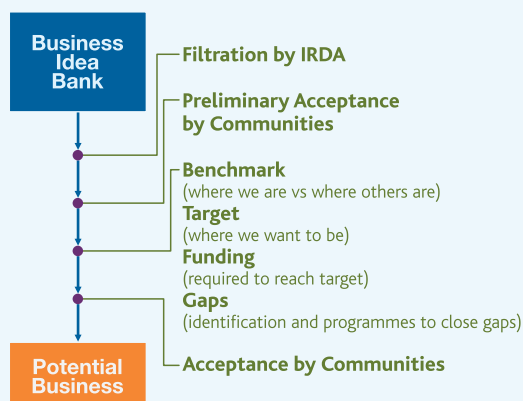
Villagers will provide:

- Skilled and semi-skilled workers
- Small and Medium Enterprises (SMEs)
- Land Owners
- Eventual owners of the business entity

The SPV management will comprise of IRDA Project Team and suitable candidates from the communities to be coached and eventually take over the SPV fully



Business Idea Bank



Business Selection Process

## What Do We Hope To Achieve?

### Equilibrium of Horizons

In the development of IM, IRDA is tasked in balancing the 3 horizons of:

- Economy
- Social
- Environment

This Eco-community project is an effort to provide positive points to all 3 horizons concurrently.

Phase	Economy	Social	Environment
1	Commercial activities - Restaurant - Market for local goods and services	<ul style="list-style-type: none"> <li>- Employments</li> <li>- Small and Medium Enterprise (SME) participation</li> <li>- Various trainings and mindset change programmes</li> <li>- Funding assistance for SMEs</li> <li>- Green Tech Lab for public education</li> </ul>	<ul style="list-style-type: none"> <li>- Green building</li> <li>- Renewable energy (solar, biomass, wind)</li> <li>- Green transportation</li> <li>- Rain water harvesting</li> <li>- Recycled waste</li> <li>- Etc.</li> </ul>
2	Resort / Hotel High-End Restaurant 3 or 4 star	<ul style="list-style-type: none"> <li>- activities</li> <li>- Restaurant</li> <li>- Market for local goods and services</li> <li>- Employments</li> <li>- Small and Medium Enterprise (SME) participation</li> <li>- Various trainings and mindset change programmes</li> <li>- Funding assistance for SMEs</li> <li>- Green Tech Lab for public education</li> <li>- Green building</li> <li>- Renewable energy (solar, biomass, wind)</li> <li>- Green transportation</li> <li>- Rain water harvesting</li> <li>- Recycled waste</li> <li>- Etc.</li> </ul>	<ul style="list-style-type: none"> <li>- activities</li> <li>- Restaurant</li> <li>- Market for local goods and services</li> <li>- Employments</li> <li>- Small and Medium Enterprise (SME) participation</li> <li>- Various trainings and mindset change programmes</li> <li>- Funding assistance for SMEs</li> <li>- Green Tech Lab for public education</li> <li>- Green building</li> <li>- Renewable energy (solar, biomass, wind)</li> <li>- Green transportation</li> <li>- Rain water harvesting</li> <li>- Recycled waste etc.</li> </ul>
3	Industrial Parks, warehouse, residential, foreign retirement homes, etc	<ul style="list-style-type: none"> <li>- Employments</li> <li>- Small and Medium Enterprise (SME) participation</li> <li>- Various trainings and mindset change programmes</li> <li>- Funding assistance for SMEs</li> <li>- Green Tech Lab for public education</li> </ul>	<ul style="list-style-type: none"> <li>- Green industrial park</li> <li>- Green warehouse</li> <li>- Green residential</li> <li>- Green building</li> <li>- Renewable energy (solar, biomass, wind)</li> <li>- Green transportation</li> <li>- Rain water harvesting</li> <li>- Recycled waste</li> <li>- Etc.</li> </ul>

### Green Accord Initiative Award – GAIA



#### What Is GAIA?

The Green Accord Initiative Award or GAIA is an innovative initiative to recognise and award worthy companies and businesses operating within Iskandar Malaysia that have practised being green in its operation. In general most companies comply with the required environmental regulation or social requirement but several companies have initiated to look beyond regulatory compliance. This effort includes the area of corporate social responsibility i.e. working with local communities in sectors of health and well-being, alleviating poverty and conserving the environment besides tackling carbon footprints.

In this initial phase, GAIA will be looking specifically at green building development and companies that have adopted efficient energy system and implementing renewable energy approaches. A green building is viewed as a structure that increases the efficiency of its resource use in relation to energy, water, and materials and at the same time has reduced the building's impact on human health and the environment during the building's lifecycle. Green Buildings should be designed and operated to reduce the overall impact of the built environment on its surroundings through better siting, design, construction materials, operation, maintenance,



and removal or recycling of its waste. The GAIA will be awarded to worthy development projects and buildings that have met local and international codes on building especially green building design, technology in its construction.

GAIA is a soft incentive that will be tied to local and international rating tools such as Malaysia's Green Building Initiative (GBI), Japan's CASBEE and Singapore's Green Mark as well as other known assessment tools (e.g. LEED) to evaluate and recognise green buildings in Iskandar Malaysia. This effort through GAIA will be a way or means to create awareness in businesses and communities that development can be done in a sustainable or green manner.

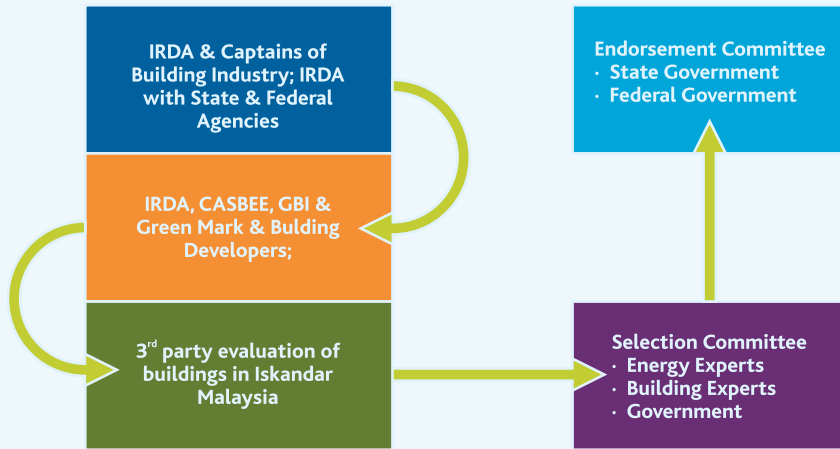
The long term plan for GAIA in Iskandar Malaysia is to distinguish businesses in different sectors including those of production, agriculture, forestry, community development and transportation through the gold standards that apply in each sectors.

### What Is The Connection With LCS?

GAIA is a means to recognise the efforts by companies in delivering Action 4 (Green Building and Construction) and Action 5 (Green Energy System and Renewable Energy) of the Low Carbon Society (LCS) Blueprint. A major challenge for IRDA is to get developers, companies and others to adopt GAIA as a strong non-monetary incentive towards the promotion and marketing of their properties. Initial engagements with a number of industry players and major developers have been very well received, with some companies wanting to be one of the first few GAIA-certified developers. GAIA-certified buildings could contribute significantly to reducing GHG emissions, particularly when more become energy-efficient up to 2025. Commitment from all sectors of industry and also public authorities are critical towards reducing Iskandar Malaysia's carbon emissions and achieving the vision of a sustainable metropolis.



**The connection of Green Accord Initiative Award with Low Carbon Society Blueprint**



An illustration showing the stakeholders that will be involved in GAIA development and its processes for the selection and awarding of recognition.

### What Do We Hope To Achieve?

The outcome from GAIA can be described as creating an awareness among construction and building industry players on green development and the importance of sustainability. In recognition of their efforts, a plaque and certificate with due mention will be awarded. IRDA is committed in ensuring wide coverage by press and media to highlight such achievements in this industry to the local and international communities. In the long term, this will contribute to lowering the carbon emission of 1,203 ktCO<sub>2</sub>eq by 2025 of the green building and construction sector and also reducing 2,725 ktCO<sub>2</sub>eq come 2025 for the energy sector (EE and RE efforts).

GAIA will help transform Iskandar Malaysia into a sustainable metropolis of international standing through a green-focused agenda of green buildings and the promoting low carbon green growth. Together with other efforts such as Smart City, GAIA will enhance the region's attraction for investment, minimises impact on the environment in the industry's procurement and operation. This effort will lead to a healthier living and will improve the quality of life of its residents.

GAIA is a way of tracking environmental performance and can serve as a platform for the construction and building industry to exchange ideas and support within the sector. It will be one of the several initiatives that will ensure global recognition and acknowledgement of Iskandar Malaysia's seriousness in reducing its carbon emissions.

### Who Will Be Involved?

IRDA will be working closely with the construction and building industry in developing the criteria for GAIA which includes green building tool for developers to adapt where necessary for Iskandar Malaysia's development. Such collaborations will also be extended to local and international agencies such as universities, research organisations, non-profit organisations as well as the government to carry out independent evaluation of GAIA's requirement.



### What Is The Timeframe?

The work towards developing GAIA criteria begins in 2013 with the criteria and assessment tool being finalised by 2014. The project preparation will be carried out through collaborations with industry players

and in consultation with all parties within Iskandar Malaysia. The evaluation of green buildings is expected to be by the end of 2014 with an expected number of buildings being awarded in 2015.



### Low Carbon Eco-village Felda Taib Andak



Low carbon community model incorporates the application of low carbon mitigation measures, which includes the practice of energy-saving, biomass of palm oil, 3-Rs (reduce, reuse and recycle), production of green goods and reduce the use private transportation. A model of low carbon community is one of the effective strategies to build up practical solutions that could set the communities on a journey to low carbon living. The low carbon eco-village initiative involved developing a few pioneer low carbon community models of villages and residential neighbourhoods in Iskandar Malaysia. It aims to establish the appropriate methodology for producing a roadmap in developing low carbon communities.

## **What Is The Low Carbon Eco-village?**

Low carbon community incorporates the application of low carbon mitigation measures and low carbon lifestyle in a village community including the practice of energy saving, 3-Rs (reduce, reuse and recycle), creation of green products and others. This project, which started in 2012, is an initiative under Action 7 of LCSBPIM to develop a model of low carbon community. It focuses on community involvement in the formulation of a low carbon action plan or blueprint and their subsequent involvement in the implementation and promotion of low carbon lifestyle among the rural communities.

Felda Taib Andak, a village within an oil palm plantation, is chosen as a pioneer project as it is located in Iskandar Malaysia and being among the earliest Felda Schemes in Malaysia. The development of the Taib Andak scheme began in 1960 with an intake of 620 settlers occurring in 8 phases from 1960 to 1971. The current population is estimated to be about 3000 people. The scheme consists of 171.18 hectares of settlement area and 29,992 hectares of plantation. The settlement is equipped with social facilities (including primary school, religion school, health clinic, shops), water, electricity, good road networks and a palm oil factory.

## **Who Is Involved?**

This project involves participation of the community and related agencies from the formulation of blueprint and subsequent implementation. There are 4 stages of the community engagements in the development of the low carbon eco-village. These involved informing and getting consensus from the respective authority and the community to execute the project; plan-making through focus group discussions (FGD) and meetings with representatives of the community; implementation (formation of implementation committees and implementation); and monitoring.

The process involved continuous engagements with the community and exchanges of knowledge and experiences among the expert group (facilitators) and the community. The feedback on the progress, issues and problems, and successes were discussed and used to improve future actions for achieving the vision. Through a series of discussions and meetings, the community and authority came to formulate the vision, priorities, actions, and identified issues in implementing the actions. It also looked into detail the time-frame and schedule for the implementation of the actions identified in the early stage.

## **What Is The Connection With LCS?**

This project is in line with Actions on Green Community, Action 4 (Green Building & Construction), Action 5 (Green Energy Systems & Renewable Energy, Action 6 (Low Carbon Lifestyle), Action 11 (Sustainable Waste Management) and Action 12 (Clean Air Action).



The connection of Low Carbon Eco-village Felda Taib Andak with Low Carbon Society Blueprint

Using the LCSBPIM as a guide, the local community formulated a blueprint of "A Dozen Actions" to achieve their combined vision of creating Felda Taib Andak as a model village for the rural communities that is environmentally-friendly and low carbon. The Dozen Actions are as follow:

1. Effective Microorganism (EM) / composting project
2. Plantation of 'buluh madu' bamboo
3. Provision of recycling bin at each blocks
4. Mosque energy saving (solar system) and housing energy saving project
5. Promotion of the use of bicycle
6. Control air pollution from factories
7. River rehabilitation project
8. Organic farming - livestock and vegetables
9. Social awareness programme
10. Provision of pedestrian path
11. Zero open burning
12. Rain water harvesting for domestic use

### What Do We Hope To Achieve?

Conceived as a showcase, the outcome of the project is to provide an excellent example of how to develop a low carbon community that involves active community-led participation in the planning and implementation of low carbon initiatives. It also hopes to inculcate positive attitude and behaviour towards adopting low carbon lifestyle among the communities and foster collaboration between communities and various agencies involved in the development and implementation of the 12 Actions. Initial surveys show that the work done so far has been very positive and raised awareness, but the efforts must now be continued. There must be regular monitoring by the Felda structure in close cooperation with IRDA and UTM.



## Timeframe Of The Project

The timeframe of the project is 5 years including preliminary works, preparation of technical details, fund raising and implementation.

	2012	2013	2014	2015	2016
Preliminary works including preparing working papers, visit to observe best practices, informing the community	+	+			
Preparing technical details for implementation including discussion with respective departments e.g JPS, Landscape		+	+		
Fund raising activities		+	+	+	
Implementation & Monitoring		+	+	+	+

## Nafas Baru Pasir Gudang - Green And Healthy City



## Background

6 years on and in the 2nd phase of its strategic development, Iskandar Malaysia has tangible and demonstrable outcomes resulting from its planned projects as outlined in the region's strategic roadmap the Comprehensive Development Plan 2006-2025 (CDP). With such rapid land use and other developments already clearly visible, it is now time to strengthen the credibility of the CDP to gain wider support towards achieving its vision of a strong and sustainable metropolis.

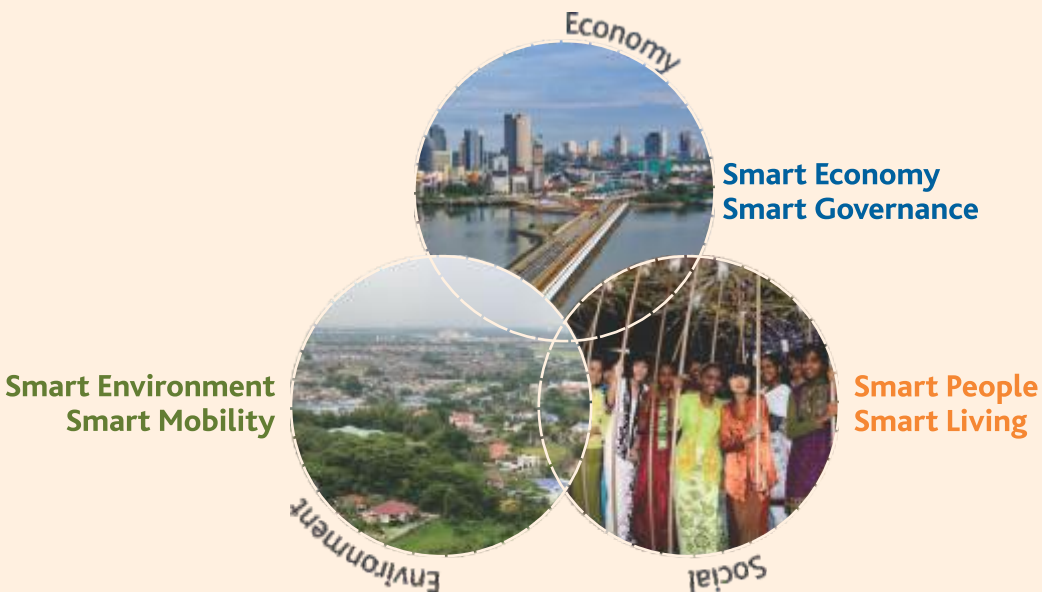
Back in February 2011, the Malaysian Government and the New York Academy of Sciences jointly formed the Global Science and Innovation Advisory Council (GSIAC) to drive Malaysia's efforts to accelerate economic development through science, technology and innovation. The GSIAC serves as an advisory panel to the Prime Minister of Malaysia and is made up of international experts drawn from industry, academia and the government of Malaysia.

In November 2012, IRDA in collaboration with Malaysian Industry-Government Group for High Technology (MIGHT), held the inaugural Iskandar Malaysia Sustainability Summit (IMSS) in Johor Bahru, the capital city of the State of Johor. IMSS 2012 showcased concepts, initiatives, strategic direction and exhibition for Smart Communities as mooted by Prime Minister in the 2nd GSIAC meeting in May 2012. Through this session, the Prime Minister endorsed the Smart City Iskandar Malaysia with a mandate to venture into smart city-related projects in Iskandar Malaysia.

### **Iskandar Malaysia Moving Towards Smart City**

Smart City as a concept for Iskandar Malaysia is about how we focus, think and implement projects and programmes in a smart way through providing innovative strategies to speed up actions to meet IM targets and vision by 2025.

Outlined below are the 6 dimensions of IM's Smart City components: Smart Economy, Smart Environment, Smart People, Smart Governance, Smart Mobility and Smart Living. For example, in providing smart mobility and connectivity, the focus is on public transportation for ease of movement and improving ICT to ease process of driving business and income productivity. It is expected that as Iskandar Malaysia continues to grow, the public mind-set will change and grow in parallel with IM's growth. This can be realised through new channels of communications, using website and mobile apps and getting the public more and more involved in decision-making. Smart collaboration between public and private is therefore the new means by which to manage the natural and built environment, working closely with developers, investors and others to go green, providing incentives for green technology and infrastructure. These new ideas and ways of management are clearly critical for a rapidly developing region. There is therefore an integration of IM's strategic pillars which cover economy, environment and social, and reflected in the 6 dimensions as shown below:



<b>Smart Economy</b> Growth & Competitiveness	<b>Smart Environment</b> Natural Resources	<b>Smart People</b> Social and Human Capital
<ul style="list-style-type: none"> <li>• Economic Growth and Value Creation</li> <li>• Innovative economic growth</li> <li>• Equitable Wealth Distribution</li> <li>• Entrepreneurship</li> </ul>	<ul style="list-style-type: none"> <li>• Clean environment</li> <li>• Environmental protection</li> <li>• Green development</li> <li>• Green infrastructure</li> <li>• Smart Growth</li> <li>• Green Economy</li> </ul>	<ul style="list-style-type: none"> <li>• Caring Community</li> <li>• Racial Harmony</li> <li>• Skilled and Talented Human Capital</li> </ul>
<b>Smart Governance</b> Efficient & Participation	<b>Smart Mobility</b> Connectivity & ICT	<b>Smart Living</b> Quality of Life
<ul style="list-style-type: none"> <li>• Public Participation</li> <li>• Efficient Public and social services</li> <li>• Private Public Partnership</li> <li>• Transparent governance</li> </ul>	<ul style="list-style-type: none"> <li>• Efficient Road accessibility</li> <li>• Efficient Public transportation</li> <li>• Non motorized accessibility</li> <li>• Availability of ICT infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Safety and security</li> <li>• Low Carbon lifestyle</li> <li>• Housing quality</li> <li>• Educational quality</li> <li>• Health Conditions</li> <li>• Cultural facilities</li> <li>• Tourist / recreation attractiveness</li> </ul>

Sources: Iskandar Malaysia Smart City Framework

The Iskandar Malaysia Smart City Framework has 33 major programmes from the 6 dimensions identified as added value enablers and initiatives to provide ease of doing business and improving quality of life in Iskandar Malaysia. These programmes, many of which have already been started will be monitored over the period until 2025, when the region is envisioned to reach maturity. A number of these programmes are now being implemented through the community's latest initiative called Nafas Baru Pasir Gudang (NBPG), the aim of which is to rejuvenate one of Iskandar Malaysia's flagships. In order to complement the Smart City programmes, Pasir Gudang is also being seen as an important research location for the implementation of LCS-related programmes. Pasir Gudang has therefore been included in the book under 4 main programmes:

1. Green Industry
2. Solid Waste
3. Carbon Sequestration
4. Green Community.

### Pasir Gudang

Pasir Gudang, an industrial city to the east of Iskandar Malaysia, is one of the key components of the economic region. The industrial and manufacturing (Flagship D) development hub covers 34,434 hectares with a population about 229,309 people. Pasir Gudang is one of Malaysia's most rapid industrial zones, built in the 1970s. The main industries are transportation and logistics, ship building, petrochemicals, oleo-chemical

and other heavy industries, a power station and a gas turbine power plant. The existing land uses includes residential, commercial and services, industrial, institution of higher learning and public services, open spaces and recreation, infrastructure and utilities, road reserves and transportation, idle land, water bodies and seaports.

Pasir Gudang's heavy industry development comes with a high concentration of industrial and warehouse buildings in a high density area and coupled with high traffic volumes, has resulted in severe air, noise, vibration and water pollution. Urban and industrial sources of air pollution are the main issues of concern for air quality management. There is the potential degradation of ambient air quality due to the increase in the number of industrial air pollution sources especially in the petrochemical and power sectors.

Industrial effluents and discharges from the heavy industries in both Pasir Gudang and Tanjung Langsat are another water quality issue, as industrial effluents are discharged into small rivers and streams flowing to the Straits of Johor or Sg. Johor estuary. Factories and other heavy industrial plants do have their own effluent treatment plant but the smaller and medium industries (SMI) are the potential sources as they lack proper treatment for their effluent. This has sometimes led to discharges of various chemicals into drains and rivers and eventually ending up in the sea.

Out of 25 major rivers in Malaysia, 15 are heavily polluted, and 2 of these rivers – Sungai Buluh and Sungai Tukang Batu – considered to be the most polluted, lie in the Pasir Gudang.

River Basin	River	WQI 2011	WQI 2010	WQI 2009	WQI 2008	Pollution Sources
Pasir Gudang	Buluh	33 (IV)	36 (IV)	36 (IV)	33 (IV)	Urban, Industry
	Latoh	58 (III)	57 (III)	57 (III)	53 (III)	Urban, Industry
	Masai	53 (III)	57 (III)	57 (III)	56 (III)	Urban, Industry
	Perembi	48 (IV)	46 (IV)	46 (IV)	52 (III)	Urban, Industry
	Tukang Batu	26 (V)	36 (V)	36 (V)	26 (V)	Urban, Industry
	Kim-Kim	64 (III)	73 (III)	75 (III)	67 (III)	Urban, Industry

Pasir Gudang River Water Quality (Based on WQI). EQR 2008- 2011

Poor air and water quality, noise and vibration problems are affecting the Pasir Gudang residents, many of whom live in the housing estates within or near the industries. With such bad air quality and bad smells as well as heavy traffic pollution, the town is considered to be unhealthy. It is affecting the residents' quality of life.



### Rejuvenating Pasir Gudang Via Smart City Framework

Nafas Baru literally means 'new breath'. It is a programmes mooted by IRDA together with Majlis Perbandaran Pasir Gudang (Municipal Council) with the aim to rejuvenate Pasir Gudang to become a Green and Healthy City by 2025. Nafas Baru is in line with both the Low Carbon Society Blueprint and the Iskandar Malaysia Smart City Framework. It is the plan that by having its residents smarter in resource planning and management, the communities within be

it residents, the municipal council, industry and others can work towards transforming Pasir Gudang into a clean, green, healthy and vibrant city. The aim is therefore to reduce carbon intensity emissions by focusing on the three LCSBPIM pillars of Green Economy, Green Community and Green Environment. As such, 4 main initiatives have been identified to be carried out in 2013- 2015 period.



## Green Industry

### Background

The industry sector is the region's the highest emitter sector contributing more than 30% of the total carbon emissions in Iskandar Malaysia in the years 2005, 2025BaU and 2025CM. There are about 500 factories in Pasir Gudang with various kinds of activities and mostly are on medium to heavy industries categories. The current status of compliance to Environmental Quality Act 1974 (EQA 1974) standards is still in the moderate level.

In order to achieve green and healthy city for Pasir Gudang, the industries' awareness and implementation on environmental mitigation must be of top priority. Consultations with the Municipal Council and the Department of Environment show that the level of environmental awareness varies between each industry. It is therefore recommended that the industrial programme under NBPG should be as follows:

- i. Strengthen all industries' compliance to EQA standards through greater enforcement and awareness programmes;
- ii. Enhance low carbon requirements for license renewal; and
- iii. Green Industry/ Greening existing industry programmeme through pilots for 10 industries.

### What Is The Programme About?

The green industry programme is to make the existing industries in Pasir Gudang greener, low carbon and environmentally-friendly without compromising their production outcome. The aim is to provide guidelines and training based on each industry's capability to adopt LCS recommendations that will ultimately reduce their GHG emissions. Based on MPPG's and DOE's recommendations, 10 industries from various types, sectors and sizes have been chosen as pilots. They will be engaged to identify their current status and readiness to apply, adapt and adopt green industry initiatives. Based on their feedback and LCS recommendation, an action plan will be developed for each industry.

The action plan will propose zero, low, medium and high cost initiatives that they can implement at short, medium and in the long term. The action plan will outline how they can green their operations, processes, products and procurements by using resources more efficiently; transforming industrial energy systems towards greater sustainability by expanding renewable energy sources; phasing out toxic substances; and improving occupational health and safety at the industrial level.

The programme will also look into the possibilities of green industry by industrial symbiosis - promoting by-products (waste, energy) and exchange between industries.

### What Is The Connection With LCS?

The green industry proposal is in line with LCSBPIM Action on Green Industry, which is to decarbonise industries, promote energy efficiency improvements, as well as promote renewable or alternative energies and sustainable industrial waste management. As different industries have different strengths and preferences, the proposal therefore needs to be based on an industry's readiness. The project, which started in June 2013, is a collaboration between IRDA, MPPG, DOE and industry players in Pasir Gudang.

### What Do We Hope To Achieve?

From an Iskandar Malaysia viewpoint, the Green Industry initiative is critical in reducing GHG emission as it contributes to some 30% of the economic region's carbon emissions. A major greening transformation of the industry, coupled with fuel shift to non-fossil will significantly reduce carbon emission cutting LCSBPIM's targeted 40% substantially. The industrial sector is expected to remain one of the key drivers of growth in Iskandar Malaysia, so its transformation would be critical. Pasir Gudang is therefore being seen as a pioneer green industrial area in the economic region.

From the viewpoints of IRDA, MPPG and DOE, the project will continue to encourage close cooperation and collaboration between government and industry players; train, educate and facilitate industry players to be go green; and increase opportunities for industries towards for high goals for green economic growth.

The continuing active participation of industrial players involved in the green industry initiative is critical to the success of the pilot. The pilot industries will set an example or benchmark to other industries in Pasir Gudang, who will help to improve information and awareness about the benefits of Green Industry and also create greater opportunities to inspire and engage employees in greener lifestyle.

## Green Community

### What Is The Green Community Programme?

This programme aims to promote green community and green lifestyle among residents of Pasir Gudang. At present the level of awareness and involvement in environmental matters such as cleanliness, energy efficiency and water management are still low. For open burning is still common as a way of disposing rubbish and there is minimal solid waste separation.

Awareness among the communities is therefore clearly important in order to achieve a green community or low carbon society in Pasir Gudang. Awareness campaigns and teach-in programmes are essential in order to increase the people's knowledge and to get them actively involved caring for their area. Programmes now being implemented or about to start include energy efficiency, 3R (Reduce, Reuse and Recycle) composting, tree-planting, promoting smart travel choices as well as promoting cycling and walking activities. Through such campaigns and teach-in programmes, IRDA expects that the communities will have necessary skills and experience to address challenges and have the commitment to make decisions for the good of the whole community.

### What Is The Connection With LCS?

The green community programme covers several themes of the LCSBPIM, notable under Action 6: Low Carbon Lifestyle, with detailed measures as 6.1.1 Enhancing general public awareness and 6.1.2 Enhancing school children awareness. The impact on GHG reductions is determined by the change in the level of awareness of the public and through encouraging them to live a more low carbon lifestyle.

Thus in line with the LCSBP Actions, IRDA in collaboration MPPG and the public have started 2 parallel green activities for schools and the public. The activities for schools is to enhance school children's awareness on the environment. It consists of a series of talks on the environment and inter-school competitions about the environment. One of the competitions is on recycling that encourages students to collect reusable and recyclable wastes from homes in their neighbourhoods. This is to encourage a shift towards positive thinking and practices on the importance of recycling, reducing and reusing with the aim of increasing schools' interests and involvement in environmental education and preservation. The awareness campaign for schools started in Q3 of 2013 and is expected to be completed by Sept 2014.



Environment talk and exhibition organized by MPPG in SK Kota Masai 2, Pasir Gudang

Programme	Environment Awareness Campaign
<b>Target School</b>	Schools in MPPG
<b>Talk</b>	Environmental awareness such as 3R and tree planting
<b>Competition</b>	Interschool Recycling Competition
<b>Details</b>	<ol style="list-style-type: none"> <li>1. Prepare recycle bin to all the schools</li> <li>2. Keep track of the quantity and type of recyclables collected every 3 months</li> <li>3. The school that have the most quantity of recyclables waste per capita will be the winner</li> </ol>
<b>Agencies</b>	Majlis Perbandaran Pasir Gudang (MPPG) Iskandar Regional Development Authority (IRDA) SWM Environment Sdn Bhd

MPPG, IRDA and relevant authorities have started the discussion on green programme for residents of Pasir Gudang. Once the proposed programme has been finalized, expected in November 2013, IRDA and MPPG will conduct a public forum during the Municipal Council's regular 'Meet the Public' (Majlis Mesra Rakyat) session, where members of the community will attend. This programme is to enhance public awareness on the environment through talks and workshops. The talk will focus on informing the public on what they need to do in order to protect the environment, how to carry out activities that will enhance their surrounding environment. There will be simple and clearly understood sessions on the short to long-term benefits of practicing 3R, information on water and water efficiency as well as workshops on composting and eco-enzyme application. The public will also learn how to use fruit peels and vegetable wastes to produce eco-enzyme that can be used as detergent or fertilizer. With these simple skills, the community can save money on the detergents and fertilizers and at the same time reduce the quantity of kitchen waste. Some of the ideas being introduced are those that have already been practiced very successfully in other cities such as Kitakyushu and Surabaya. This programme is expected to increase the level of awareness of the public and encouraging them to live a low carbon lifestyle.

### What Do We Hope To Achieve?

IRDA and the Municipal Council hope that once the community are more aware of their environment and how to take care of it, they will have a better sense of belonging to Pasir Gudang and take pride in championing their city. It is also expected that through greater awareness and direct involvement in decision-making, the people will become more responsible for the environment and thus encourage them to move toward greener lifestyles.

Programme	Environment Awareness Talk
<b>Event</b>	Majlis Mesra Rakyat- Dialogue session between community and the top management of Pasir Gudang Municipal Council
<b>Content</b>	Environmental awareness such as low carbon society, 3R, energy efficiency, water efficiency
<b>Workshop</b>	Environmental awareness such as low carbon society, 3R, energy efficiency, water efficiency
<b>Date and Time</b>	Twice a year (2014)
<b>Agencies</b>	Majlis Perbandaran Pasir Gudang (MPPG), Iskandar Regional Development Authority (IRDA)

## Integrated Solid Waste Management

### What Is The ISWM Programme?

IRDA developed the Integrated Solid Waste Management Blueprint in 2009 to meet the current and future needs of its citizens through providing a sustainable and integrated framework to manage the solid waste generated in the economic region. This will be achieved through:

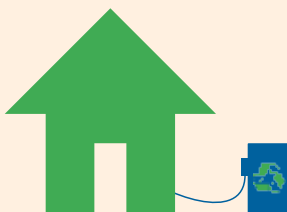
- Providing key strategies for the development of a participative and actively engaged public that is motivated to manage solid waste in an environmentally sustainable and socially responsible manner.
- Recycling systems and treatment technologies capable of generating beneficial by-products; and no or minimal emissions will be considered a priority with landfill disposal as a last resort;
- Elimination, reduction, reuse and the use of advanced treatment and disposal technologies and facilities in order to contribute to the sustainable development of Iskandar Malaysia and to protect public health and the environment;



3R Lifestyle Approach

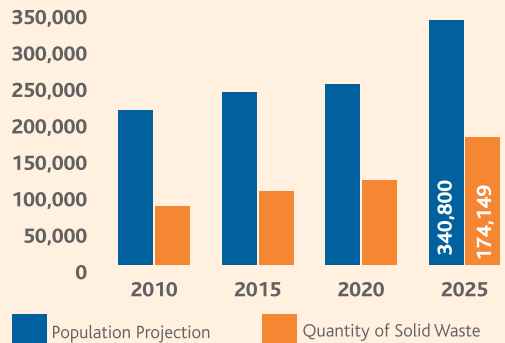


Green Initiative for Industry



From Waste to Energy

As part of the blueprint findings, the population projection and how much waste will be generated as the population increases toward 2025 is as below;



Population Projection vs Solid Waste Generated in Pasir Gudang

Year	2010	2015	2020	2025
Population Projection	211,900	240,916	252,130	340,800
Quantity of Solid Waste Generated (tonne)	81,984	102,883	118,715	174,149

Currently the only method to discard household solid waste in Iskandar Malaysia (and in Malaysia generally) is to mix (called commingle) all household waste together in one bag, which is collected and then taken direct to the landfill. This method has been working for a very long time but today this is no longer feasible due to the rapid urbanisation that causes much larger volume of waste generated. Moreover, today the waste composition generated by most households is more complex not only in terms of organic, non-organic but also the increasing composition of e-waste as well.

In addition, rapid expansion of urban areas caused by the take-up of brown sites and even green sites in Pasir Gudang has not only led to increases in land values but also decreases the available land for new landfill sites.

Most countries, notably developed ones, have tackled these issues effectively using the combination of waste reduction and waste to energy methods; and Pasir Gudang plans to do such programmes that have proved successful.

### What Is The Connection With LCS?

Started as a pilot project between IRDA, MPPG and Solid Waste Management (a concessionaire company tasked with collecting and disposal of municipal solid waste in the state of Johor), the aim is to gather data and information on waste separation, waste collection and disposal and the promotion of 3R in Pasir Gudang area. The pilot will also carry out a comprehensive study on best practices of solid waste management in other countries and apply these to Iskandar Malaysia if suitable. Discussions have started between all relevant agencies and the actual pilot is expected to start in January 2014.

The pilot will also look into the social aspect of understanding the effects of awareness program conducted on its communities as well as on how to strengthened and promote awareness among the residents, municipal council and private sectors. In addition to this, the pilot will contribute to the LCSBP in detailing the amount of recycle-able material that is generated at source, identifying the most appropriate segregation type based on composition of waste generated and identifying the most appropriate collection frequency and by what method.

### What Do We Hope To Achieve?

IRDA, in collaboration with Municipal Council and relevant agencies are working closely together in order to realise this pilot project. The expected outcomes are as follows:

- Amount of recyclable materials collected;
- Effectiveness of public education programmes (through several monitoring methods);
- Effectiveness of waste discard method; and
- Effectiveness of collection frequency

Once the above have been completed, the next stages will be to evaluate the suitability of the methodology for duplication in others in Pasir Gudang; study on improvement of frequency of collection based on changes in waste generation pattern; and development of a proper monitoring method.

It is expected that through greater awareness and knowledge as exemplified by the City of Surabaya, Kitakyushu, Sibu and others, the people of Pasir Gudang will become responsible citizens through effective waste management themselves, caring for the environment and at the same time move towards greener lifestyles.

Current Issues	Proposed Programmes
Commingled waste collection that all recyclable material ended up being landfilled	Waste segregation and separate collection at source
Time loss during door-to-door collection	Effective placement of waste bin Monitoring of waste collection using GPS
3R education through several methods of campaign and promotion	3R education through several methods of campaign and promotion



## Carbon Sequestration of Tree Preservation Order (TPO) In MPPG, 2013-2025

### Background

Global warming is threatening the world's trees and deforestation exacerbates global warming when dying trees release their stored carbon back into the atmosphere and lead to uncontrolled climate changes. Town and Country Planning Act 172 (Act 1976), Section 35A (2), a Tree Preservation Order (TPO) may, in particular, make provisions for prohibiting the felling of trees except with the written permission of and subject to conditions, if any, imposed by the local planning authority and for securing the planting of trees or the replacement of trees by replanting in such manner as may be determined by the local planning authority.

### What Is The Programme About?

Pasir Gudang Municipal Council (MPPG) has identified 250 trees to be potentially gazetted under this act. There are 19 species of tree (8-30 years old) and all of these have significant characters such as large healthy trees, rare species, unique, has substantial aesthetic and historical value, tourism value and enhance the visual character of the town. Carbon sequestration and a TPO tree's monetary value will be identified in order to assess the carbon sink and the tree value. In the future, tree-planting and urban landscape design in the municipality will be based on these values as a priority to reduce the carbon emission.

### What Do We Hope To Achieve?

Trees help to reduce carbon through carbon storage. As they grow, they help in the fight against climate change. Trees remove carbon dioxide from the air, store carbon in the trees and soil and then release oxygen into the atmosphere. Planting trees is a simple step that anyone can do; trees reduces carbon dioxide in the atmosphere and their prevalence in our urban environment is essential as a way to proactively stand against global warming. Trees are essential in a heavy industrial city like Pasir Gudang. The key activities of the recently started pilot include:

1. Calculating the current carbon sequestration of TPO in MPPG;
2. Setting target carbon sequestration intensity up to 10% by 2025 (based on 2013); and
3. Generating a Landscape Design Guideline of numbers and types of tree to be planted in MPPG.

### What Is The Connection With LCS?

The carbon sequestration of TPO programme is in line with LCSBPIM Action on Green and Blue Infrastructure and Rural Resources for sub-action New Development to Retain Existing Vegetation by adopting the Town and Country Planning Act 172 (Act 1976), Section 35A (2), a Tree Preservation Order (TPO). This is a collaboration programme between IRDA and MPPG which has been started June 2013 and expected to be completed by year 2014.







