Mega Science 3.0

Furniture   Automotive   Creative   Tourism   Plastics / Composites

FINAL REPORT

TOURISM INDUSTRY SECTOR

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1.1   Introduction

Tourism has become a key driver of socio-economic progress. It generates income, creates jobs, and contributes to export revenues and infrastructure development. In addition to the traditional tourist attractions of Europe and North America, more destinations in the emerging economies have opened up to tourism. The growth of international tourist arrivals has grown phenomenally. It rose uninterruptedly from 25 million in 1950 to 278 million in 1980, 528 million in 1995, and 1133 million in 2014 (UNWTO, 2015: 2)[1]. In the same manner, the receipts derived from international tourism have surged from US$2 billion in 1950 to US$104 billion in 1980, US$415 billion in 1995 and US$1,245 billion in 2014.

The potential of Asia is tremendous as a travel market for outbound as well as inbound tourism. It is currently the second most visited region in the world with more than 263 million tourist arrivals in 2014 (UNWTO, 2015). Leading the rapid increase in tourist arrivals is China, which has become the number one source country in the world as well as the top spender in 2012. It extended its lead further to record US$129 billion in 2013.

Table 1: International Tourism Trend, 1950-2014

Year	Arrival (Millions)	Receipts (Billions)
1950	25	2
1980	278	104
1995	527	415
2013	1,133	1,245

Source: UNWTO (2015), *UNWTO Tourism Highlights 2015 Edition*

The tourism industry is an important contributor to economies around the world. It accounts for 9% of global GDP, creates 1 in every 11 jobs, and contributes 6% of the world's exports.

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[1] UNWTO, 2015. *Tourism Highlights, 2014 Edition.* Madrid.

Source: UNWTO (2015), *UNWTO Tourism Highlights 2015 Edition*
Figure 1: Contribution of Tourism to World Economy

Rapid urbanisation, increased disposable income, improved travel facilitation and the easing of restrictions have enabled more people to travel. Tourist destinations China is taking the lead in the growth of international travel from 10 million Chinese tourists in 2000 to 120 million in 2015. China ranks top in terms of international expenditure, spending a record US$165 billion in 2014, up 28% from 2013. The China Outbound Tourism Research Institute (COTI) says the "New Chinese Tourists" are travel-savvy, well-educated and mostly under 45 years of age, which characterise the other travellers from Asia. To attract tourists to their destinations, Europe and countries in Asia are making travel from China easier by simplifying visa applications or waiving visa requirements altogether.
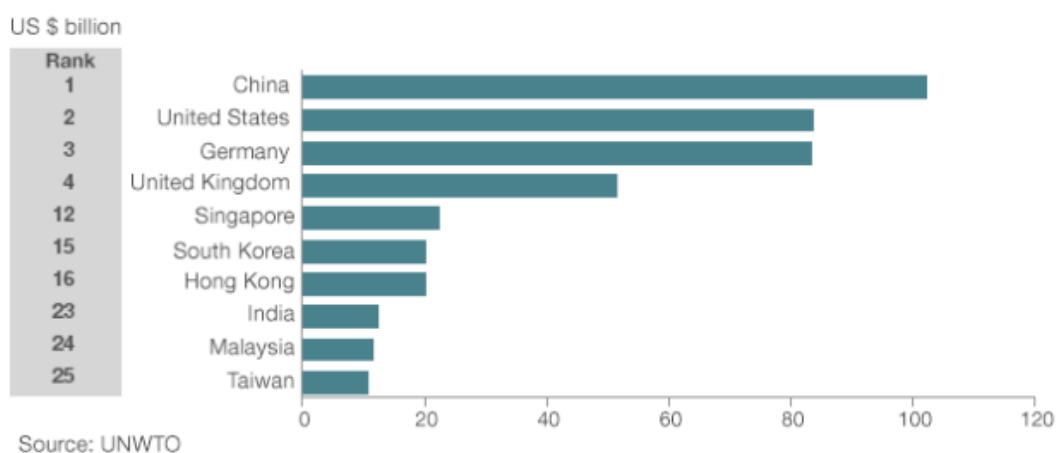
Figure 2: Asians Rank among the Top Spenders

1.2 Tourism Forecast

According UNWTO's long-term forecast *Tourism Towards 2030*, international tourist arrivals worldwide are expected to increase by 3.3% a year from 2010 to 2030 to reach 1.8 billion by 2030. During this period, arrivals in emerging destinations (+4.4% a year) are expected to increase at twice the rate of those in advanced economies (+2.2% a year). The number of visitors to Asia Pacific is projected to increase rapidly over the next 20 years from 204 million in 2010 to 535 million in 2030. In absolute tourist numbers, North East Asia will be the fastest growing, adding 9 million arrivals per year during this period. Southeast Asia will triple the number of arrivals it currently receives to 210 million in 2030. The dynamic economies in Southeast Asia, coupled with a rising middle class and increased air accessibility, has made the region the fastest growing in the world, on the back of buoyant intraregional demand.

Inbound tourism by region of destination
International Tourist Arrivals, million

Source: World Tourism Organization (UNWTO) ©
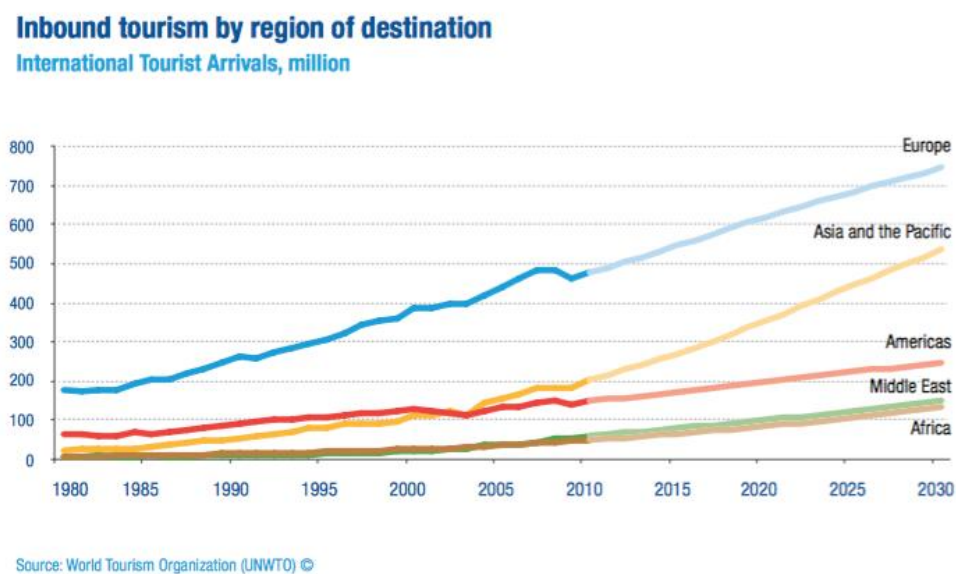
Figure 3: International Tourism Forecast 2030
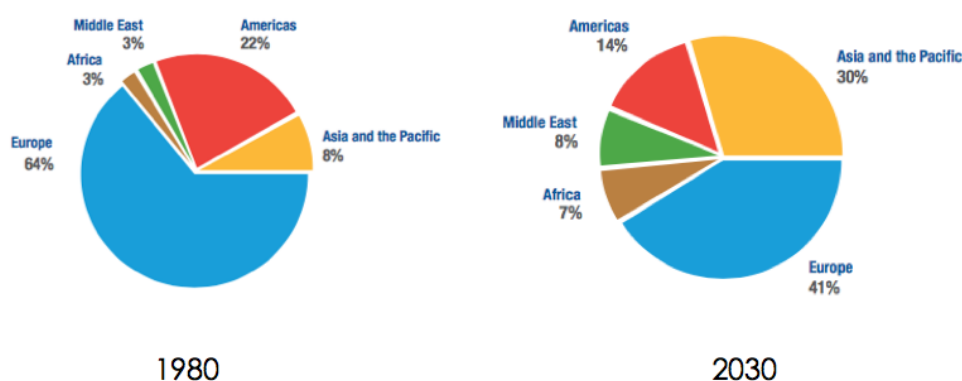
Source: World Tourism Organisation (UNWTO)
Figure 4: Inbound Tourism by Region of Destination, 1980 & 2030

Within the ASEAN community, businesses and governments are collaborating within the framework as spelt out in its blueprint, *ASEAN 2025: Forging Ahead Together*. For the next decade, countries within the ASEAN Community will leverage on vibrant, sustainable and integrated economies, enhanced connectivity and mobility of investment, skilled labour, and capital. This will continue to provide the dynamism to tourism within the region as well as linking the region to the rest of the world.

At the TravelRave 2013 [2] organised at Singapore, industry participants identified four challenges and opportunities in the Southeast Asia travel and tourism industry. The same challenges and opportunities will affect Malaysia's own travel and tourism industry:

- **Differences in culture and expectations:** The travel markets within Southeast Asia are inherently diverse and travellers from each country would like to seek out the differences as their travel experience. The diverse Southeast Asia destinations present opportunities for the travel trade to market to every type of traveller.

- **New types of travellers:** The expanding middle class population in Southeast Asia will be a key factor fuelling the region's growth in tourism and presents a challenge for tourism professionals to effectively meet this demand. The

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[2] TravelRave 2013, *Navigating the Next Phase of Asia's Tourism.* Singapore

travel industry should take advantage of this opportunity to offer creative packages to the untapped or under tapped travellers seeking to explore their immediate region and the world beyond.

- **Diverse purchasing power.** The purchasing power of Southeast Asia will continue to rise, but there will be significant differences in the per capita GDP in each of the countries. There will be opportunity for the industry to offer lower-priced and value-for-money travel and tourism opportunities.

- **Varied infrastructure and travel facilitation.** Visa requirements vary for inbound and outbound travel in Southeast Asia. There are also variations in the usage of credit cards and Internet access across markets. The launch of the ASEAN Economic Community (AEC) at the end of 2015 includes the finalisation of a visa-exemption agreement among all ASEAN member countries and the creation of an ASEAN Single Aviation Market (SAM).

1.3   Tourism Outlook 2050

The global economy is experiencing a seismic shift that will continue to 2050. According to HSBC study of the world in 2050[3], the emerging economies that are experiencing rapid growth would have expanded five-fold and become larger than the developed world. Of the largest 30 economies, 19 will come from the emerging world. With the decline of economic power, the rich economies of Europe with their small ageing population will witness the corresponding decline in their political clout. Energy availability will not be a constraint on global development as long as there are major investments into efficiency and low-carbon alternatives. There will be a challenge for meeting food demand, but improvements in yield and diet could address this issue.

According to the International Air Transport Association (IATA, 2014), 'one thing is absolutely certain: the passenger market will expand and diversify beyond our wildest dreams by 2050'. Moreover, IATA has pointed out that the airlines of the future would have to market and provide their services to a far more heterogeneous customer base (IATA, 2012). Air transport has grown at almost twice the rate of GDP

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[3] HSBC Global Research (2011), *The World in 2050.*

expansion, meaning that more people are travelling than ever before and more frequently than ever before. Global advances in the technology in the airline industry will make the sector unrecognisable from what it was before. Travelling by air is faster, safer and more seamless than in the past.

There are several technological advancements that will transform the way people travel in the coming years, such as frictionless vehicle, the flying car era, Vertical Take Off and Landing (VTOL), binary power for transport vehicles. As the emerging space industry is expected to grow and become more accessible to tourists in the near future, significant changes in the profile of the travel and tourism industry are expected to occur in the following ways:

- By 2050 fully functioning space elevators will be operating at full capacity, moving both people and supplies into space.

- By 2050 over one million people will have visited the moon.

- By 2050 several dozen space hotels will have made a major impact on tourism with growing numbers of people opting for the "sleeping with the stars" vacation package.

- By 2050 several space stations will have been started as small working cities to build the next generation of space-based industries.

Based on the data, the major transformation in different sectors of tourism is going to happen in the transport industry and allied sectors. The consequences of such changes will directly shape the future tourism industry worldwide and in Malaysia.

Almost 3 billion people – more than 40% of today's population – will join the middle classes by 2050 and give a big boost to the tourism and travel industry. These entrants are to be found almost exclusively in today's emerging markets. But countries such as China, India, the Philippines, Peru, Malaysia and Russia look set to experience annual growth in real incomes of more than 4% over that period. Since transportation and related sectors constitute a major portion of tourist expenditure, it is expected that in the future, transportation sectors will be transformed to meet the

needs of the middle-income segment, while at the same time retaining the demand in the upper-income segment market. There are several areas that will address the synergy between science and tourism, such as transports and connectivity, low-cost carriers and low-cost industry, and low-cost travel demand in the emerging markets.

From the literature, it is also mentioned that science has a direct relationship in developing sustainability in several sectors of tourism, such as energy management, system engineering etc. For example, scientific innovations could be pivotal to manage environmental resources in a more sustainable manner by producing environmentally friendly sources of energy. This in turn will create more efficient forms of energy and will reduce the consumption of fossil fuels. Technology will play a role in the provision of new water treatment system, which in turn will help to save this precious natural resource.

Some other scenarios for 2050 are as follows:

- Self-driving cars and artificial intelligence reduce accidents to zero.
- People live to 90s and 100s, and facilities such as medical services will be in all locations.
- Businesses and cities are mostly self-sufficient and less time are needed to travel because work is done at home.
- Women are equal leaders in all businesses and top management positions. Washrooms, travel in flights, and accommodation will be female sensitive.
- Train travel will be used for long distance to all major cities. It would be possible to travel by train from Singapore to Bangkok in 5-6 hours, and from there proceed to Cambodia, Vietnam, China, and overland to Central Asia and Europe. The trains will be powered by renewable energy, not fossil fuel.
- With renewable energy, electricity becomes cheap. Water is abundant, but only drinking water is scarce at many locations. Since desalination needs 2KWh per cubic meter of electricity, there can be as much clean water as anybody wants at hardly any cost.

- A medical device linked to the phone can perform a health check that will identify nearly any disease, so anyone in the planet will have access to world class medicine for nearly free.
- The average life expectancy will increase at an accelerating pace and people will live for over 100 years.

1.4   Tourism Contribution to Preferred Future 2050

Tourism can contribute much to the Preferred Future 2050 of the country based on the ASM Foresight study. The first area of contribution is towards sustainable economic growth and employment. The role of tourism in Malaysia as a key driver for national development has been spelt out in the Malaysia plans since the 1980s. Following international trends, Malaysia has experienced significant growth in terms of tourist arrivals in the last thirty years, with the strongest increase recorded during the last 15 years. In 2015, Malaysia received 25.7 million visitors and RM69.1 billion receipts. In addition, Malaysia registered a total of 169.3 million domestic visitors in 2014, with a total expenditure of RM62.2 billion (DOS, 2016). The tourism industry employs a significant number of workers, estimated at 14% of the workforce. Under the Economic Transformation Program (ETP), the tourism targets are 36 million tourist arrivals and RM168 billion tourist receipts for 2020. These targets are premised upon shifting its focus to raising the yield per tourist by improving and upgrading tourist offerings and services, and enhancing connectivity to key priority markets.

A large number of cities and regions have used culture, creativity and tourism as means of revitalising the city centre and creating employment, while projecting a new image of the region to the outside world. Glasgow, Toronto, Barcelona, Singapore and Sydney are just a few cities that have employed culture in their restructuring strategies. In many cases, the development of culture and tourism go hand-in-hand, as cultural facilities became important flagships that attracted tourism, and tourists contributed the money that supported the expansion of culture. Cultural tourism is one "good" form of tourism that could be adopted for Malaysia since it is

widely viewed as sustainable and supporting local culture (Richards 2001)[4]. Cultural tourism is also being equated with "quality tourism", an important factor for areas which are experiencing decreasing returns from traditional forms of mass tourism (Russo, 2006)[5].

Potentially, tourism is a cosmopolitan-making and a world-making industry. It is global in scope, bringing people from diverse backgrounds together to transact, interact and exchange with the potential of creating friendship and greater understanding among the human race. It is universalising and particularistic, with political economy, cultural and ethical dimensions. Travellers with an open mind develop global citizenship and a cosmopolitan outlook that would contribute to the Smart Community 2050 of the Preferred Future. Smart cities would also be thriving centres for socio-cultural activities, leisure, as well as creative and performing arts. Indeed, tourism helps to create appreciation, pride and preservation of one's cultural heritage and natural environment.

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[4] Richards, G, 2001, ed. *Cultural Attractions and European Tourism*, Wallingford: CABI.
[5] Russo, A.P. 2002. The "Vicious Circle" of Tourism Development in Heritage Destinations". *Annals of Tourism Research*, 29(1): 165-82

CHAPTER 2 GLOBAL TECHNOLOGY OUTLOOK FOR TOURISM

2.1 Global Technology Trends

According to the consulting company Accenture, future global technological trends will lead to a 180-degree shift to the so-called 'We Economy', namely, new markets and ways of living highly influenced by technology. More specifically, the 'Accenture Technology Vision 2015' proposes examples of how the interconnection of computing devices embedded within the existing Internet infrastructure will be employed by companies to create digital ecosystems, which in turn will offer new services, reshape experiences and enter new markets. Increasing amounts of information (news, books, real-time data, TV, entertainment) will be processed by a variety of handheld devices, which will shape an ad hoc wireless network and novel self-sufficient gadgets in the area. Thus, wherever a user goes, he/she will go behind a trail of digital traces. Electronic gadgets, including the Oculus Rift and Google Glass, will be utilise cloud computing and grid networking. Urban 4G mobile phone networks will be gradually more organised, supporting between 100 Mbits/s and 1 Gbit/s for high mobility.

According to Gretzel (2013, p. 123), 'tourism's dependency on IT is bound to increase, with tourism experiences being mediated by an ever greater array of devices that provide opportunities to interact with information, services, things and other human beings before, during and after a vacation'. Augmented reality will provide tourists the opportunity to interact with the toured objects in new forms. Gretzel also points out that the technology-related future developments of tourism may not necessarily lead to positive scenarios. Indeed, while technology will offer tourists more complex experiences, it will also lead to problems related to users' privacy and manipulation of information. In other words, as technology will lead to digital traces, tourists' profiles and travel movements will always be available and known by others without the consent of users. Consequently, tourists' profiles and habits recorded by technological devices will provide data that could be easily manipulated or stolen. Despite this, the positive implications of technology for tourism should not be underestimated. Indeed, virtual tourism may lead to more sustainable forms of tourism as technological devices will allow tourists to visit destinations and tourist spaces without compromising the environmental characteristics of the toured objects

(Tavakoli & Mura, 2015). Moreover, virtual tourism would open up and expand new tourist markets, as it will guarantee more accessible forms of mobility. In this respect, virtual destinations will be accessible to the disabled and the elderly, whose impaired mobility at the moment may not allow them to travel physically. While physical travel represents a catalyst for local economies, virtual tourism may play a major role in creating desires about travelling to destinations. In this perspective, physical and virtual tourism should not be conceived as antithetic but as complimentary phenomena (with the latter playing the role of encouraging tourists to travel to the destination).

2.2   Technological Revolution

Manyika et al. (2013) identified twelve potentially economically disruptive technologies to indicate the substantial economic impact and disruption they will have over the coming decades. They are, namely:

1.   Mobile Internet;
2.   Automation of Knowledge Work;
3.   The Internet of Things;
4.   Cloud Technologies;
5.   Advanced Robotics;
6.   Autonomous and Near-Autonomous Vehicles;
7.   Next-generation genomics
8.   Energy Storage;
9.   3D Printing;
10.   Advanced Materials;
11.   Advanced oil and gas exploration and recovery;
12.   Renewable Energy.

The impact of these disruptive breakthroughs may impact on the tourism sector in a different fashion compared to the other sectors. Some scientific technological and scientific developments have a major impact on the tourism industry (e.g. the mobile internet, advanced materials for the transportation industry and cloud technology), while others will be less so.

Digital technology that has become closely integrated with daily life with mobile Internet, navigation systems and smart phones strongly influence tourism and how businesses are transacted in the industry. The whole industry has to keep pace with new technology trends, which often require them to rethink their strategies and reshape the services they provide. Robots are now being used in the hospitality industry for maintenance, guest service and room service, while holograms with avatars could perform the role of reception staff. Interactive displays, smartphones and gadgets are increasing used in the hotel industry.

2.3   Tourism and the Internet

2.3.1   ICT in Tourism

Tourism industry is one of the most successful industries proved using ICT enabled e-commerce due to its seamless integration of information and physical services (Wayne & Michelle, 2014, p.257). Tourism industry is at a 'big data cross roads', which are some of the predictors of future trend in travel and tourism industry. 'At the Big Data Crossroads: Turning Towards a Smarter Travel Experience' charts the emergence of new technologies and strategies for managing big data, and outlines how big data can be harnessed to focus travel around customer needs and preferences (WYSE Travel Confederation, 2015). Based on a study conducted by big data experts from companies around the world including Air France-KLM, Cathay Pacific, Eurostar, Facebook, Frontier Airlines, KAYAK, Marriott Hotels, and Munich Airport, it is revealed that big data offers major opportunities for travel companies to improve both the business and experience of travel. The benefits of big data include better decision-making, greater product and service innovation and stronger customer relationships. Influence of social media in future will be the main decision making tool for the tourists; the review of services will be the most reliable information the tourist trust rather than middle man in the industry.

Undoubtedly, the Internet is one of the most significant technological advancements of the last 20 years due to its revolutionary impacts and implications on exchanging information and goods in the world. The development of affordable internet-enabled portable devices, such as smartphones and tablets, has significantly

expanded the number of Internet users in the world. As noted by Manyika et al. (2013), users have now access to a myriad of apps and wearable devices, which enable them to interact with the physical world easily and instantly. The diffusion of portable devices has also been accompanied by an expansion of the wireless network, which allows the traveller to surf the web almost everywhere.

For the consumers, the Internet has changed the way tourists search, explore, book, and experience a trip. The Internet provides a channel for travellers to search for information, visualise the travel products and services, and purchase a tour. In addition, the social media is used to share travel experiences with friends and family members. The Web technologies enabled Internet users to automate searches through search engines such as Google, whereby portals play the role of *online travel agents (OTA)*, which provided consumers with the web access to central reservation systems of hotels, airlines, car rental and other travel related product and services suppliers. OTAs allow consumers to check availability of accommodation, compare prices and perform payment for the services. OTAs provide one-stop convenience and empower the customer to find the best value for their travel needs.

Hock (2007) contends that the Internet is used in more than 75% of all travels. Likewise, according to Gretzel (2013, p. 123), 'tourism's dependency on IT is bound to increase, with tourism experiences being mediated by an ever greater array of devices that provide opportunities to interact with information, services, things and other human beings before, during and after a vacation'. In a study by Ipsos MediaCT/Google in 2013, 5000 travellers were interviewed on how they sourced for travel information. The study found that 61% of the respondents researched an upcoming trip online; 46% researched a destination, flight, hotel or vacation as a result of seeing an online advertisement; 46% read reviews from other travellers; 35% requested more information related to an upcoming trip; 35% watched a travel video; and 31% reviewed the travel content or reviews written by friends and family members. Sociological studies on tourism show that the Internet affects tourists' perceptions of authenticity and their whole satisfaction levels before, during and after the holiday experience.

2.3.2 Internet for Tourism Business

The Internet provides the platform to transact tourism business, sell and buy tourism services, search for travel information, obtain feedback from travellers, and share travel experiences over the web. From the travel business point of view, the digital platform and information technology is a perfect tool in serving clients and doing business in the tourism industry. The evolution of ICT in the travel industry now poses challenges to the value propositions offered by traditional retail travel agencies. Through sites like Skyscanner, travellers can compare airfares before purchasing the airline ticket. Online booking systems, such as Expedia, Agoda.com and Booking.com, enable customers to select hotels, reserve rooms, compare prices and pay online without any sort of human interaction.

Social media sites, such as Airbnb and Couchsurfing, provide alternative accommodation options, such as homestays and private houses, where travellers can list, find and rent lodging. The mobile applications of Airbnb and Couchsurfing are gaining popularity as they allow geolocation and travellers private messaging, which render the whole booking process faster.

Technology has played an important role in improving customers' experiences in hotels. More and more hotels are providing products and services to accommodate these gadgets (e.g. wireless networks, tablets' chargers, Ipods) as well as online booking systems. Starwood has also introduced robotic butlers at Aloft Hotel in Cupertino, California to facilitate interactions between guests and staff. Moreover, mobile keys, check-in kiosks and self-check-in devices have been introduced in many hotels worldwide to facilitate guests' management and save time. Hilton Worldwide, for example, is spearheading an initiative that will allow guests to use their smartphones to open hotel rooms through online applications. Moreover, Starwood Hotels allow their guests to use the Google Glass to get directions to the hotel and obtain information about its facilities.

With the development of the Internet, hotels have also started to employ *Cloud Computing* to increase efficiency and reduce costs. The National Institute of Standards and Technology (NIST) defines cloud computing as 'a model for enabling convenient, on-demand network access to a shared pool of configurable computing

resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction'. In other words, through cloud computing hotels can have access to software, business applications, operating systems, hardware and general resources at a relatively inexpensive price. According to Albietz, hotels could employ cloud computing for front office applications (e.g. reservation system and check-in/check-out), back office applications (e.g. sales and catering and financial reports), restaurant and banquet management systems (e.g. menu management system and sales analysis) and guest-related interface applications (call accounting system, electronic locking systems and energy management systems). By employing cloud computing in all these areas, hotels would be able to provide more flexible services to guests at a lower cost and time.

The development of *mobile technologies* paves the way for a new era of tourist experiences. As these applications require the use of the Internet, it is important that tourist destinations offer wireless and affordable Internet networks. Currently, the availability of efficient wireless networks is limited, especially in rural areas and emerging economies. Since the use of the Internet and e-literacy varies among the different regions of the world (Jacobsen & Munar, 2012), traditional information sources (e.g. guidebooks, newspapers and magazines) should still be available.

2.3.3   *Virtual Reality, Augmented Reality and Mixed Reality*

Augmented reality provides tourists the opportunity to interact with the tourist destination in new forms. Before the time of travel, mobile virtual reality (VR) and augment reality (AR) applications allow tourists to obtain a wide variety of information about destinations, including accommodation, dining opportunities, nightlife and sightseeing trails. Kounavis *et al*. (2012) reported that the AR applications already available in the market for several tourist destinations, such as Tuscany, Basel, and London. Through these applications, tourists can visualise street views, museums, neighbourhoods, and historical areas before travelling to the destinations. VR and AR mobile applications are powerful tools in influencing tourist motivation, decisions, attitudes and perceptions of risk about destinations (Sharif & Mura, forthcoming). At the destination, tourists can point their devices at items and

places of interest and visualise reconstructed images superimposed on the physical ones. This is possible because more and more tourists are connected online with their devices when they travel. Indeed, according to a survey conducted by TripAdvisor in 2013, 87% of travellers worldwide use a smartphone and 44% a tablet when they travel. During and after the trip, tourists can circulate the images captured with their devices through social media and share their experiences with others on the Net. They can also buy hand-made souvenirs online after they return home through virtual spaces like Novica.com.

By providing detailed information about places and cultures, VR and AP mobile applications also play an important educational role, which could minimise issues related to cross-cultural misunderstanding and socio-cultural impacts in tourism settings. Traditionally, the tourism literature has reported many cases in which tourism creates cross-cultural misunderstandings between tourists and locals stemming from a lack of knowledge (from both tourists and locals) about others' cultures and traditions. With VR and AR mobile applications, which provide fast, detailed and updated information about people and places, many of the issues related to cross-cultural contact could be minimised. In other words, mobile applications are powerful tools to provide tourist experiences that are interactive, educative, and entertaining for the tourists. Importantly, while traditional media (e.g. guidebooks) tend to provide generic information for all types of tourists, mobile applications take into account the specificity of tourists' needs by providing information tailored to the need of each tourist (Kounavis *et al*., 2012). This represents a very important aspect of mobile technologies as more and more the needs of consumers are becoming articulated and diverse.

VR and AR applications also play an important social role as they minimise barriers to travel. The internet and mobile applications offer the possibility of experiencing new forms of tourism to those who are physically less able, especially when many heritage and natural sites worldwide are not easily accessible. In this respect, Hobson and Williams (1995, p. 133) claimed that 'VR [virtual reality] could offer alternatives for those who are disabled but who want a tourism experience'. Despite questions raised about the authenticity of virtual tourist experiences, advanced technological gear which already exist in the market, such as the Oculus

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Rift and the Google Glass, are already revolutionising the way people can visit relatively inaccessible sites. In the future, technology will be probably able to offer multi-sensorial tourist experiences accessible to all.

Besides VR and AR, *mixed reality (MR) or hybrid reality* is also beginning to play a role in the tourism experience. MR refers to experiences in which virtual and real world merge. In these experiences, which encompass VR and AR, tourists are able to interact with both real and digital objects through head-mounted displays and tablets. AsukaLab.com, a venture firm from the University of Tokyo, has been leading projects in which heritage sites are reconstructed using MR technology. Among others, AsukaLab.com has spearheaded a project involving virtual tours of the reconstruction of Edo Castle, which was destroyed by fire 300 years ago. By using smart glasses tourists can visualise the castle, its halls and gardens in a very realistic fashion. According to AsukaLAb.com, the reconstruction of heritage sites may increase tourist numbers and, consequently, boost local economies, especially in rural areas. This technology, which is being developed at the moment in Japan, will be soon tested in Europe and promises huge changes in the way people experience tourist heritage sites.

The development of VR, AR and MR is also facilitated by the parallel development of *wearable electronic devices*, namely clothing and accessories that incorporate advanced electronic technologies. Among them, the most popular ones are smart watches, activity trackers, wearable computers and e-textiles. Atembe (2015) discussed the main scenarios in which wearable devices are already applied in the tourism industry. For example, he reported that in the air travel industry costumers have already been employing the Google Glass to obtain information about flights and airport facilities. Customers can also use the Google Glass while on board to have a better flight experience. Also, when visiting destinations tourists could use Google Glass as replacement of traditional travel guides. Overall, it is expected that wearable electronic devices, which will allow tourists to take photos, retrieve information about destinations and book hotels online, will replace smartphones in the near future. Companies like Memoto are already introducing in the market wearable cameras so tiny to be pinned on the body to video record tourist experiences.

VR, AR and MR are some of the technological developments that will change the tourism industry in the near future. Currently, other internet-based breakthroughs are also changing the way tourists experience travel. User-generated content (UGC) and peer-to-peer applications, also known as social network sites (e.g. Facebook and YouTube) also represent one of the most innovative aspects of the Internet (Akehurst, 2009). Within the context of tourism, sites like tripadvisor.com allow tourists to share information, experiences and recommendations about destinations. Moreover, through these virtual communities, tourists can rate hotels and products. Importantly, studies have found that tourists regard the opinions expressed in user-generated content are more credible than those offered by traditional tourism information sources, such as guidebooks and travel agencies (Casalo *et al*., 2011). Indeed, in general tourists find the information provided by UGC more immediate, updated and unbiased than that provided by traditional channels.

CHAPTER 3 MEGA TRENDS AND THEIR RELEVANCE

A crucial aspect of analysing the tourism industry is identifying future trends, tendencies and challenges affecting the industry since this can help in the identification of the right measures to respond to them. There are megatrends affecting tourism, which include the demand for and supply of tourism, as well as enabling factors for tourism that require response and lines of action. The challenges connected to each megatrend will be described and concrete measures recommended in addressing future needs.

2.3 Mega Trends Affecting Tourism Demand

2.3.1 Demographic Change

Demographic changes will have a dramatic impact upon tourism in the coming decades, influencing the types of tourists that will travel, where they come from, where they travel to, the types of accommodation they require and the activities they engage in while travelling. Between 2015 and 2030, world population is forecast to grow over the period from 7.3 billion to 8.3 billion people. By 2050, the world population is estimated at 9.7 billion. Population growth will generate substantial expansion in international travel.

2.3.2 Ageing Population

Population ageing is a phenomenon that is occurring across the world. According to UN (2015)[6], between 2015 and 2030, the number of older persons—those aged 60 years or over—in the world is projected to grow by 56%, from 901 million to more than 1.4 billion. By 2030, older persons will outnumber children aged 0-9 years (1.4 billion vs. 1.3 billion); by 2050, there will be more people aged 60 or over than adolescents and youth aged 10-24 years (2.1 billion vs. 2.0 billion). Virtually, all countries are expected to see substantial growth in the number of older persons between 2015 and 2030, and that growth will be faster in the developing regions than in the developed regions.

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[6] United Nations, 2015. World Population Ageing

Malaysia will achieve the status of an ageing country in 2030, when more than 15% of its population consisted of those aged 60 years and above. This is the result of the decline in fertility rates, which reduced the number of young people, as well as the longer life expectancy arising from better access to quality health services (Mustapha, 2015).

Life expectancies have been increasing across countries but the level varies between the developed and developing regions. People tend to live longer in the developed countries. Although the ageing population is now increasing in developing countries, majority of the ageing population is still found in Europe, the Americas and Asia, especially in Germany, China and the US, which will continue to be the primary sources for outbound tourists.

It is not just how long people live, but what level of health they enjoy while they are alive. The trend worldwide is for morbidity to decline at the same time that life expectancy increases. Therefore, not only will the number of older tourists rise sharply because they live longer and have more disposable income, but they will also be fitter and look younger.

From market studies, the senior population can often be financially secure and is ready to spend, especially from developed countries where they have the purchasing power to indulge in travel. With a satisfactory disposable income, less home responsibilities, more time to travel and in relatively good health, they are an important tourist segment and expected to spend more than all other age groups on holiday travels. The ageing population will constitute active travellers, require highly personalised services, and because they are relatively fitter and healthier than previously, they demand travel products that are "experience-driven", even soft adventure for "feeling young".[7]

There must be a radical challenge in current assumptions about the needs and wants for the senior traveller. Tourists from developing countries are likely to be

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[7] Horwath HTL, 2015. Tourism Megatrends

younger with very distinctive needs than older tourists from more traditional source markets. In designing transport and accommodation, the designs that take into account the needs of older tourists are generally considered as examples of good design for all.

2.3.1   Generation Y and Z

The "Millennials" or Generation Y is a rapidly growing segment that is expected to represent 50% of all travellers by 2025. Most researchers and commentators use birth years ranging from early 1980s to around 2000 to refer to this generation. Those in Gen Y like to focus on exploration, interaction, and emotional experience, and expect greater link between tourism services and their everyday life. Their lifestyle requirement is tech savvy with a strong focus on empathy and customer connection. They are socially and environmentally conscious, seek access to person development, as well as work-life balance with the blurring of lines between socialising and work. They are also said to seek instant gratification, with shorter attention spans, need constant feedback and like a lot of options.

Gen Y members listen to each other, much more than they listen to traditional information sources. The word-of-mouth recommendations applications based on user-generated content (UGC) are perceived to be more credible sources of consumer opinions.

Over 20% of international tourist arrivals each year are youth travellers and the youth travel market is worth 18% of international tourism receipts, therefore constituting a significant proportion of the travel and tourism industry (UNWTO, 2008). Motivations of youth tourists to travel abroad include the opportunity to study, the desire to explore and the experience of working in different cultures. Youth travellers typically embark on travel for long periods of time in order to enhance their knowledge of the globe, encounter new experiences and get to know other cultures better.

Generation Z members, born after 1995, are 100% digital natives. They grow up in an era of mobile devices and smartphones. They live in a world that is neither

offline nor online, but one seamless, interchangeable zone. As Gen Z are multi-taskers with short attention spans, marketers must grab them quickly with their marketing pitch, otherwise they will lose them in a blink of an eye. Gen Z have global values and want results at the press of a button. They demand respect and respond well to visual media, ready to engage with brands and new causes for the collective good.

In Asia, the emergence of the Asian Millennial Travellers (AMT) will be a growth driver and generate significant business opportunities for leisure as well as corporate travel. According to a joint study by Singapore Tourism Board, Visa and McKinsey, the AMT account for nearly 35% of the US$600 billion spent by Asians on international travel. The population segment is expected to increase their travel spending by 1.6 times to US$340 billion by 2020. Industry players need to understand the changing consumer behaviour and respond appropriately with new business models, innovation and the utilisation of new technologies. Attracting, retaining and developing high quality talent, including tapping AMT in the workforce, will always be a challenge for Asia's travel and tourism industry in the borderless world.

2.3.1   Disabled Travellers[8]

About 10% of the whole population has various kinds of disabilities. Due to technological progression, most people with disabilities are gradually more able to execute normal human tasks. In Malaysia 290,000 people have several disabilities (1% of the total population) and in the world total disability is documented as 650 million (10% of the world population). If travel prospects are offered to 10% of the total disabled population, some 65 million travellers could be constitute as a new market division. Malaysia passed the Persons with Disabilities Act (PWDA) in 2008 as part of its obligations under the Convention on the Rights of Persons with Disabilities (UN Convention). According to the PWDA, those persons with disabilities shall have equal access to the following in Malaysia:-

- Public facilities, amenities, services and buildings

- Public transport

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[8] They are also called "differently abled"

- Education

- Employment

- Information, communication and technology

- Cultural life

- Recreation, leisure and sport

A new term called as 'adaptive technology' significantly addresses the mobility and access for differently abled people, which are expected to be a transformative solution for addressing disability increasing mobility and access. Technological innovations such as The DynaVox EyeMax System, The Car for the Blind, Google's Driverless Car, The DEKA Robotic Arm, Cochlear Implant, The iBot Stair-Climbing Wheelchair are currently in the implementation stage to address disability and access issues. Some 10% of the population has various kinds of disabilities. With technological support, people with disabilities are gradually more able to execute normal human tasks. Based on several studies, the main enablers of barrier free tourism are categorised as follows: information in accessible media formats, and information about accessible travel, venues and offers. When products are marketed using a website to the differently abled, care must be taken with respect to text size, contrast, voice function and easy navigation. Accessible tourist attractions would come with ramps, voice guiding, braille, access to counters etc.

1.1 Economic Growth in Asia and Growing Middle Class

The rapid economic growth of Asia during the last 4-5 decades has been one of the most outstanding examples of rapid economic transformation in recent times. Along with the rising economic power in Asia are the rising per capita income levels and the growth of the middle class, which contribute to widespread affluence. According to estimates by Asian Development Bank (ADB), Asia could account for nearly half of global output, trade, and investment by the middle of this century.[9] Of course, Asia's rapid rise in the global economy is not inevitable and on "autopilot" because there still exist significant risks that could lead to economic, social and political instability,

[9] Asian Development Bank, 2011. *Asia 2050: Realizing the Asian Century.*

which could derail economic development. There are also the dangers of countries falling into the Middle Income Trap, of increasing social disparities, and a decline in the quality and credibility of institutions.

Table 2: The Asian Growth Engines, 2010 & 2050

	2010 GDP ($ trillions)	**2050 GDP ($ trillions)**
People's Republic of China (PRC)	5.7	62.9
India	1.4	40.4
Indonesia	0.7	11.4
Japan	5.4	8.2
Republic of Korea	1.0	3.7
Thailand	0.3	3.2
Malaysia	0.2	2.6
Total Asia-7	**14.8**	**132.4**

Source: ADB (2011: 31)

According to ADB analysis, Asia's prosperity up to 2050 will be led by seven economies, namely, People's Republic of China, India, Indonesia, Japan, Republic of Korea, Thailand and Malaysia. In 2010 their combined GDP was US$14.2 trillion. By 2050, these countries will become the engines that will drive not only Asia's economy, but also of the world. Their combined GDP will rise to US$132.4 trillion, accounting for 45% of global GDP.

The growing middle class will be a strong driver of economic growth because of its demand for goods and services as well as a source of savings and entrepreneurship. The rising affluence of the middle class motivates tourism and travel, as witnessed in the emerging economies across Asia and elsewhere. Spending by the Asian middle class could rise 9% a year through 2030, driven by the very strong growth of middle class spending in the large Asian countries—PRC, India and Indonesia. In the other dynamic Asia economies, household incomes are expected to increase at least by the rate of GDP growth, bringing more households into the middle class and driving domestic consumption. Asia's middle class will grow sharply over the next 40 years. These structural shifts in global demand would mean that the future

driver for Asia's growth would increasingly be from intraregional sources rather than dependence on Europe, Japan or North America.

Table 3: Asia's Middle Class, 2030 & 2050

	2030			2050		
	Middle Class Population	Upper Class Population	GDP per capita (PPP)	Middle Class Population	Upper Class Population	GDP per capita (PPP)
PRC	1,120	40	21,100	1,240	190	47,800
India	1,190	15	13,200	1,400	210	41,700
Indonesia	220	5	13,500	250	40	37,400
Japan	100	20	48,900	60	40	66,700
Republic of Korea	30	20	60,200	10	35	107,600
Viet Nam	80	2	11,900	100	15	33,800
World	4,990	580	19,400	5,900	1,500	36,600
US	185	190	65,500	120	290	98,600
Germany	50	30	31,300	25	50	77,800

Source: Centennial Group projections, 2011

With the rise of the middle-class population, the profile of the international traveller has changed and international travel is no longer the domain of the wealthy. Low-cost carriers open up new routes and make it possible for "everyone can fly" brought about the rise of travel among the middle class. International travel has become as an aspirational lifestyle. Rapid urbanisation, increased disposable income and the relaxation of travel restrictions have made it easier for people to travel. The middle-class tourists are also educated, well connected and tech-savvy, doing their online research on the destination, food, shopping and activities before the trip. Travel has also become multi-purpose where the business travellers take time off to explore for leisure.

1.1   Demand Trends for Tourism Product Segments

According to the World Travel Monitor, there are strong growth of city trips, cruise holidays and long-haul travel in world outbound travel. Between 2007 and 2014, cruise holidays boomed with a growth rate of 248%, while city trips rose by 82%. There is a strong trend for off-season travel in the case of city travel. According to World Travel Monitor, Hong Kong, Paris and New York were the top three metropolitan travel destinations. The other top ten destinations were London, Macau, Bangkok, Barcelona, Singapore, Istanbul and Munich.

By comparison, sun and beach holidays grew by 39% and tours grew more slowly by 21%. Countryside holidays have stagnated in volume. In the business travel market, MICE (Meetings, Incentives, Conferences & Exhibitions) segment grew by 37% during this period. At the same time, the traditional business trips segment has been affected by technological solutions and declined by 14% during 2007-2014.

Pursuing healthy lifestyles is an important motivation for travel. With the rising disposable income, tourists would like to take care of personal health and pamper themselves at spas and medical-focused destination spas that embrace diagnostic medical technology for real time health monitoring. Treatments, relaxation, exercise and healthy diet are some well-known product segments. The integration between the health and tourism sector opens up the scope for health tourism.

Medical tourism is a fast growing multibillion-dollar industry where travel is done across international borders to obtain medical treatment. Affordability, availability, and accessibility of good quality healthcare services along with the assistance provided by tourism departments and local governments help to expand the medical tourism market. North America and Asia Pacific are the leading regions with significant number of inbound medical tourists. Asia Pacific is projected to grow rapidly because of the availability of appropriate quality healthcare services provided at an economical cost along with good hospitality. Asia Pacific is anticipated to grow fastest at the average growth rate of 16.1% between 2015 and 2022. The top destinations that attract most medical tourists are Thailand, Singapore, India, and

Malaysia due to superior quality care available at affordable prices and within minimum waiting time.

3.4 Mega Trends Affecting Tourism Supply

Some mega trends influencing and shaping the supply side of tourism are transport and connectivity, technological revolution and destination management. Some recent game changers in the tourism and travel industry are as follows:

- Airline alliances (One World, Star Alliance, Sky Team)
- Low-cost carriers (RyanAir, AirAsia, EasyJet, JetStar, etc)
- Mega hubs in the Middle East (UAE, Qatar), Turkey
- Cruise lines
- All-inclusive resorts
- Non-traditional operators
- Online direct booking: OTA – Online Travel Agencies
- Vertical integration (Tour operators, travel agents, airline, resort, attraction, etc.)
- Internet and social media

3.4.1 Transport and Connectivity

Transportation development is an essential component of tourism. The capacity, efficiency and connectivity of transportation can play crucial role on how a destination develops. Air transport contributes to economic development by enabling the movement of passengers and goods across borders. In its 20-year growth forecast, the International Air Transport Association (IATA) expected that passenger numbers would reach 7.0 billion by 2034 with an average annual growth rate of 3.8%. This will result in a doubling of the 3.5 billion passengers in 2015. The five fastest-increasing markets in terms of additional passengers per year over the forecast period will be China (758 million new passengers), the US (523 million new passengers), India (275 million new passengers), Indonesia (132 million new passengers), and Brazil (104 million new passengers). IATA expects that China will overtake the United States as the world's largest passenger market by 2029. In 2034, China will account for some 1.19 billion passengers, while the US will see 1.16 billion

passengers. Routes to, from and within Asia-Pacific will see an extra 1.8 billion annual passengers by 2034, for an overall market size of 2.9 billion. The growth of the Asian market is generally due to the increased spending power due to the robust income growth and deepening financial markets.

Airline strategies and business model is continually going to change in the future. The air transport industry has become highly competitive with the deregulation of air transport and the emergence of LCCs that result in the reduction of airfares and making air travel more affordable. The business structure of airlines differs for legacy carriers and low-cost carriers (LCCs). Legacy carriers operate a hub and spoke network structure with several aircraft types, while low-cost carriers operate on the point-to-point model. Although the hub and spoke model provides broad network coverage through a large, diversified fleet size, it adds to the complexity and cost of operations. In order to provide a wide coverage at competitive prices, many legacy airline carriers are forced to mix business models by combining the cost-effectiveness of the low-cost model while providing the broad range of services and routes offered by legacy carriers. This has narrowed the cost gap between LCCs and legacy carriers (Figure 5).

More airlines will enter into the strong partnership and alliances in the airline industry. In future it is also expected that the full merging and cobranded subsidiaries will allow the airline industry to expand their brands. All these strategies will contribute to a strong profitable growth of this industry. A rapid expansion of network and fleet planning will help to establish new hubs, new markets and increase of frequencies. Emerging countries will be highly considered in the future growth of the airline industry with several regional routes that stimulates growth within the region resulting increased passenger traffic.

Figure 5: Cost of Transport as Measured in Terms of Wages Required to Fly Sydney-London Return Airfare

Megahubs are transforming the way people connect and travel around the planet. According to OAG, the global leader in air travel intelligence and analytical services, selected major hub airports are rapidly growing into Megahubs as expanded international connectivity, airline consolidation, larger aircraft types and the growing desire for air travel have created these world-leading facilities. The U.S. is the global leader in Megahubs, with 22 of the 50 most connected airports in the world. Following the U.S. is China, home to three of the top 50 Megahubs. As the aviation market evolves, well-connected Megahubs will continue to grow importance and become more prevalent across the world as major cities add more runways and airport infrastructure to accommodate increased capacity. Contributing to the growth of Megahubs are LCCs and the rise in self-connecting passengers between low-cost carriers. With the Southeast Asian region, Jakarta Soekarno-Hatta Airport is the largest Megahub in Asia, ranked 17th just ahead of Haneda (Tokyo) International Airport and Sydney Airport.

Breakthroughs in airplane designs through improvements in aerodynamics, structures and materials, control systems, and propulsion technologies have increased

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the capabilities of airlines in transcontinental travel. For example, what used to take the Flying Boat 32 stops and 10 days to travel from London to Sydney in 1930, now it is possible to fly London to Sydney nonstop within 19.5 hours (Figure 6).
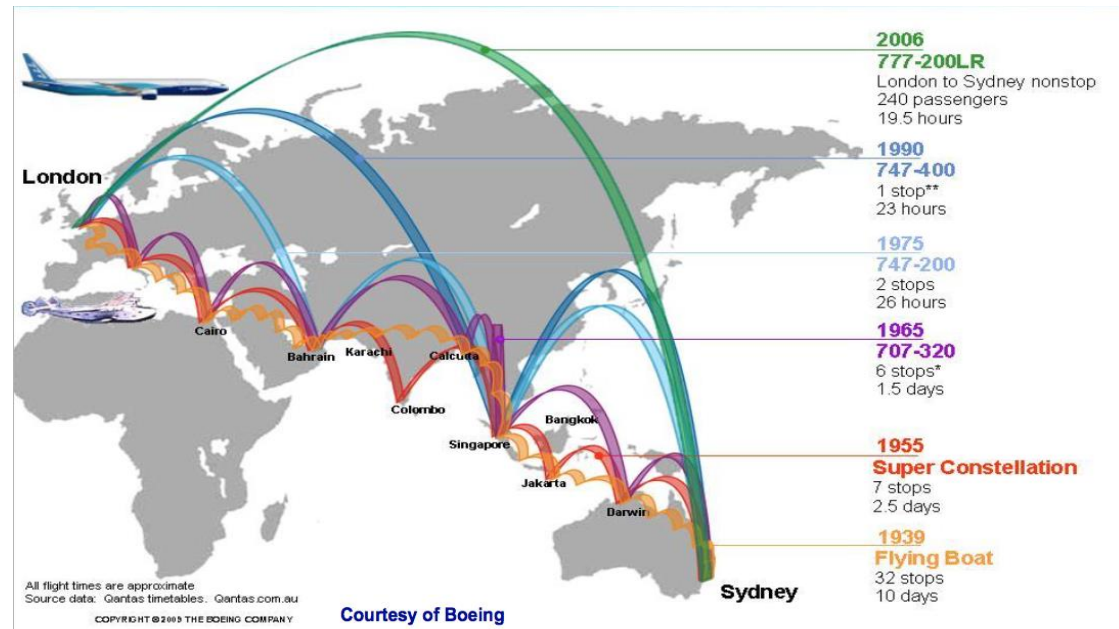
Figure 6: Breakthrough in Airplane Capabilities

Since the air traffic in the next few decades are expected to register significant growth, ICAO noted that international flights are responsible for approximately 62% of global aviation fuel consumption. The amount of CO_2 emissions from aviation is projected to grow around 3% to 4% per year. Therefore, aviation industry is looking on 2% annual fuel efficiency improvement through the year 2050. Limiting and reducing the number of people affected by significant aircraft noise remains a key environmental goal of airline industry. Addressing the noise level reduction of aircraft though advanced technology creates improved confidence on expanding the air routes and airports in more human settlement areas. Local air quality is also important concern of ICAO to mitigate local air quality addressing the environmental impact of travel, this issue is currently addressing the adverse effect of air pollutants released within an aircraft's landing and takeoff cycle (LTO).

3.4.2 Trans Asian Network and the Silk Road Economic Belt

There are two ambitious land transport projects that were planned since the 1950s to connect Asia by highway and rail, and when completed would enhance land connectivity between countries and have a strong impact on tourism. The *Asian Highway* network of 141,000 kilometres of standardised roadways crisscrossing 32 Asian countries with linkages to Europe has tremendous potential to boost business, travel and tourism across Asia and Europe. This project was initiated in 1959 with the aim of promoting the development of international road transport in the region. A total of US$26 billion has already been invested in the improvement and upgrading of the Asian Highway network, though there is still a shortfall of US$18 billion. Part of the effort is to link the missing portion of the existing highways. In 2015 a new section of the Asian highway of 25.6 kilometre roadway linking India, Myanmar, and Thailand has become operational. The newly opened section of the highway is located in the East-West economic corridor of the Greater Mekong Subregion (Figure 7).

Figure 7: Trans Asia Highway Network

The *Trans-Asian Railway* project has the objective of providing a continuous 14,080 km rail link between Singapore and Istanbul, Turkey, with possible further connections to Europe and Africa. Political and economic obstacles from 1960s through the early 1980 hindered the project. With the normalisation of relations between some countries prospects have improved for creating a rail network across the Asian continent. The Trans-Asia Railway will be able to accommodate the huge increase in international trade between Eurasian nations and increase the accessibility of landlocked countries such as Laos, Afghanistan, Mongolia, and the Central Asian Republics.

At the same time, the China-Singapore rail project is also being developed and planned for operation by 2020. The rail route fans out from Kunming, heads south through Vietnam, with branches heading west to Laos and Myanmar and south down to Bangkok. It then heads further south through Malaysia and ends at Singapore. When completed it will be a high-speed route that will cover the distance from Beijing to Singapore in 36 hours, averaging 200 km per hour (Figure 8).
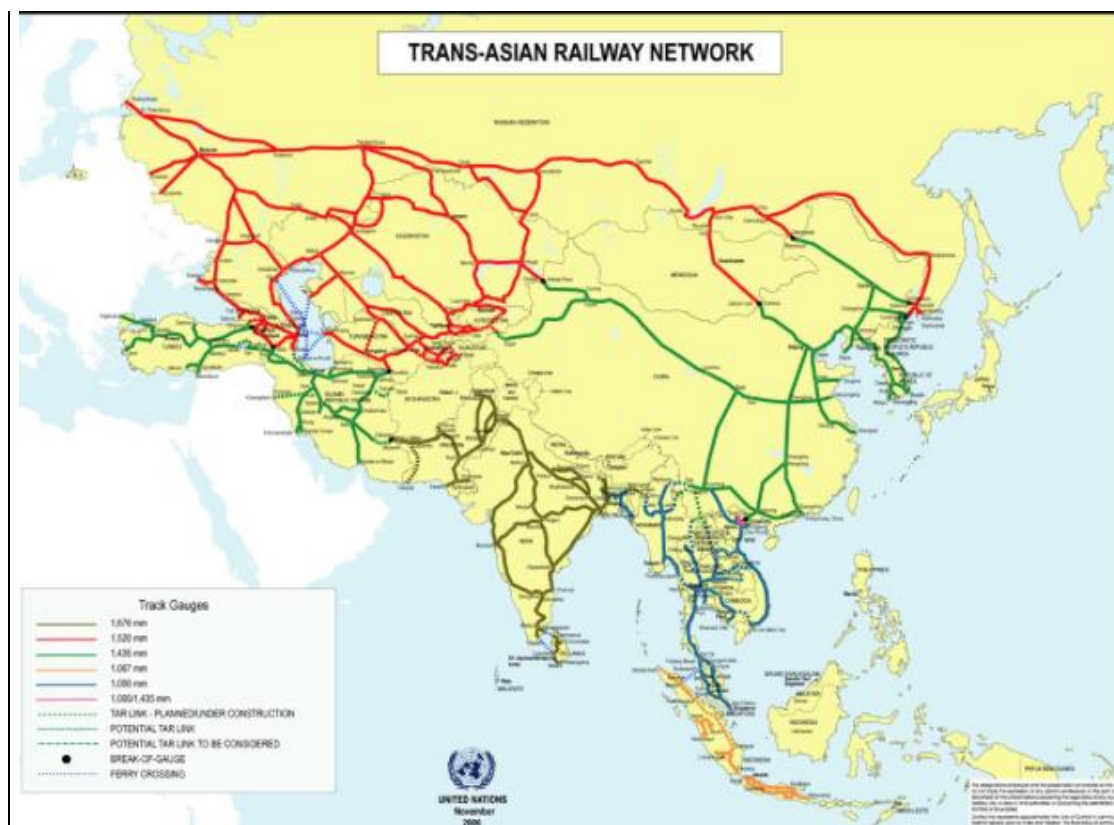
Figure 8: Trans-Asian Railway Network

The *UNWTO Silk Road* initiative, which started in 1994, has expanded with an increasing number of stakeholders working together to foster tourism development along the Silk Road. This project is designed to enhance sustainable tourism development along the historic Silk Road route, which encompasses the overland route between China, Central Asia and Europe. At the same time, a new *Maritime Silk Road* project has also been embarked upon to promote tourism destinations along the maritime route, which includes sea routes to South and Southeast Asia as well as the Middle East and Europe. The goal of the Silk Roads initiative is to strengthen road connections and establish a great transport corridor from the Pacific to the Baltic Sea, and from Central Asia to the Indian Ocean, and then gradually build a network of transport connections between Eastern, Western and Southern Asia. Besides transportation development, the Silk Road Economic Belt initiative also aims at strengthening policy community, trade facilitation, monetary cooperation, and people-to-people relations.

3.4.3 One Belt, One Road Initiative

Building on the idea of the Silk Road, China has embarked on a new initiative of the modern Silk Road Economic Belt and the 21st century maritime Silk Road, or One Belt, One Road (OBOR) in 2013 that proposes to connect 60 countries encompassing China, Asia, Europe, Oceania and East Africa. The Asian Infrastructure Investment Bank first proposed by China in October 2013 is aimed at providing the financing of the infrastructure networks under this initiative that is estimated to range between US$4 trillion to US$8 trillion. Part of the Silk Road Economic Belt runs through the historic Silk Road that connected China through Central Asia, West Asia, the Middle East, to Europe. The 21st Century Maritime Silk Road, on the other hand, connects Southeast Asia, Oceania, and North Africa traversing the South China Sea, the South Pacific Ocean, and the Indian Ocean. This initiative has the prospect of bringing about greater integration of the countries within OBOR and facilitating infrastructure development, cultural exchange, trade and tourism.

3.4.4 Facilitation of Tourist Travel

Travel facilitation of tourist travel is closely linked with tourism development since the reduction of travel formalities, including waiving visa requirement, can help to increase tourist arrivals, a vehicle for job creation, economic growth and development. Research by UNWTO and WTTC showed that the G20 countries could boost their international tourist numbers by an additional 122 million and generate an extra US$206 billion in tourism exports and create over five million additional jobs by 2015 by improving visa processes and entry formalities. Despite challenges, the visa openness report 2015 prepared by UNWTO show that progress has been made in visa facilitation over the past seven years. The most open regions are Southeast Asia, East Africa, Caribbean and Oceania destinations, while the most restrictive regions are Central Africa, North Africa and North America.

3.4.5 Transport and Connectivity in Southeast Asia

Among some of the developments on connectivity within the region that will have a profound impact on Malaysia's travel and tourism industry going forward are developing intraregional connectivity through low-cost carriers (LCC), advancing the cruise industry through public-private partnerships, and Singapore-Kuala Lumpur high speed rail. The relatively recent introduction and growth of low-cost carriers have significantly transformed people's travel patterns. At the moment, there are 132 low-cost carriers in the world, with 61 based in Asia and 27 in South East Asia. Malaysia has five low-cost carriers. The ASEAN 2015 regional economic integration and the Single Aviation Market (ASEAN-SAM or Open Skies Policy) will increase regional and domestic connectivity (ASEAN, 2012).

The emergence and expansion of *low-cost carriers* have been a factor that dramatically transforms travel within the region by providing access to air travel to a broad population segment within Asia. According to Amadeus Air Traffic solution research, India, Thailand and Malaysia account for more than 50% of global LCC growth. Several partnerships and operational innovation among LCCs within the region saw the emergence of regional, multinational LCC brands like AirAsia and the successful long-haul, low-cost operators such as Jetstar, AirAsia X and Scoot.

With the year-round tropical climate and well-suited geography, Southeast Asia is poised to see an uptrend in the *cruising industry*. The Asian Cruise Association (AC) expects the cruise passengers within the region to grow at 14.3% per year for the next seven years. The growth of the cruising industry is also supported by the study of port infrastructure in key Southeast Asian ports, the ASEAN Cruise Development Working Group, and the commitment among the ASEAN Tourism Ministers to further develop the cruise industry.

To improve travel and business linkages between Malaysia and Singapore, a *high-speed train* project that links Kuala Lumpur to Singapore is scheduled for completion in 2020. The 330 km long rail service will cut the travelling time of six hours to 90 minutes. The proposed system will be undertaken in two phases: the first will link Kuala Lumpur to Singapore, with intercity stops in Negeri Sembilan, Melaka and Johor, and the second phase will be to connect Penang to Bangkok and China.

3.4.6 Destination Management

Destinations have to compete to provide the highest quality of experience for visitors and manage the impacts of tourism on host communities and environments.[10] To compete, destinations have to deliver wonderful experiences and excellent value to visitors, whose quality of experience could be affected by many factors. Delivering excellent value will depend on many organisations working together, including public and private services, community interactions, environment and hospitality. To deliver excellent value to the visitor will require a coalition of the different interests to work towards a common goal to ensure the viability and integrity of their destination now, and for the future.

Destination management is the coordinated management of all the elements that make up a destination, such as attractions, amenities, access, marketing and pricing. The elements of the destination are supported by marketing to get people to visit and delivery of services on the ground to ensure that expectations are met at the destination. Underlying these activities is the need to ensure a suitable environment—physical, social and economic—in which to develop tourism. The destination management organisation should lead and coordinate the different aspects of tourism, particularly in achieving a balance between the environmental, economic and socio-cultural aspects of tourism development so as to guarantee long-term benefits to recipient communities. It should aim for the following:

- Make optimal use of environmental resources, maintaining essential ecosystems and helping conserve biodiversity
- Respect socio-cultural authenticity, conserve built and living cultural heritage, and contribute to cross-cultural understanding and tolerance
- Ensure long-term socio-economic benefits, fairly distributed to all community stakeholders, including stable employment and income-earning opportunities, social services, and poverty alleviation.

Without proper planning or management, the influx of tourists to a destination can damage its environment, cause social and cultural conflict, and alienate the communities that host tourism. It is the challenge for destination management to mage

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10 UNWTO, 2007. *A Practical Guide to Tourism Destination Management*

the impacts of tourism on environment, economy and community, maintain and enhance the destination's resources for the present and future needs of both tourists and the communities that host them (UNWTO, 2007:12).

3.5 ENABLING FACTORS IN TOURISM

3.5.1 Global Warming and Climate Change

Concern about climate change is increasing worldwide. Compelling evidence suggests that the climate is already changing at an unprecedented rate within human history (UNWTO, 2014). Climate is a key resource for tourism and the sector is highly sensitive to the impacts of climate change and global warming, many elements of which are already being felt. The tourism sector is estimated to contribute some 5% of global CO_2 emissions (UNWTO, 2014). Future changes in temperatures and other important features of climate will manifest themselves differently across the regions of the world. Key impacts of climate change on the tourism sector range from direct impacts on the climate resources of destinations, to indirect environmental impacts (e.g., biodiversity, water resources, landscapes), and to the potential for societal change and political destabilisation of some nations. Exploratory studies indicate that a shift of attractive climatic conditions for tourism towards higher latitudes and altitudes is highly probable. As a result, the competitive position today of some popular holiday areas is anticipated to decline in the future (UNWTO, 2014).

Climate is an essential resource for tourism, and especially for the beach, nature and winter sport tourism segments. Changing climate and weather patterns at tourist destinations and tourist generating countries can significantly affect tourist comfort and travel decisions. Changing demand patterns and tourist flows will have impacts on tourism businesses and on host communities, as well as knock off effects on related sectors, such as agriculture, handicrafts or construction (UNWTO, 2015). In future, travel becomes more environmentally conscious and the industry needs to foster environmental attitude. Due to the structural changes in several destinations, it is expected that there will be massive changes in destination choice that will significantly impact on the national economy of several countries (UNWTO, 2015).

Science and technology, specifically through identifying the necessary R&D areas related to climate change and sustainability, could play a very important role in promoting more sustainable forms of tourism and reducing the impact of tourism on climate change. The use of nano-technology could enhance fuel efficiency and alternative forms of energy.

3.5.2 Issues Related to Sustainability

Tourism success, often measured in terms of receipts, has been widely seen as a tool for economic development. Globally, the tourism industry has several success stories in supporting 'global sustainability aims' that are prescribed by UNWTO and UNEP. Although the criteria for sustainable tourism are similar in all contexts of development, the practices significantly vary based of the profile of the tourist destination.

The question often raised on sustainable tourism development is whether there can be a proper balance establish among economic viability and local community involvement, while being sensitive towards environment, cultural and social needs? (Edgell, Allen and Swanson, 2008). Based on the literature, several successful examples could be referred to. There are several objective indicators and measurements to check the sustainability status of the tourist destination based on sustainability classification criteria such as Type 1, Type 2 and Type 3 destinations. The type 3 destinations are categorised based on the following characteristics: *"Very high level of integration of the attribute with other resources. Relational capabilities have been developed, and all possible synergies have been exploited. The resource is managed with criterion of sustainable development. Management of the resource is long term. Integrated management of the resource within the destination as a whole with the aim of the destination's continued competitiveness in the future"*.

Type 1 and Type 2 are based on a lesser level of sustainability integration in the development and managing tourist destination. The major areas to look on achieving the higher level of sustainability integrations are: (1) Natural and environmental consideration, (2) culture and heritage, (3) tangible and intangible assets, (4) polices and plans, (5) internal and external benchmarking, and (6) tourism

governance and human well-being. There are several indicators of the above determines the sustainable progress of the destination.

Malaysia is the fastest growing economy amongst ASEAN countries. The rapid growth rate is attributed mainly in the ability to exploit the very environmental resource base availability of the country. Malaysia, as one of the mega biodiversity countries in the world, is rich with natural tourism resources that are highly vulnerable to the impact of human activities. In the sustainable tourism trinity, planning and policy makers often struggle in achieve environmental sustainability along with tourism development. The last half decades witnesses the emerging importance of trans-boundary issues that further impacts the wellbeing of quality of life (Mokthsim & Salleh, 2014).

Malaysia has presented its climate change action plan during the United Nations' climatic change conference (COP 21) in Paris. The document declares that Malaysia has planned to reduce greenhouse gas emissions' intensity by 45% by 2030. Malaysia's Intended Nationally Determined Contributions (INDCs) document points out that surface mean temperature in the country is increasing by 0.14 to 0.25 Celsius every 10 years. The government spent around RM51 billion under the 10th Malaysia Plan (2011-2015) to 'enhance resilience' against climate change (Lee, 2015).

Human activity is one of the main reasons for drastic climatic change on earth. One of the solutions identified to overcome climate change is 'green technology', which is intended to mitigate or reverse the effects of human activity on the environment. Green technology, which includes the energy, construction, transport, waste management and water sectors, supplied RM 7.9 billion or 0.8% to Gross Domestic Product (GDP) in 2013 (Malaysian Green Tech Corporation, 2014). The strategies and action plans from the Green Technology Master Plan are commenced in 2014 to extend the local green technology industry, which is also predicted to provide RM22.4 billion to the GDP by 2020 and RM 60 billion in 2030. Climatic change always has serious effects, particularly if climate-sensitive tourism has major economic importance for the country. Farahani and Abahre (2011) have studied the impacts of climate change in Malaysia, as well as how the country adapts to climate challenges, to control the probable variation of tourist arrivals. The major climate change impacts in tourism are loss of natural attractions; increase of flooding risk;

damage to tourism infrastructure; loss of natural attractions and species from destinations; loss of archaeological assets and other natural resources and impacts on destination attractions; increased coral bleaching, marine resource, aesthetics degradation in dive and snorkel destinations; coastal erosion; loss of beach area; and higher costs to protect and maintain waterfronts.

3.5.3 Globalising and Localising Forces

Wahab and Cooper (2000: 4) refer to globalisation as 'the product of many converging forces – technology, transnational corporations, new methods of communication and distribution systems as well as new vistas of competition – all of which are instrumental in creating a global market, an economy conceived of as mainly the same in all its parts'. Importantly, globalisation is related to processes of standardisation and interconnectedness, which tend to reduce national differences and increase more integrated, international orders. It is imperative to note that globalising forces do not totally dissolve socio-cultural differences. Yet, they are responsible for more intense and deep interactions among countries and cultures due to fast-evolving technological changes. For example, the development of the Internet has completely transformed the way people communicate across cultures. Also, countries share larger amounts of information through computer networks.

The raising of global societies has an impact on the tourism industry. More specifically, scholars agree that globalisation will affect the tourism industry in terms of tourist-generating markets, tourist behaviour at the destination, and post-holiday experiences. As globalisation facilitates interactions between and accessibility to countries, it may lead to higher competition among destinations. It is important that the preservation, conservation and promotion of tangible cultural assets (e.g. buildings, monuments, landscape, works of arts, handicrafts), intangible culture (folklore, traditions, language, local knowledge) and natural heritage (landscape, and biodiversity) are continually pursued and not lost as a result of homogenisation and commoditisation. As some forms of tourism (e.g. heritage, cultural tourism) are based on the provision of authentic experiences and different cultural experiences (MacCannell, 1976), tourist destinations need to find a balance between globalisation and its opposite phenomenon, namely, localisation. Indeed, localising forces are crucial to create future tourism products with a distinctive edge and unique

characteristics. Technology may play a pivotal role in producing the perfect balance between globalising and localising forces. For example, the use of augmented reality could transform the way tourists experience heritage. Augmented reality devices have already been employed in Malaysia (e.g. Melaka). Yet, no studies have been conducted on how new technological devices like this will impact on the tourism industry in the next 40 years.

The Malaysian tourism industry has not underestimated the importance of providing localised experiences to its tourists. The provision of particular tourism products, such as homestay, is based on the idea of offering unique travel experiences. Likewise, destinations driven by forms of heritage and cultural tourism, such as Malacca and Penang, attempt to achieve a competitive advantage through localisation. In other words, the idea behind cultural and heritage tourism is to promote 'local culture' to the 'global village'. Also, the Rural Tourism Development Master Plan for Malaysia (2000-2001) was conceptualised 'to sustain and reflect the culture and surroundings of local communities and enhance the authenticity of a tourist's visit' (WTO, 2009: 241). However, the Malaysian tourism industry has also been part of global processes of consolidation and integration among tour operators and other tourism-related companies, which often tend to homogenise tourism products. As there are no studies which have explored the role played by globalisation and localisation on the Malaysian tourism industry, part of this study attempts to cast more light on this phenomenon.

Travel and tourism has emerged as one of the world's most centralised and competitive industries, and hardly any other economic sector illustrate so clearly the global reach of transnational corporations (TNCs). As globalisation involves the intensification of the exchange of products and ideas across societies, this study will explore how globalising forces will impact the tourism industry in the next 40 years.

CHAPTER 4 GOVERNANCE

There are different interpretations about the definition of governance in tourism, but for basic conceptualisation it can be taken to mean: "Tourism governance means the process of managing tourist destinations through synergistic and coordinated efforts by governments, at different levels and in different capacities; civil societies lining in the inbound tourism communities; and the business sector connected with the operation of the tourism system." (Cited by UNWTO, 2008). This definition highlights the importance of public-private coordination, decentralisation with regards to the role of the authorities in that local environment level and the involvement of diverse organisation's working together in the production to the tourism service. In the successful implementation of governance, there is need for capacity in decision making and influencing nongovernmental actors in the implementation of public policies.

Unlike other products where they are being delivered to the consumer, in the case of tourism the consumer is brought to the product and hosted in a local community where the tourism product is consumed. The tourism product is often the heritage, wealth, and legacy of the community that becomes the tourist destination. This means that the local community will bear the impact of tourists, which affect the local customs and lifestyles, spread of infectious diseases, changes in local demographics, and changes in local housing and labour markets. If the tourism business of bringing and hosting the tourists in the tourist destination community degrade the community's heritage and wealth, then the community suffers as a result of the tourism activity. The arrival of large numbers of uninformed foreigners can be a major source of degradation of local ecological, economy and social systems. As noted in Convention on Biological Diversity 2010 (CBD: 1), the ultimate effects of tourism on a community and a destination depends on several factors, including the sensitivity of the environment, the policy and legal framework under which it occurs, the technologies used, and the capacity of its stakeholders to manage impacts and steer development towards sustainability (Table 4).

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Table 4: Negative Impacts of Tourism on Environment

Involvement With Tourism	Negative Impacts
Infrastructure	Infrastructure for tourism can alter natural habitats, particularly because tourism often occurs in areas of high biodiversity, such as coastal zones, mountains and protected areas.
Resource use and depletion	Tourism consumes much resources e.g. energy, water and undermine local resource management systems
Water pollution	New tourism developments lead to increase sewerage pollution and can have severe negative impacts on coastal areas and coral reefs
Tourism activities	The activities of tourists and operators can lead to negative impacts on local environments. Careless divers, boats, or by entrepreneurs who sell pieces of coral as souvenirs can damage coral reefs.
Waste	Tourism produces 35 million tonnes of solid waste yearly, roughly equivalent to that of France
Climate change	Carbon dioxide emissions from transport, accommodation and other activities for tourists account for 4 to 6% total global emissions (UNWTO, 2007)

Source: UNEP and CI 2003

There are multiple relationships among numerous types of actors and agents involved in producing the goods and services that are consumed by visitors. Governance is decision-making in complex and changing contexts with many stakeholders representing different interests. The principles of good governance must ensure the following:

- All stakeholders are represented
- Stakeholders have the necessary and sufficient conditions to make decisions that affect them
- Those decisions can be made.

The role of the government is particularly important to plan, manage and coordinate efforts to achieve growth and economic, social and environmental sustainability. There are many government functions across a range of ministries affect and influence the direction and quality of tourism development. Among others, they include the intergovernmental functions, planning and zoning regulations, development of transportation and infrastructure, environmental protection of forest, rivers and coastal areas, safety and security, etc.

The actors and agents in the public sector operate at two levels: horizontally and vertically. Horizontally, each of the ministries with responsibilities related to tourism operates at the same level of government through the legislative and executive branches. Vertically, the different levels of government (local, state, regional, national, international etc.) have different areas of competence based on the constitutional provisions and the distribution of functions and responsibilities. Since the goods and services provided by the public sector spans across areas of administrative responsibility, experience, personnel and leadership, in practice this could create gaps and shortfalls in the effective coordination and cooperation not only across the public sector but also with the actors and agents of tourism. The public administration of tourism and their leadership should be strengthened at the national and sub-national level to undertake effective public policy as well as articulate and coordinate, collaborate and cooperate in areas impinging on tourism so as to achieve the collective goals and interests shared by networks of actors involved in the sector.

The private sector is the principal producer and supplier of goods and services for the tourists, comprising a diversity of economic units of varying sizes (micro, small, medium, large enterprises), levels of operation (local, state, regional, national or transnational), and range of economic activities ranging from manufacturing, transport, trade, services (travel agency, airline, hotel and hospitality, food and beverage, cultural and recreational activities, etc.). The other important actor is the local population inhabiting the tourist destinations. They should be involved in the planning, design, and execution of tourism activities as well as derive benefit from the tourism activities. Public-private partnerships are important for the effective planning, execution, management and monitoring of tourism policies, programmes and activities because of the extensive and complex range of actors and agents, public and private, involved in the production, provision and marketing of tourism goods and services.

Malaysia is a party to many international declarations, agreements, and commitments, including those pertaining to regional cooperation to develop the ASEAN Community. As a nation within the global community, it will have to continue to keep to its commitments and make efforts to reach, if not exceed, the agreed standards within the established timeline. At the national level, a strong

institutional and governance framework is crucial for the orderly and dynamic growth of the tourism industry. Although the Ministry of Tourism and Culture (MOTAC) is empowered by legal provisions touching upon policy formulation, regulation, and promotion of tourism, there are many laws, regulation, plans and policies impacting on the tourism industry that fall outside the competence and jurisdiction of MOTAC but within the direct area of responsibilities of the other ministries and agencies. The Cabinet Sub-Committee on Tourism established in 2005 is an important instrument to bring about greater inter-ministerial coordination and more coherent approach to tourism development at the national level. Its members comprise ministers whose areas of responsibility affect tourism and the Deputy Prime Minister chairs the Cabinet Sub-Committee (Table 5).

According to the Federal Constitution, land matters fall under the responsibility of states. Since tourism destinations occur at particular locations, the actions of state governments and local authorities greatly affect the dynamism and sustainability of tourist destinations. The attractiveness of a tourism destination would also depend on the actions and effectiveness of local authorities, which shoulder the task of developing, maintaining and administering the tourism products and providing supportive infrastructure and services. Their role in the licensing and management of accommodation facilities, food and business sites beaches, and waste disposal at beaches, lakes and islands is particularly crucial for the sustainability of these destinations. Effective and well-funded local authorities are also needed for the administration and management of tourism destinations. There is currently no institutionalised coordinating mechanism for the governance of tourism across the states and at the local level.

Table 5: Areas of Government Influencing Tourism Sustainability

Areas of Government	Influence on Tourism Sustainability
Tourism	Overall development, coordination and implementation of tourism policy. Support for tourism development, management and marketing.
Prime Minister's Office	Tourism's position within the overall balance of policies and priorities.
Finance	Level of budgetary resources allocated to tourism. Tax policy. Currency exchange rules.
Trade	Terms of trade negotiations. Export and investment promotion.
Economic Development	Sustainable development policies. Support for enterprises, particularly SMEs.
Environment and Natural Resources	Regulation and control of environmental impact. Conservation of biodiversity. Protected area management. Management of resources for ecotourism.
Transport	Accessibility, signage and information, traffic management and infrastructure.
Culture	Management of historic and cultural heritage, promotion of handicraft.
Agriculture	Rural development and supply chain issues.
Education	Tourism, hospitality, language training, and information technology.
Health	Safety and social security issues, for visitors and employees.
Sports and Recreation	Promotion of attractions, activities, events, etc. Elements of domestic market.
Internal Affairs	Crime and security. Child protection.
Foreign Affairs	Source country-destination relations. Visa requirements.

Convention on Biological Diversity (2010: 14), *A Good Practice Guide: Tourism for Nature and Development.*

Over a decade ago, the State Tourism Action Council (Majlis Tindakan Pelancongan Negeri) was in operation in all the states, comprising members from the Tourism Ministry, state officials, local authorities, as well as tourism operators and stakeholders. This council performed the oversight functions of all tourism activities funded by the Federal Government. In addition, the State Tourism Action Council

would also plan and execute tourism strategies and programmes, gather feedback on the state of tourism activities and the areas of concern, as well as find solutions for their redressal. The STAC was disbanded following the reorganisation of the Tourism Ministry. While some states still continue provide the platform for some form of public-private coordination, the same cannot be said to be the practice of all states, resulting in the lack of coordination for decision making at the local level.

There is a clear need for strengthening the governance instruments at the state and local levels in Malaysia. In addition, the country needs the construction of governance indicators in the tourism sector for use in determining, explaining and evaluating the development and impact of tourism activities at different localities. The Rural Tourism Project that has been undertaken by a consortium of universities led by Taylor's University to develop the Tourism Barometer under the Ministry of Higher Education funding that will help to evaluate the sustainability of tourism destinations by looking a wide range of indicators, including environmental conservation, environmental education, cultural heritage attractions, tourism infrastructure and national resources.

CHAPTER 5 SECTORAL LINKAGES

Tourism has linkages with the other industries studied under Mega Science 3.0. and their future development will impact on the tourism business, products and services.

1.1   Automotive Industry and Tourism

As tourists become more conscious of the environmental impacts provoked by their patterns of mobility, the automotive industry will need to be more sensitive of consumers' ecological values and provide more sustainable means of transport. Greenovators, namely those who are highly conscious about the socio-ecological consequences of mobility, will not accept the existing automobiles to go on holiday. More integrated forms of mobility, which allow tourists to use both public transportation and private eco-friendly vehicles, should be developed. As the idea of car as a 'status symbol' is vanishing, tourists will travel through 'shared mobility', 'pay-by-use' cars, and multimodal travel. Electric Vehicle Tourism, i.e. tourism based on the use of electric and hybrid vehicles will become more common and sought after by customers. This will require the provision of more charging infrastructure and tools like PlugShare, especially in tourist areas. These facilities should also be available in hotels and other lodging facilities. National Parks, such as the Golden Gate National Recreation Area in the San Francisco Bay Area, are already providing alternative fuel vehicles and green rides to their visitors. In the future, tourists will travel in connected electric or hybrid cars, which will be part of an IT system and will offer an array of digital services, including tour guiding and hotel booking.

1.1   Arts/Media/Entertainment and Tourism

According to McCallum (2012, p. 125), the arts, media, and entertainment play a pivotal role in affecting people's beliefs and attitudes about the past, present and future. As she claims, 'every day the average global citizen watches 3.4 hours of television, listens to 2.2 hours of radio, uses the Internet 1.7 hours, reads magazines and newspapers for 1 hour, and watches 8.5 minutes of cinema' (McCallum, 2012, p. 125). Consequently, even tourists' patterns of behaviour, attitudes, expectations and motivations will be affected by the messages conveyed by the media, arts and entertainment industry. This is also due to the digital revolution that contemporary society is experiencing, which makes images and messages more available and easy-

to-access by tourists. As destinations are socially constructed and promoted through images conveyed by the media and artistic representations, tourists' images about tourist areas are shaped and influenced by the entertainment industry. As such, tourism marketing agencies should constantly remain in contact with the media and the entertainment industry in order to strengthen their promotional plans.

The links between the arts/media/entertainment industry and tourism are quite solid within the context of cultural/heritage tourism. Virtual and 3D art exhibits, online museums, holographic performances (e.g. digital puppetry) and other forms of art consumption are already available to tourists as attractions. A typical example of the link between arts/media/entertainment and tourism is represented by the Museum 'Te Papa Tongarewa', the national museum and art gallery of New Zealand. Indeed, this museum has a mixture of digital and non-digital exhibitions of cultural objects, hands-on and interactive exhibitions, cultural spaces and touring exhibitions. By combining forms of art and historical artefacts, the museum attracts about 1 million visitors a year and it is listed as one of the most important tourist attractions in New Zealand. Future developments of the internet and its related services (e.g. new mobile applications, augmented reality, virtual reality, mixed reality, holographic representations) will definitely make the link between arts/media/entertainment and tourism stronger as tourists will seek more articulated experiences while travelling. This will in turn require a reinterpretation of heritage and the past.

1.1 Furniture and Tourism/Hospitality

Studies on designing elements have highlighted different links between tourism and the furniture industry. By focusing on the impact of urban furniture on tourist numbers, Khezri, Shakouri and Panahi (2014) point out that tourists are positively affected by urban designing in public spaces. More specifically, their work emphasises the importance of urban design elements and furniture evoking natural environments in encouraging tourists' visits of certain urban spaces. This is due to the fact that urban furniture plays a pivotal role in creating perceptions of safety, beauty and cleanliness among the tourists. In other words, destinations that use public furniture to beautify themselves are perceived positively by the tourists. Indeed, 'from the view of planners and designers, suitable choice and designing of urban furniture

make possible maintain place entity and are effective in promoting the quality of tourism areas' (Khezri et al., 2014; p. 104).

Besides its effects on urban design and tourist numbers, the furniture industry is also directly linked to the hospitality industry, especially if hotels and restaurants are referred to. In this respect, a study conducted by the North Carolina A&T State University points out that the new furniture industry servicing hotels should adapt to fast-changing costumers' needs by offering:

- Faster delivery
- A focus on service (readily available repair parts)
- Better value for customer's dollar
- Customised product offerings
- Better quality of workmanship
- Use of environmentally sustainable materials.

1.1   Plastic/Composite Materials and Tourism

The development of advanced composite materials and its impacts on the aerospace industry will definitely play a role in changing patterns of mobility and tourist flows. In this regard, Mrazova (2013, p. 139) argues that 'this improvement in material properties has helped us to travel quickly and inexpensively around the world, by improving the performance and operations of modern aircraft'. Composites represent a revolution for the aviation industry as they are lighter and more resistant than traditional materials. This in turns leads to lighter aircrafts and lower costs due to less fuel consumption. The Airbus A380 is the first aircraft that has a Carbon Fibre Reinforced Plastic central wing box, which weighs one and a half tonnes less than traditional aluminum alloys. Within this scenario, tourist arrivals may increase in the future as national and private carriers will be able to transport more passengers.

CHAPTER 6 TALENT DEVELOPMENT

The common feedback received from stakeholders at the workshops held at six locations was that they faced problem in getting adequate workers in the travel and hospitality industry in the country. The lack of trained workers across a wide range of occupations and skill levels, from licenced and skilled tourist guides to unskilled labourers in hotel and tourism industry are limiting the growth of the industry. This problem was echoed by the Economic Transformation Programme (ETP) which pointed out that the industry was faced with two specific challenges: to ensure sufficient supply of the required human capital and the shortage of local talent entering the industry. To meet the ambitious plan of the tourism industry, approximately 497,000 additional workers would be needed between 2010-2020 (Pemandu, 2010: 344)[11]. In terms of breakdown by qualifications, 65 percent of this incremental workforce will need to have a vocational or certificate qualification, 25 percent will need to have a diploma, while the remaining 10 percent will need to have a degree or post-graduate qualification.

A survey conducted by the Ministry of Human Resources found that there were manpower gaps for hotels especially workers in the food and beverages segment, front-line as well as housekeeping staff. The survey showed that these positions were predominantly filled by foreign workers, who made up 6 percent of the hotel industry workforce. The industry faced restrictions in employing foreigners and the difficulty of recruiting local staff with good English-speaking skills. Attracting a quality workforce is a challenge faced by the industry which is regarded as the employer of last resort.

The tourism, travel and hospitality industry continues to experience growth and change. As the tourism industry expands, it is important that it is supported with a workforce that is suitably skilled and committed in order to provide appropriate service to meet the demands of all aspects of consumer needs. Many countries that experience growth in tourism face labour shortage. Within the Asia Pacific region, the rapid expansion of international tourist arrivals in China, Macao, Hong Kong,

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[11] Pemandu, 2010. *Economic Transformation Programme: A Roadmap for Malaysia*

Vietnam, Cambodia and Singapore place pressure on headhunters to source for experienced staff from Malaysia. Malaysians are generally preferred in the hospitality industry of these countries because they are multilingual and comfortable in operating in a multicultural environment. The result of these actions is the depletion of experienced staff from Malaysian tourism industry, making it a challenge for the industry to maintain quality standards.

One of the biggest challenges to Asia's tourism industry that is growing rapidly is the shortage of talents. The supply of talents is simply inadequate to meet the demand that is growing at an unprecedented rate. In the analysis of the Boston Consulting Group, the tourism industry will face a labour shortage of about eight million jobs in the next ten years. The shortage will be most pronounced at the managerial level, as the supply of hotel managers in 2021 is expected to meet less than half of the expected market demand.[12] Companies will therefore need to place talent as the top priority in their business objective and work towards accelerating the development of the next generation of leaders who will support future business growth.

One of the realities of the tourism, travel and hospitality industry is that the vast number of job roles that will continue to be demanded cannot be filled through local sources alone. The use of overseas workers remains a vital source of employment for the industry. The adoption of the Mutual Recognition Agreement will facilitate the movement of qualified staff with certification within the ASEAN region.

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[12] Boston Consulting Group research as shared at Asia Travel Leaders Summit 2012.

CHAPTER 7 PROPOSED RESEARCH AND DEVELOPMENT AREAS

According to the Frascati Manual (2002) published by OECD, the term 'Research and Development' (R&D) refers to three main activities, namely, basic or theoretical research; applied research; and experimental development. The definition provided by OECD places emphasis on both theoretical and applied research to achieve sustainable development. In the case of tourism, R&D is crucial for sustainable tourism and an overall harmonious development of tourist activities and destinations. This report identifies four major areas for tourism research, namely, megatrends in tourism; science and technology (S&T) in tourism; talents in tourism; and governance in tourism.

1.1 Megatrends in tourism

As discussed in the report, the present and future development of the tourism industry is shaped by a number of megatrends that characterise modern society and which require more research to understand their implications for the tourism industry. For example, R&D activities should focus on how the so-called disruptive technologies, such as the sharing economy and the Internet of Things, will impact on the tourism industry in the future. More specifically, theoretical and applied studies need to explore how technology will influence tourists' experiences before, during and after travelling. Also, more research needs to be conducted on tourism demand as new segments of the market are emerging (e.g. medical tourism, MICE).

Likewise, research activities need to be carried out on how transportation and connectivity developments will affect tourist flows. Importantly, the intensification of tourist flows and activities need to be studied in relation to its environmental and social impacts as tourism future development should be sustainable. An area that also deserves attention by tourism researchers concerns the effect of these megatrends on specific geo-political areas, such as ASEAN. As developing countries are more and more playing an important role in generating and receiving tourist flows, more research is needed to understand how these trends will affect the socio-cultural fabric of these emerging economies.

1.1.1 List of Topics

- Technological revolution and impact of disruptive technologies on future tourism
- Mega trends of demographics and growing middle class on the demand for travel
- Demand trends for tourism product segments, including city trips, MICE, health and medical tourism
- Trends on transportation and connectivity development within ASEAN and their impact on travel
- Effect of Trans Asian Transportation Networks and the Silk Road economic belt on intra and inter-regional travel
- Effect of the ASEAN Single Aviation Market on the tourism industry
- Establishing and raising standards for facilities, services and destinations
- Cultural tourism for revitalising the city centre and creating employment
- Innovative approaches to product development and destination management
- Environmental protection and climate change

1.2 Science and technology (S&T) in tourism

As virtual, augmented and mixed realities are becoming a predominant part of our travelling experiences, R&D activities should focus on their effects on visitors' experiences. Also, the impact of ICT on destinations should be in the researchers' agenda. More specifically, future studies could explore how S&T will impact on destination marketing and management. In this regard, the use of 3-D and 4-D technologies could contribute to tourism sustainability, especially if heritage sites at risk of depletion are referred to. This technique, already employed at the Lascaux Caves in Southern France, could be effective in terms of preserving heritage. However, more studies are needed to understand whether and how technology-based experiences will impact on tourists' experiences of authenticity. An area that should receive particular attention by R&D concerns the implementation of strategies capable of creating synergies between S&T and tourism as at the moment there exists a relative lack of data on the relationship between science, technology and tourism. In this respect, future empirical studies could explore visitors' experiences in virtual

tourist destinations or destination heavily reliant on technology. Research could be conducted on the experiences of specific segments of the market, such as the disabled and the elderly, as S&T could represent a way to improve accessibility at the destination. Moreover, the impact of S&T on tourism should also be studied from the perspective of tourism providers (e.g. travel agencies and tour operators) and local communities.

7.3.1 List of Topics

- Virtual reality, augmented reality and mixed reality and how they impact on travel
- Incorporate user-friendly technology in tourism
- Expand usage of ICT to enhance tourist experience such as using virtual reality enabled marketing in presenting the country tourism products, such as 3-D museum and galleries, and 4-D shows at heritage sites, virtual travel
- Examining the synergy between S&T and tourism, such as transportation and connectivity, low cost carriers and low cost travel demand in emerging markets
- Raising the knowledge and capability of local travel operators to compete in the globalised and techno-savvy environment
- Increase ICT enabled access for people with disabilities and inclusive design for universal access
- Use ICT to reduce cost and increase efficiency and data safety, by using cloud technologies in tourism and hospitality and integrating automated/robotic knowledge work and human skills in an efficient manner
- Equip tourist police with monitoring and tracking devices for better traffic management, safety and security, and improve response time
- Improve the quality of guiding, information and quality of tourist experience by using Big Data, Cloud technology, Internet, and apps

7.4 Talents in Tourism

As S&T become more and more ubiquitous in modern society, more research is needed to understand how they will impact on the labour market and the future generation of employees in the tourism industry. S&T will make some of the existing jobs in hospitality and tourism as obsolete. Also, S&T will automatise many of the

tasks currently executed by human beings. This not necessarily will lead to a decrease of job opportunities as new S&T-related jobs will also be created to replace more traditional jobs. However, this trend will require employees to acquire new skills. In this regard, more research is needed to understand the future of the tourism employment market and how the current curriculum adopted by universities and other institutions training tourism and hospitality personnel should be amended.

7.3.1 List of Topics

- Harnessing talent and creativity of the young for travel and tourism (culture and performing arts, design and development, music and dance, IT, environmental management, etc.)
- Understanding and responding to the future trends of Gen Y and Gen Z travellers
- Assessing the impact of automation and the more pervasive use of robots on jobs within the travel and hospitality industry
- Attracting and retaining Gen Y talents in the workforce through better recruitment strategies, job matching and career development opportunities with career pathways

7.4 Tourism Sustainability and Governance

Perhaps one of the most important areas that R&D should focus on concerns the management and development of the future tourism industry. In this respect, more studies needs to be conducted to understand the existing governance structures and forecast future management developments. Within the context of developing economies, there still exists a relative paucity of studies on governance structures and how these are operationalised to develop forms of sustainable tourism. Theoretical research is needed to understand best practices and structures to achieve sustainable tourism. Also, applied studies are needed to explore whether and how the existing theoretical frameworks available can be applied to specific contexts. Future research should also tackle existing governance-related issues related to destination safety, environmental protection, preservation of heritage sites at risk of being depleted, and representation of culture.

7.4.1   List of Topics

- Linkage and contribution of tourism to U.N. Sustainable Development Goals
- Promote and develop sustainable tourism from the economic, environmental and socio-cultural perspective
- Establish a coordination framework at the subnational and local levels that meets regularly to strengthen public-private coordination in the tourism industry
- Problems of rapid tourism growth on environmental pollution, food wastage, solid waste, water consumption, local communities and remedies
- Managing environmentally-friendly resources and energy for the tourism industry
- Green technology for the tourism industry
- Participation of local communities and public-private sector in the tourism value chain at the destination level
- Safety, security and protection of key destinations in the ASEAN region
- Environmental protection and climate change
- Preservation, conservation and protection of tourism heritage sites
- Ecotourism policy and environmental sustainability
- Best practices in presenting and promoting culture and heritage to tourists while preserving their authenticity and integrity

CHAPTER 8   SCIENCE AND TECHNOLOGY OPPORTUNITIES

8.1   Science and Technology and Tourism Integration

The advancement of technology in the past few years significantly changes the way we live. Consumer habits have radically changed with new technology, namely, the search of information and travel consumption patterns. An endless number of people all over the world use and benefit from modern technology (Effect of Techonology in Our Lives, 2014). The integration of technology in tourism and its allied sectors has significantly transformed the tourism industry. Tourism products, resources, travel sectors, destinations, marketing and promotions, customer choices and preferences have a new outlook due to the interface of technology in this service sector. Advanced science and high-tech technology open new avenues to predict the future of the tourism industry such as traveling beyond the planet earth, exploring the unexplored tourist destinations, travel opportunities for people with different abilities, new ways of finding leisure and recreation opportunities like augmented reality and enhancing the tourist experiences. Technological integration in the tourism industry also made opportunities for modelling the tourism business by changing the structure of marketing, destination promotion, resource development and packaging trips and tours.

The advancement of technology is one of the most important factors transforming global tourism. This has direct implications on how tourists communicate and locate places, the way they travel and access places, the way they manage travel logistics etc. Destination Management Organizations (DMOs) are also leveraging benefits from technology in the way that the destinations are promoted, sold and how competitively they reach to the potential tourists.

8.2   Transport, Connectivity and Speed- Bridging the Gap

The democratisation of travel and rationalising travel for major social class segments is one of the greatest achievements of science and technology in the sociological aspects of tourism. The rise of low cost carriers continues to change the dynamics of

global travel and greatly contributes to the rise of tourism statistics. This innovative travel concept creates a multiplier effect in the travel industry through better connectivity, advanced network and faster transportation. Due to the speed, network and connectivity, people can travel and visit much more destinations in a shorter period of time. This will result in increased tourist flows all over the world. Transportation technology is about to move ahead more rapidly in the coming years with the advent of two radical new technologies – frictionless vehicles and binary power. Science and technology innovations enhance the way we travel today and along with that the tourism and leisure industries will transform accordingly. Future transportation will use frictionless vehicles and binary power will define the transportation in the future. The recent innovation of Personal Land and Air Vehicle (PAL-V), a vehicle that can fly and ply on roads, will have enormous opportunities in tourist mobility and sightseeing applications. These vehicles will be driven in self-illuminating highways – highways that glow in the dark. "Glow Roads" will dramatically change the night-time aesthetics of major cities and will be shown to improve driving safety at night and reduce the need for streetlights.

8.3   Destination Data Intelligence

Technology has an influence on tourist behaviour. The web has now surpassed the traditional word-of- mouth and primary source of inspiration to travellers. The advanced web function in the communication has created a systematic consumer function to travel and engage in leisure and recreation activities. Technology enables people to 'Dream', 'Research', 'Book', 'Experience' and 'Share'. Technological innovations also raise competitiveness in tourist destinations through monitors, measures, analyses and modelling the flow of visitors to the different destinations. Such innovations help to provide objective, empirical, real-time Geo-referenced data that will allow the DMOs to understand the conception patterns of destination visitors on the basis of variables such as socio-demographic profiles and weather.

8.4 Tourism Business Global Restructuring

Innovations like 'cloud destination', an innovative tourism business solution, are expected to change the nature of tourism business in the future. The cloud destination enables to analyse the whole tourist lifecycle (before, during and after their stay) promoting intelligent destinations. These innovations will offer companies the possibility of obtaining complete and detailed information of tourist profile, which will allow them to achieve a better management of their activity, aiming their services and products in a more specific and customised way.

8.5 Technology Transfer

In the past, tourism was considered as a luxury phenomenon. It was for the elite and travelling to known destinations was traditionally promoted. Technology enables opportunities for emerging destinations irrespective of their economic status. Profiling destinations, promote disadvantaged segments and hence expand their commercial reach. Such transformation will have impacts on the rapid economic development of the Developing and Least Developed Countries (LDCs). Such changes will justify the universal promotion of tourism and decrease discriminatory effects in the global travel and tourism industry.

8.6 Travel Apps

The enhanced technology enables the travellers with essential add-ons to make the trip smoother and smarter than ever. Some of the apps that are heavily used by the tourists make the holiday with a 'level-up' experience. Apps such as FlightTrack (Travel Plan), WeatherPro (Weather reports), Entrain (Adapt circadian cycle to avoid jet lag), Tipulator (Split bills and tips), TravelSafe (Emergency contact information and lifesaving database) are some of the good examples of this kind.

8.7 Science and Technology for Sustainable Future

Destinations are inevitably the areas where the main tourism impacts are felt most powerfully (Wall and Mathieson, 2006). Science and Technology eventually become a necessity for tourism industry development. Due to the high level of integration of

technology in tourism, the proposition of Science and Technology has become an effective concept in destination management through the innovative application of information and communication technology (J, Frew, Alisha, & Ali, 2014). The effective use of ICT, specifically to support the management of sustainable tourism has been an underexplored area in tourism research. Shafie et.al (2013) developed a conceptual approach in understanding how ICT-ST capacity can be used in sustainable urban tourism through the ST indicator development. The main contribution of Science and Technology in sustainable tourism development are;

- Carbon calculator: Used to determine carbon emission.

- Community informatics: Online electronic media for community enhancement.

- Computer simulation: A realword setting to depict how systems operate over time.

- Destination Management System: A system that consolidates and distributes a comprehensive range of information and product through a variety of cahnnels and platforms.

- Economic Impact Analysis Software: A software used to monitor the economic impact using type and amount of spending.

- Environment Management Information Systems: System which integrate disparate environmental information sources in order to facilitate organisational management.

- Geographical Information System: Information system that can capture, stor, manage, manipulate, analyse, integrate and display large amount of geographical data.

- Intelligent Transport System: telematic system, which provide detailed information on dynamic routing.

- Location based services: Collection and delivers information to and from mobile device depending on automatic location of the user based on the cutomer's geographical location.

- Weather, Climate and Ocean Change Forcasting Software: Software used to monitor changes in the weather, climate and ocean.

CHAPTER 9 STRATEGIES AND RECOMMENDATIONS

Table 6: Strategies and Recommendations

Findings	Strategy	Recommendations	Actors
(i) Tourism strategy	Migrate to quality tourism	More accurate targeting of tourists in product development and marketing by using data from social media and big data	MOTAC and industry players
		Develop and provide personalised services, experiential products, creative and performing arts, culture, gastronomy, MICE, luxury, interesting tourist circuits and products for targeted market segments, etc.	Ditto
		Greater use of ICT, Cloud Technology and Big Data for a more competitive industry	Ditto
		Address the demand arising from demographic changes on tourist profile—senior and youth travellers, physically challenged travellers—& intra-regional travel	MOTAC and related ministries, local authorities, tourism players
		Enhance the adaptability of the tourism industry to disruptive technologies	Industry players, MOTAC and relevant agencies
		Provide tourism products to travellers who live longer, have shorter hours, are highly connected and have alternative means of experiencing travel enhanced by VR, AR, MR	Industry players
		Improve city transportation and intercity connectivity	Ministry of Transport and relevant agencies, local authorities

Findings	Strategy	Recommendations	Actors
(ii) Governance	Strengthen the governance and coordination of tourism products and services at the national and subnational levels	Establish a coordination framework at the subnational and local levels (along the lines of the State Tourism Action Council) with regular meetings to strengthen public-private coordination, involving government agencies and local authorities, private sector, local communities and other stakeholders. All stakeholders must be represented and have the necessary and sufficient conditions to make decisions that will affect them.	MOTAC, State Governments, Min of Urban Wellbeing, Housing and Local Government, state governments and local authorities, and tourism stakeholders
		Establish a mechanism for dialogue, consensus building and decision-making for a "win-win" development choice that takes into account the shared interest of local communities, tourism businesses, and tourism consumers as well as those pertaining to local authorities and government agencies.	Ditto
		Before adopting and implementing laws and regulations, conduct adequate consultations with industry personnel and local community	Ditto
	Enforcement of Uniform Building By-Law	Develop plans and inclusive designs for tourism.	MOTAC, State Government, Min of Urban Wellbeing, Housing and Local Government, Local authorities and city councils
		Each tourism establishment should have a set criteria and uniform standards	Ditto
		Proper and strict legislation should be enforced in tourism activities, including legalising homestays, hotels and other accommodation units.	Ditto

Findings	Strategy	Recommendations	Actors
	Establish tourism and community inclusiveness to enhance safety and security and crime-free tourism at destinations	Interdepartmental collaboration between tourism and the police for crime-free tourism, especially at prominent locations	Min of Urban Wellbeing, Housing and Local Government, Royal Malaysian Police Force
		Instal circuit TVs and tracking device to increase safety and security in wilderness and eco-tourist sites.	Ditto
	Undertake continuous monitoring and tracking to determine, explain and evaluate the development and impact of tourism activities at different localities	Use tourism indicators to evaluate the sustainability of tourism destinations, including environmental conservation, environmental education, cultural heritage attractions, tourism infrastructure and national resources.	MOTAC, Min of Environment and Natural Resources, and related government agencies
	Strengthen enforcement of laws, rules and regulations	Abide with the bylaws for environmental protection and tourism development (beaches, rivers, wetlands and buffer zones)	Local authorities and city councils
(iii) Capacity Building, Education, Skills Development, R&D	Develop appropriately skilled and able workers who contribute to a sustainable, productive and profitable tourism industry	Establish close collaboration among the industry, training providers and government to train the right people with the right skills at the right time for the tourism industry	MOTAC, MOHR, MOE, MOHE, private sector and product owners and operators, training institutions
		Increase the number of licenced and skilled guides with the passion, interest, as well as the right aptitude and attitude for the tourism industry	Ditto
	Improve attraction, recruitment and retention of	Improve recruitment strategies, job matching and career development opportunities by setting career pathways and	Tourism product owners and service

Findings	Strategy	Recommendations	Actors
	people working in the industry	pre-screen of potential employees to establish aptitude and appropriateness	providers
		Attract mature age workers and accommodate their needs for short-term jobs on a seasonal basis or jobs that offer reduced hours of work	MOHR, tourism operators
		Attract and retain Gen Y workers into the tourism, travel and hospitality industry by considering the motivations of this cohort, improving the image and brand of the industry, and presenting it as the career of choice to this group.	MOHR, tourism operators
	Increase industry productivity by raising standards, including leadership, management and governance skills	Undertake continuous training as well as tourism refresher programme with strict standards, procedures and training	MOTAC, MOHR
		Set up a National Tourism Academy	Ditto
		Encourage the young and adults to increase their facility and competency in international languages to cater for future tourists.	MOTAC, MOHR, MOE, MOHR, industry players
		Establish standards and KPI for assessing the quality of workers in the tourism industry	MOTAC, MOHR, industry players
		Use the work-based training model of apprenticeship training to promote accelerated training and improving retention within the industry	Ditto
	Increase the quality of skills through improving the quality of delivery and assessment	Create a more responsive training and learning system that reflect the current needs of the industry, through continuous improvement process	Ditto
		Enhance the collaboration and partnerships at all levels of Government, and all stakeholders	Government at all levels, education and

Findings	Strategy	Recommendations	Actors
			training providers, industry organisations and associations, destination management organisation, tourism product owners, employees and local communities
		Give incentives for talent development.	
		In situations where businesses were not able to provide training for their staff due to geographic reasons, lack of resources, and inability to provide time off for attending training, use technology for online courses, web-based workshops and self-directed training can contribute to broader accessibility for training and staff development.	MOTAC, MOHR
	Increase funding and adopt innovative approaches to address the shortage of suitably-skilled workers within the industry	Strengthen advocacy role of the industry to raise the profile its development needs	MOF, MOTAC
	Establish a strong informational base to support effective planning to development the workforce	Publicly available data on the workforce must be collated and presented in a clear, user-friendly way to help the industry to plan for its future labour and skill needs	MOTAC, MOHR, Department of Statistics, tourism industry
		Undertake research and disseminate the results	MOTAC, MOHR, MOE, MOHR
(iv) S&T	Incorporate user-friendly	Increase awareness how STI can be used to enhance tourism	Ministry of

Findings	Strategy	Recommendations	Actors
Implications and R&D Needs	technology in tourism	products and services as well as tourism business	Communications and Multimedia, Tourism industry associations, mass media
	Use STI to develop inclusive tourism where everybody can travel with more accessible and developed facilities.	Increase ICT enabled access for people with disabilities as well as inclusive design for universal access, such as elevator and satellite phones for communication, for elderly people or those with disabilities	Ministry of Communications and Multimedia, Ministry of Women, Family and Community Development, Ministry of Works, Ministry of Urban Wellbeing, Housing and Local Government, MOHR, local authorities and city councils
		Embed the needs of elderly travellers in the early stages of product and infrastructure development to cater for their needs in the future	Min of Works, PAM, Min of Urban Wellbeing, Housing and Local Government
		Implement Disability Act (Malaysia passed the Persons with Disabilities Act (PWDA) 2008 with high priority to public facilities, amenities, services and building, public transport, education, employment, information and community technology, cultural life, recreation, leisure an sports	Ministry of Women, Family and Community Development,
		Equip tourist police with monitoring and tracking devices for	MOF, Royal

Findings	Strategy	Recommendations	Actors
		better traffic management, safety and security, and improve response time	Malaysian Police Force
		Improve the quality of guiding, information and quality of tourist experience by using Big Data, Cloud technology, Internet, and apps Designing of easy options for tourists to rate the destination.	Ministry of Communications and Multimedia, MOTAC
	Increase innovations within the tourism industry	Establish a government directed special tourism research centre with multidisciplinary researchers to bring new innovations into tourism.	MOTAC
		Digitalisation of education system and digital education integration of technology into the traditional business.	MOE, MOHE, Industry players
	Expand usage of ICT to enhance tourist experience	Use VR (Virtual reality) enabled marketing and promotion techniques as well as for tourism products, such as 4-D shows at heritage sites, 3-D interactive museums, virtual travel, etc.	Min of Science, MOTAC, MOHR, Min of Communications and Multimedia, tourism industry association, tourism product owners
		Integrate virtual/augmented/mixed reality experiences at tourist destinations and heritage sites to enhance tourist experience, increase appreciation and learning to all	MOTAC, Tourism product players, Min of Communications and Multimedia,
		Bringing back traditional cuisine and presenting authentic hawkers food to tourists in a new way.	MOTAC, local authorities, Min of Urban Wellbeing, Housing and Local Government

Findings	Strategy	Recommendations	Actors
		Develop new tourism segments facilitating multi-generation tourists, Innovative spa therapies, and outdoor activities like roller glider	Tourism product owners
	Use ICT to reduce cost and increase efficiency and data safety	Develop cloud technologies in tourism and hospitality sectors	Min of Communications and Multimedia,, Tourism industry players
		Integrate automated/robotic knowledge work and human skills in an efficient manner	Tourism product owners
(iv) Outreach and Advocacy	Promote and develop sustainable tourism from the economic, environmental and socio-cultural perspective	Preserve and protect the environment and cultural heritage.	MOTAC, Min of Environment and Natural Resources, PEMANDU, Min of Urban Wellbeing, Housing and Local Government, Min of Energy, Green Technology and Water, State governments and local authorities, private sector, PAM, NGOs, tourism stakeholders and Mass Media
		Ensure proper consultation with the community, industry and stakeholders and NGOs before undertaking development of sites with heritage structure in order to avoid conflict	Ditto

Findings	Strategy	Recommendations	Actors
		between traditional and modernised methods of architecture and infrastructural development. Designers should have knowledge about the tradition and culture and incorporate local peoples' opinions and using renewable energy resources.	
		Promote culture through preserving forts, museums, longhouse, traditional handicrafts, art forms, food and festivals and preserve nature through conserving beaches, caves, national parks, forest reserves, mountains rivers.	
		Identify special zones for tourism development in the country	Min of Urban Wellbeing, Housing and Local Government, State Government and local authorities
		Put up innovative plans for tourists to have an authentic experience of the ambience, culture and lifestyle of the destination. Future tourism would see an urban centric development. Rural tourism has to be redefined.	Min of Urban Wellbeing, Housing and Local Government, State Government and local authorities, private sector
		Incorporate enhancements in the amenities of rural areas and ensure technological penetration into these areas while every city should aim to be self-sufficient with its own food production and farming techniques	Min of Rural Development, Min of Multimedia and Communications, Min of Urban Wellbeing, Housing and Local

Findings	Strategy	Recommendations	Actors
			Government, State Govt. and local authorities,
	Take remedial action against pollution	Establish proper collection system or waste disposal system in order to reduce pollution of the environment as well as tourist destinations	Ministry of Urban Wellbeing, Housing, and Local Government, Min of Environment and Natural Resources
		Undertake integrated master plans for waste management.	Ditto
		Aim towards achieving zero waste through the intensive separation of wastes, organic reusing, use of biodegradable objects, use of advance technology in re-using, and water treatment.	Ditto
		Change the habits of citizens through awareness and education for a sustainable future	MOE, Mass media, local authorities & city councils
	Create awareness and mould citizens through education	Train children from very young age by incorporating in the school curriculum lessons that promote the local tradition and culture, mould good behaviour in citizens, practice cleanliness and hygiene, understand and love their home country and its natural and cultural heritage, use of renewable energy resources, utilise resources in proper way and uphold sustainability.	MOE, MOHE, Mass Media
		Change the habits of citizens through awareness for a sustainable future	Ditto
		Provide incentives for Research into Green Technology Development.	Min of Science & Technology, Min of

Findings	Strategy	Recommendations	Actors
			Energy, Green Technology and Water,
		Incentive for climate mitigation and CO2 reduction	Min of Energy, Green Technology and Water,
		Incorporate the values of sustainability as DNA for all academic programmes and training.	MOE, MOHE, MOHR
		Revamp community tourism model and ensure that a high proportion of income derived from tourism reaches the local community in rural/Community tourism.	MOTAC, Min of Rural Development, tourism industry and stakeholders
		Give incentives to local community to avoid cultural dilution.	MOF, State and local governments
		Emphasise better resource management and RE (Renewable Energy) in all sectors of tourism	Min of Energy, Communications and Multimedia
		Use Green Building Index (GBI) for all construction sectors	Min of Works, Min of Urban Wellbeing, Housing, and Local Government, Min of Energy, Green Technology and Water, PAM, local authorities and city councils
	Adopt responsible tourism practices	Encourage tourism operators to adopt the principles of responsible tourism in growing their businesses whilst	MOTAC, tourism industry group and

Findings	Strategy	Recommendations	Actors
		providing social and economic benefits to local communities and respecting the environment.	stake holders, mass media
		Enforce the legal and normative tools, such as specific laws for the tourism sector, norms regulating environmental impact assessments, laws related to zoning and land-use, environmental impact assessments, and laws taking into account the concerns of indigenous communities	Min of Works, Min of Urban Wellbeing, Housing, and Local Government, local authorities and city councils
		Measuring, baseline information, reporting, auditing, monitoring and evaluation, which should include proper assessment kits, systematic compilation of statistics, implementation of indicators to measure achievements, carrying capacity assessments, benchmarking exercises, reports on environmental and biodiversity performance	MOTAC, Min of Urban Wellbeing, Housing, and Local Government, Min of Environment and Natural Resources, local authorities and city councils
		Adopt economic, financial and market-based instruments, such as sustainable tourism certification, concessions for tourism operators, awards, financial incentives, carbon-offset schemes.	Ditto
		Establish destination management and marketing organisations with a social and environmental focus	Ditto
		Develop a standard curriculum on sustainable tourism, to be included in official guidelines for training/education institutions	Min of Works, Min of Urban Wellbeing, Housing, and Local Government, MOE, MOHE, local authorities and city

Findings	Strategy	Recommendations	Actors
			councils
		Establish Public-private-partnerships and tourism trade associations focussing on sustainability issues	MOTAC, industry players, tourism stakeholders
		Provide support for development of voluntary codes – such as the Global Sustainable Tourism Criteria	MOTAC, Min of Energy, Green Technology and Water,
		Provide professional development tools for small and medium enterprises, particularly business incubators for critical sustainable facilities and services, special credit lines, and marketing support (trade fairs, websites, and awards)	MOTAC
	Examine with a view of adopting and implementing international policy and strategy tools for good governance and sustainability	The policy and strategy tools promulgated by the UNWTO (2009) for good governance and sustainability are in line with a White Paper launched by the European Commission on European Tourism Governance in July 2001. Both the UNWTO's and EU's tourism guidelines mirror the World Bank's six dimensions of governance, namely i) Voice and accountability; ii) Political stability and absence of violence; iii) Government effectiveness; iv) Regulatory quality; v) Rule of Law; and vi) Control of corruption (World Bank, 2009). The UNDP (1997, p. 10) points out that four different types of governance exists: economic, political, administrative, and systems governance.	MOTAC, Min of Natural Resources and Environment, Min of Urban Wellbeing, Housing & Local Government, and related agencies
	Address the existing environmental challenges	Sustainable energy, water and waste management in the tourism industry are dealt in the publications by UNEP's Division of Technology, Industry and Economics	MOTAC, Min of Natural Resources and Environment, Min of Urban

Findings	Strategy	Recommendations	Actors
			Wellbeing, Housing & Local Government, Min of Energy, Green Technology and Water, and related agencies, and mass media
		Marine recreation, cruise ships and the siting, design and construction of resort facilities in the reference papers published by Conservation International's Centre for Environmental Leadership in Business.	Ditto
		Manual on biodiversity-friendly hotels by IUCN (2008)	Ditto
		Handbook on environmental management of hotels by International Business Leadership Forum's Tourism Partnership Planning techniques for minimising visitor impact in CBD's User Manual for the CBD Guidelines (SCBD 2007: 25).	Ditto

CHAPTER 10   ROADMAP TO 2050

Table 7: Roadmap to 2050

	Strategies and Recommendations
Changing Nature of Demand	Anticipating, adapting and riding on the mega trends affecting the tourist demand arising from demography, economic growth and growing middle class, and tourism product segment

Demography, economic growth and product segment	2016-2020
	• Embed the need of elderly travellers in the early stages of product and infrastructure development to cater for their needs in the future. • Develop health and healthy lifestyle products. The elderly travellers have specific desires and needs in terms of customisation, service requirements, security, and desire products • All future constructions and development of public facilities, amenities, services and buildings, public transport, education, employment information, communication and technology, cultural life, recreation, leisure and sports are accessible to all. • Understand the challenges of and opportunities for tourism posed by Gen Y and Gen Z as to how to pursue their business and get them participate in the tourism, travel and hospitality industry • Adjust the value chain to meet their lifestyle requirement with a strong focus on digitalisation and tech savvy facilities, empathy and customer connection • Strengthen the MICE market with active promotion
	2021-2035
	• Different sectors of the tourism industry need to address this the rapid growth of the Middle class from the Asia Pacific region and develop business opportunities for this income segment • The middle-class market will come with increasing disposable income with education and will be independent travellers. Tourism operators and service providers will need to innovate to face competition from online giants and use digital technology for their business and enhance tourists' digital experience • Strengthen medical tourism to cater for the growing market within the region

	2036-2050
	• Provide tourism products and services to tourists who live longer, have shorter working hours, highly connected, and alternative means of experiencing travel that is enhanced by VR, AR, and MR

	Strategies and Recommendations
Changing Nature of Supply	Anticipating, adapting and riding on the mega trends affecting tourism from the supply side, including transport and connectivity, global technology revolution, destination management.
	2016-2020
	• Use technology to enhance the tourist experience, such as improved internet access in attractions, as well as more effective marketing and promotion • Develop cloud technologies in tourism and hospitality sectors to reduce costs and increase efficiency and data safety • Develop trails and circuits (bundling attractions) for enhanced travel flows • Creation of tourism circuits that involve soft adventure, exploration, and utilise VR • Create awareness on future trends in all sectors of the industry • Enhance competitiveness in the face of emerging destinations within the region as well as the renewal and re-invention of tourism products of the established destinations • Strengthen city tourism in major cities such as Kuala Lumpur, Penang, Johor Baru, Melaka, Kota Kinabalu and Kuching with diversified tourism products and unique selling features • Increase innovations within the tourism industry with multidisciplinary research
	2021-2035
	• Develop hub and spoke system in selected tourist destination to enhance internal connectivity and access. • Business development opportunities for self- driving vehicles and high speed train connectivity • Integrate virtual/augmented/mixed reality experiences at tourist destinations and heritage sites • Integrate virtual and non-virtual experiences to enhance tourist experiences and increase appreciation and learning to all
	2036-2050
	• Integrate automated/robotic knowledge work and human skills in an efficient manner

	Strategies and Recommendations
Enabling Factors in Tourism	Anticipating, adapting and riding on the other issues in tourism such as global warming and climate change, sustainability, governance and talent development
Sustainability	2016-2020
	• Ensure feasible, long-term economic operations for sustainable tourism so that all stakeholders involved enjoy the benefits from tourism • Put economic value on traditional arts, crafts and cultural practices and encourage preservation of historical sites and heritage buildings • Encourage community participation by showcasing authenticity of socio-cultural products, conserving their living cultural heritage and traditional values, while contributing to inter-cultural understanding and tolerance • In developing tourism, care must be taken to maintain a balance between providing adequate visitor experiences and services, protecting the ecological and cultural values of the area and ensure the long-term sustainability of the site • Incentives to be given for Research into Green Technologies Development • Incentive for climate mitigation and CO2 reduction • Sustainability as DNA for all academic programmes and training • Revamp community tourism model and ensure that high proportion of income derived from tourism reaches the local community in rural/community tourism • Incentives to local community to avoid cultural dilution • Local community awareness on lifestyle factors
	2021-2035
	• Better resource management and RE (Renewable Energy) emphasis on all sectors of tourism • Green Building Index (GBI) for all construction sectors • Develop cultural village (by region) in strategic locations to appreciate the culture and heritage of Malaysia • Optimise tourism development throughout the country (consider all regions) • National regeneration programme to eradicate poverty through tourism

Governance	2016-2020
	• Strengthen the coordination, monitoring and governance mechanism at the national, subnational and local levels • Need strict enforcement of laws, rules and regulations • Bylaws for environmental protection and tourism development (beaches, rivers, wetlands and buffer zones) • Circuit TV and tracking devise (increase safety and security in wilderness and eco-tourism) • Implement Disability Act (Malaysia passed the Persons with Disabilities Act (PWDA) 2008 with high priority to public facilities, amenities, services and building, public transport, education, employment, information and community technology, cultural life, recreation, leisure and sports
	2021-2035
	• Tourism and community inclusiveness to enhance safety and security (Crime-free tourism at destinations) • Inclusive design for universal access
Talent Development	2016-2020
	• Address talent deficit in the tourism and hospitality sector • Incentives given for Talent Development • Efficient use of HRDF funding for grooming talents • Strong industry institution linkage to enhance skills in the tourism and hospitality sector • Improve attraction, recruitment and retention of people working in the industry • Improve the career prospects and talent management to recruit young workers from Gen Y
	2021-2035
	• Zero compromise of professional service needed to address on Attitude, Aptitude, Passion, Interest as criteria for training • Tap the elderly workers and women

APPENDICES

List of Team Members

Sl. No	Name	Role
1.	Prof Datuk Seri Dr Victor Wee	Sectoral Leader
2.	Mr Antony Wong Kin Hooi	Expert
3.	Mr Neethiahnanthan Ari Ragavan	Expert
4.	Dr Toney K. Thomas	Expert
5.	Dr Paolo Mura	Expert
6.	Aiwa Romy	Research Officer
7.	Stephanie Toe	Research officer (Up to May 10, 2016)

LIST OF STAKEHOLDERS ENGAGED

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
ACADEMY OF SCIENCES MALAYSIA, MATRADE BUILDING, KUALA
LUMPUR

27TH JULY 2015

No	Name	Organisation
1	Prof Madya Dr Habibah Ahmad	UKM
2	Assoc Prof Dr Loh Siew Yim	UM
3	Dr Lucy Valentine	HELP University
4	Dr Rajesvare Rada	HELP University
5	Prof Dr Khatijah Awang	UM
6	Pn Ow Kwai Lyn	UM
7	Pn Zharzeae Salleh	Sunway
8	Dr Hashim bin Abdul Wahab	Individual
9	Datuk Pof Dr Ow Chee Seng@Aw Hee Teng	UiTM
10	Jimmy Leong Wie Kong	President Malaysian Tourist Guides Council (MTGC)
11	Nicolas Dubrocard	Project Director Wild Asia Responsible Tourism Initiative
12	Rose NICOLAS de SALES	Assistant Director Wild Asia Responsible Tourism Initiative
13	Stanley Kok	General Manager Persatuan Pengurusan Kompleks Malaysia (PPK)
14	Ms Jean Tan	Malaysia Retailers Association (MRA)
15	En Shaharuddin M Saaid	
16	Pn Elly Kamali Mustapha	Persatuan Hotel Budget Malaysia (MYBHA)
17	En Azreen Rusnan	MOTAC Penolong Setiausaha Kanan
18	En Mohammed Khairil Rismen	Pegawai KPI MOTAC
19	Dr Periasamy A/L Gunasekaran	Pengarah MITI
20	En Chong Wai Kit	MOTAC Penolong Setiausaha
21	Pn Emelia Tay Ling Imm	EPU KPP Pelancongan, Kebudayaan & Industri Kreatif
22	Puan Zaleha Asmahan Binti Haji Ismail	Pengarah Bahagian Teknologi Maklumat Tourism Malaysia
23	Puan Sharon Ho	Penolong Pengarah Tourism Malaysia
24	En Mohamad Rosly bin Selamat	Senior Vice Presiden IRDA

No	Name	Organisation
25	Pn Asmaliana Ashari	Pengurus RnD mlk State Tourism
26	Pn Samsudin Salleh	Jabatan Perhutanan Semenanjung Malaysia
27	Pn Farah Kareena Hadenan	Kem Pembangunanan Wanita, Kebudayaan dan Masyarakat

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
HOTEL GRAND CONTINENTAL, KUALA TERENGGANU
29TH JULY 2015

No	Name	Organisation
1	En Wan Supian Dato' Wan Ishak	Managing Director Kapas Island Resort
2	Ms Loh Mee Ann	Tourist Guide
3	Alex Lee Yun Ping	Ping Anchorage
4	En Ahmad Sanusi Bin Ibrahim	President Mybha Terengganu
5	En Zakaria bin Hussin	MAH Chapter Terengganu
6	Pn Che Wan Nor Faridah	MAH Chapter Terengganu
7	En Muharim Bin Abd Samad	SWCorp Terengganu
8	Pn Azlina Binti Alwi	SWCorp Terengganu
9	Pn Nurul Nejeeha Binti Ibrahim@ Yunus	SWCorp Terengganu
10	Pn Zalina Binti Zahari	SWCorp Terengganu
11	Mohd Noor Haidzir bin Mohd Fauzi	Pegawai Laut Bahagian HEPP Jabatan Laut Wilayah Timur
12	En Norazihan bin Mohd Daud	Penolong Pengarah Jabatan Laut Wilayah Timur
13	Pn Asiah bin Abdullah	Pembantu Perikanan Tingkat Kanan Jabatan Taman Laut Malaysia Negeri Terengganu
14	Cik Zaini Binti Sulaiman	Timbalan Pengarah Tourism Malaysia Terengganu
15	Pn Siti Salmah binti Azman	Tourism Malaysia Terengganu
16	Pn Nurul Azilawati binti Ismail	Tourism Malaysia Terengganu
17	En Khairul Rizal Kheli Kuzzaman	Senior Executive ECER Pantai Timur
18	PM Dr Azemi Che Hamid	Koordinator Komunikasi Korporat Universiti Teknologi MARA , Terengganu (Kampus Dungun)

No	Name	Organisation
19	En Harnizam Zahari	Koordinator Komunikasi Korporat Universiti Teknologi MARA , Terengganu (Kampus Dungun)
20	Cik Rohani Ismail	Koordinator Komunikasi Korporat Universiti Teknologi MARA , Terengganu (Kampus Dungun)
21	Pn Siti Noor Shazilla Zaki	JAS

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
CITITEL HOTEL, PENANG
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No	Name	Organisation
1	Dato' Lim Mee Lee	Chairman MBHA
2	Mr Ken Tan Kea Hock	Tresurer of PHA & MBHA
3	Yoshua Tan	Member of PHA & MBHA
4	Yim Man Kee	Penang Tour Guide Association
5	Mr Azhar	Presiden Persatuan Pelancongan dan Warisan Melayu P.Pinang (SAHABAT)
6	Ms Norma Abdul	Ketua Srikandi Persatuan Pelancongan dan Warisan Melayu P.Pinang (SAHABAT)
7	Ms Nurhazwani Binti Mohd Ramli	MPSP
8	Tuan Haji Rosman bin Hashim	Timb. Pengurus Besar Pembangunan PERDA
9	En Mohd Salleh bin Hussain	Pen. Peng. Kanan Pemb. Perniagaan PERDA
10	Associate Prof. Dr. Tiun Ling Ta	Ahli Majlis MPSP
11	Puan Khairunnisa binti Md Saad	Pen. Pegawai Kesihatan Persekitaran Majlis Bandaraya Pulau Pinang
12	En Mohd Faidrol bin Mohd Radzi	Majlis Perbandaran Seberang Perai
13	En Zairomizi Bin Nayan	Majlis Perbandaran Seberang Perai
14	En Mohammad bin Khalid	Jabatan Warisan Negara Zon Utara
15	Pn Mazni Binti Suaib	Pen. Pegawai Kesihatan Persekitaran Majlis Bandaraya Pulau Pinang
16	En Mohd Amir Bin	MPSP

No	Name	Organisation
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20	Dr Syamsul Herman bin Mohammad Afandi	UPM
21	Professor Datin Dr Faridah Hanum Ibrahim	UPM
22	Mr Gary Teoh Kiang-Hong	Pengarah Urusan Golden Highway Auto-City Juru Sdn Bhd
23	Mdm Ong Bee Lee	Golden Highway Auto-City Juru Sdn Bhd
24	En Azhar Syed Kamal	Sahabat
25	Pn Norma Abdul	Sahabat

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
PROMENADE HOTEL, KOTA KINABALU, SABAH
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No	Name	Organisation
1	Dr Rahimatsah Amat FASc	
2	Mr Sani Sham Ahmad	Director Tourism Malaysia – Sabah
3	Mrs Shanina Samsuri	Deputy Director Tourism Malaysia – Sabah
4	Mr Darryl Hamzah	Tourism Officer Tourism Malaysia – Sabah
5	Ms Susan Pudin	Environment Control Officer Environment Protection Department, Sabah
6	Mr Ag Ahmad Zaki Bin Abdul Bakar	Ministry of Tourism and Culture
7	Mr Yunus Sampeh	Borneo Trails
8	Mr Albert Teo Chin Kion	Managing Director Borneo Eco Tours Sdn Bhd
9	Mr Fathi Ahmad Shah	Asst. Vice President Felda Investment Corporation Sdn Bhd
10	Mr Tyan Wong	Director Amazing Borneo Tours and Events Sdn Bhd
11	Ms Dinna Chong	Business Development Manager Amazing Borneo Tours and Events Sdn Bhd
12	Ms Elizabeth Mojugit	Amazing Borneo Tours and Events Sdn Bhd
13	Ms Theresa Tham	Managing Director Borneo Reef World (Dynamic Holiday Cruise Sdn Bhd)
14	Ms Tasha Yong	Borneo Reef World (Dynamic Holiday Cruise

		Sdn Bhd)
15	Ms Candy Cheng	Borneostar Cruise s/b
16	Mr Martin Kong	Sabah Tea Resort s/b
17	Ms Daniela Kinsik	Destination Kinabalu Travel & Tours
18	Mr Djuanis Mogirong	Sabah Homestay Association
19	Ms Ceronia Shirley Michael	Policy officer WWF – Malaysia Sabah Office
20	Mr Irwan Bin Isnain	Research Officer Sabah Parks
21	Ms Pauline Chin	Sabah Tourist Association
22	Mr Tonny Chew	Sabah Tourist Association
23	Mr Albert Aseh	Aseh Tours

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
LEGOLAND MALAYSIA RESORT, NUSAJAYA, JOHOR
17TH NOVEMBER 2015

No	Name	Organisation
1	Puan Raja Zuraifah Raja Musa	IRDA
2	Mr Mohammad Rosly Md Selamat	IRDA
3	Puan Wan Suziana Wan Othman	IRDA
4	En Mohammad Sukry Bin Dato' Abd Rahim	Ketua Pen. Pengarah UPEN Johor
5	Ms Thila Munusamy	Director of Sales & Marketing Legoland Malaysia
6	Ms Nirubah Karalasingam	Head of Sales Legoland Malaysia
7	Mr Mohd Effendy Yusof	JCNTGA
8	Mr Jimmy Leong	JTGA
9	Mr Raaj Nawa	Newasia Holiday
10	Mr Syazwan bin Abdul Rahim	MOTAC Johor
11	Mr Shadan bin Rahmat	Unit Pembangunan Prasarana MOTAC Johor
12	Mr Amirrul Asyraf Ibrahim	Penolong Pengarah Johor Department of Tourism
13	Mr Jailani Bin Kayon	UPEN Johor
14	Mr Dzuifakarali Mohd Yunus	MBJB
15	Mr Tan Tee Chai	MATTA Top Budget Travel S/B
16	Mdm Belinda Lim Jit Ngoh	Johor Tourist Guides Association
17	Ms Anne Molly	Johor Tourist Guides Association
18	Mr Chua Poh Kok	Johor Tourism Association
19	Mr Ahmad Firdaus Bin Shaik Omar	Johor City Nature Tourist Guide Association
20	Mr Mohammad Fadil Ami	JGA
21	Pn Juiah Arsat	IOI Palm Villa
22	Mr Fadzil	IRDA
23	Dr Norhazliza Bt Abd Halim	Senior Lecturer Department of Urban and Regional Planning UTM
24	Dr Zuraidah Sulaiman	Senior Lecturer Department of Business Administration UTM
25	Dr Grace Dr. Thoo Ai Chin	Senior Lecturer Department of Business Administration UTM
26	Puan Delma Poniman	Senior Lecturer Department of Business

No	Name	Organisation
27	Ms Adeline Chng	Vice President, Strategic Merketing Medini Iskandar Malaysia Sdn Bhd
28	Ms Esther Yap	Medini Iskandar Malaysia Sdn Bhd
29	Pn Suraya Mohd Daus	Cahaya Jauhar

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
RIVERSIDE MAJESTIC HOTEL, KUCHING
16TH DECEMBER 2015

No	Name	Organisation
1	Ms Nazasheera	Head Of Sarawak & Sabah Branch Office SIRIM
2	Ms Amelia Lim Tzing Woon	Dept of Chemistry Malaysia , Kuching
3	Ms Norhafiza Bt Madeni	Dept of Chemistry Malaysia , Kuching
4	Mr Kasvenda Bin Kassim	Head Of Sarawak & Sabah Branch Office SIRIM
5	Mr Haburi bin Hamdan	Timbalan Pengarah Jabatan Meteorologi Sarawak
6	Mr Ahab'ullah Jamahari	Jabatan Meteorologi Sarawak
7	Mr Chin Ah Ka	Jabatan Meteorologi Sarawak
8	Mr Michael Lu Yian Lock	Sarawak Tourism Board
9	Ms Roziah Binti Taiban	Jabatan Imigresen Negeri Sarawak
10	Ms Tasick S Tik	Jabatan Imigresen Negeri Sarawak
11	Mr Sarjan Mubrele Isma	PDRM IPK Sarawak
12	Ms Melissa Bulan Liau	Hon Secretary Matta Sarawak Chapter
13	Mr Donald Tan	Matta Sarawak Chapter
14	Ms Marina Foo	Matta Sarawak Chapter
15	Ms Elina Tiu	VP, PACE SEGi College Sarawak
16	Mr James Sinjeng	SEGi College Sarawak
17	Ms Carleen Teo	SEGi College Sarawak
18	Ms Mukvinder Kaur Sandhu	COO UCSI University Sarawak Campus
19	Mr Ting Hui Bun	Lecturer UCSI University Sarawak Campus
20	Mr Christopher Wan Sageng	HOD of Culinary Arts UCSI University Sarawak Campus
21	Emmanuel Osakue	Lecturer Faculty Of Design Innovation (FDI) LICT
22	Afida Khasuma Zaidi	Program Leader Faculty Of Communication, Media And Broadcasting (FCMB) LICT
23	Adeline Tan Yean Nee	Cx

24	Hii Wei Min	Lecturer Faculty Of Business Management And Globalisation (FBMG) LICT
25	Livan Luhat	Administrative Manager Administrative Dept. Limkokwing Institute of Creative Technology (LICT)
26	Alan Goh Chung Kee	Lecturer Faculty Of Architecture & The Built Environment
27	Mdm Heidi Munan	Hon. Curator of Beads, Sarawak Museum & Director of Crafthub Sdn Bhd
28	Ms Susan Teo	Manager Interborneo Sdn Bhd
29	Mr Daniel Lee	Sales Marketing Interborneo Sdn Bhd
30	Mr Victor Luna Amin	Manager Sarawak Forestry Corporation Sdn Bhd
31	Mr Rambli Ahmad	Ecologist Sarawak Forestry Corporation Sdn Bhd
32	Ms Mok Venia	Cat City Holidays Sdn Bhd
33	Ms Alisa Wong	Cat City Holidays Sdn Bhd
34	Ms Adele Chai	Cat City Holidays Sdn Bhd
35	Ms Gladys Teo Hsin Ee	Fabulous Holidays Sdn Bhd
36	Ms Gracie Geikie	Director/Principal Consultant Planet Borneo Group of Companies
37	Ms Suhaili Mokthar	Sarawak Forestry Corporation
38	Mr Gustino Basuan	Sarawak Tourism Board
39	Mr Erivina Jihel	Sarawak Tourism Board

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP NOTES
ACADEMY OF SCIENCES MALAYSIA, MATRADE BUILDING, KUALA LUMPUR

Logical Framework Analysis (LFA) Template

27th July 2015

Sector: Tourism

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Future Tourism	Yield Vs. Volume of Tourist	Exploration Market			
	New Tourist Segments Gen Z, Gen Y, Multi-Generation Tourists	Nature Tourism Niche			
	Promotion of Malaysia Malaysia Truly Asia – Still relevant	- New Route of Tourism - Connectivity + Accessibility			
	Experience Economy needs				
	Middle Class Tourist	- Indian Market - Malaysia Market for all - Sell comfort to tourist			
	Promotion				

	Methods/Strategies				
	Virtual tourism	Image & branding e.g. Budapest (High End Tourist)			
	Tourism Products - 2050	Nature Vs Culture Vs Idea Quality of services	Hotel Accommodations 2050 Home stay resources Vs carrying capacity		
	Aging Tourist Segments	Manpower Training			
	Socio-political influence				
	Human Capital	Education + Entrepreneurships Competency			

Logical Framework Analysis (LFA) Template

Sector: Tourism

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Governance	Human capital development and quality of service	• Quality of language • Skills/knowledge • Passion • Attractive salaries & advancement • Multitasking • Import of training • Quality over quantity → no proper mechanism to ensure quality of workers & students [Malaysia has many hospitality schools – issue is what happens after they graduate?]		• Clear career-path • Development of skilled quality workers • 3P program (Program pelancongan pelajar) to be revived → similar to 'Learning Journey' of Singapore	• HRDF fund – Ministry of tourism • MOE – education • Regulation of tourist guides by MOTAC • 3P program initiated by MOE, tourism module by MOT
	Level of maintenance - Local authorities	• Cleanliness of basic facilities		• Dedicated tourism unit	• Permanent posts to ensure continuity

		• Budget		• Impose additional bed tax • Tourism component in local authorities	• Minister of Tourism to be a businessman

	Tourism facilities
	- Jetties
	- Terminals/interchange
	- Transportation
	   o Taxis
	   o Rental cars
	   o Buses
	   o Signage
		• User friendly
		• Look at demand
		• Physical planning
		• Lack of ease of booking (no online booking)			

	Security and safety	• Bad PR image for Sabah & Johor		• Create more awareness • Community partnership & NGO • More PR from authorities • SOP for ferries – passenger manifesto, safety protocols	
	Profiteering	• Illegal profiteering • Bad PR image to tourists		• More enforcement by SPAD	Taxi drivers given their own permit – penalty points

					causing revoke of licence will give accountability
	Connectivity	• Seamless connectivity unavailable			
	Marketing - Target - Budget - Medium Marketing intelligence	• Spending on digital marketing is high but not all travellers are tech savvy			

	Data collection & Statistics	• Accurate data/statistics
		  - Exit visitors survey
		  - Expenditure			

	Events & lack of promotion (event planning)	• Lack of world-class/international events			

<u>Trend</u>
1. Wealthy Chinese tourist that invests in property
   - Money not an issue
   - Cash transactions

2. Malaysia Tourism facilities far lacking compared to our neighbours

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP NOTES
ACADEMY OF SCIENCES MALAYSIA, MATRADE BUILDING, KUALA LUMPUR

Logical Framework Analysis (LFA) Template

27th July 2015
Sector: Tourism

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Sustainability (Food, Energy, Water, & Resources, Security)	Carrying Capacity / Low Impact				Identify the capacity
	Preserving Buffer Zone (Buffer to Buffer, River) Natural Protected Pristine Shortage	Land + Marine			Identify + Expand Eco-Tourism
	(Cities) Governance/Enforcement/ Local Authority				Re-evaluate + Re-engineering To look into legal Structure (Federal, State, Local)
	Education/Ignorance/Greed				Sustainability DNA
	Dilution of Culture/Loss of Culture				Recording + Incentive and Support
	Climate Change (Security on H2O, Food, Energy + Resource)				• 50% Permanent Forest Cover • Green City / Innovation • Policy Must

					Include/Embed Sustainability • All Disciplines – to Embed Sustainability • Incentivise Industry that puts sustainability as a Priority. • Eco Labellies, EMGS + ISO
	Social Needs				• Education Accessibilities (Infrastructure) • Inclusivity (Local Welfare) • Social Rights of Indigenous people

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP NOTES
ACADEMY OF SCIENCES MALAYSIA, MATRADE BUILDING, KUALA LUMPUR

Logical Framework Analysis (LFA) Template

27th July 2015

Sector: Tourism

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Enabling Factors	Attitude of Malaysians - Awareness of STI and how they can enhance Tourism			Research / Multidisciplinary (High Impact Tourism Researchers)	Education & Research (Not only Children but community Industry as well)
	Lack of integration of existing practices (Stakeholders)			Getting input from Stakeholders – Two way communication	
	Coordination e.g. Herbal Tourism / Local Fruit / Culture			One Common Strategy	
	Inclusive Tourism – Sense of Pride / Belonging Lacking - Knowledge of History / Culture Passion - Technology to facilitate the tourism experience - Potential market		Inclusivity – Everybody can travel (Signs, hotels, etc.)	Incentives from Government to promote	- Set up a special Tourism Research centre - Government directed Research - More Grants for Research

	- Inclusive Tourism / Accessibility, Developed Facilities				
	Safety – Transportation e.g. See Singapore tourism as an important Phenomenon to create social cohesion (Punctuality System) Facilities (e.g. Toilets) Gadgets for aiding mobility (e.g. Home stay, Kampung Movies) Green Technology		Perceived Safety – the whole country is safe. - Comprehensive system of safety e.g. Barcelona - Higher Insurance Payout - Community Involvement - EC Assessment - More Technological; Forms of Transportation - Integration		Enforcement – (We need to be stricter) Policies to make the Disabled more included in the society
	Medical / Health / Tourism Lifestyle		Forms of Tourism - Eco/Healthy Lifestyle (New) - Business - Culture		
	User Friendly Technology – Technology can also be a problem –			- Integrated pollutes (Governments/ communities) - Immigration all	- Communication Technology - Set to apply research in every day care

	Technology to overcome these issues Pollution - Application - Communication Software - To be given at Immigration at point of Entry - Centres			together - Training to minimise pollution	

Science & Technology
Issues:
1. Financial Issues
2. Promoting simple Lifestyle through High Technology
3. Nature / Attraction – How to water them with technology
4. Herbal Tourism – how to promote through technology? Technology can help so promote healthy lifestyles
5. Machines need maintenance through
6. Nature based – Integration through technology
7. Machines – Audio / Visual, can be costly / maintenance.

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
CITITEL HOTEL, PENANG

Logical Framework Analysis (LFA) Template
Date: 31st July 2015
Venue: Johor

Items of Interest	Items identified	Gaps	Desired Outcome 2050	Strategies to achieve desired outcome	Recommendation
Enabling Factors					
Safety and Comfort	Increasing the safety level in certain areas (Inconsistency between different areas)	Lagging in safety (Snatch thieves) • Perception of safety is poor • Facilities • Backpacking	- Connect community for tourist safety and security - Tourism and community inclusiveness)	- Community acceptance through empowerment - Community participation (Homestay, activities that benefits tourists) - CBT - Community Policing in housing area (volunteering to patrol the area)	
Comfort	User design -1	There is no	- Universal design	UBBL 34 A since	

		planned or inclusive design for tourism for all.	for access and all infrastructure (Inclusive Tourism) - Heritage sites - Continuous connectivity and cooperation	1993 Enforcement of UBBL	
	Disaster and safety preparation	There organised plans on natural disasters	- Form Disaster Management Plan	Form Disaster Management Plan	
Comfort	User Design -2	No universal website access, location identification	- ICT- enabled access for people with disabilities - Website cater all people (Enable for people with different abilities)	Accessible website and ICT enabling	Gadget that press and provide information to the blinds
Connectivity	Chaotic Traffic	Poor public transport system	- Easy tourist flow Feeder bus service (Main road to housing estate) - Tram, LRT, MRT and Monorail - Signage	Development planning	

Marketing and Promotion		Unidentified uniquetivity of the areas (Villages/ any areas with tourism potential)	- Explore, identify potential attractions - Pulau Aman (Product declined) No focused promotions	Promotion of Unique and Niche potential attractions	Example (Jamesbond Island in Puket)
Workforce	- Attitude of workforce - Not well equipped - Tourist Guide	- Lack of knowledge - More shopping oriented - Fake guides	- Well trained tourist guide	- Tourist Guide Associate to empower the tourist guide. - Enforcement	
Maintenance	Slow maintenance	- Complete maintenance of facilities	- Preparedness	-	

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
CITITEL HOTEL, PENANG

Logical Framework Analysis (LFA) Template
Date: 31st July 2015
Venue: Johor

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Future Tourism	Congestion/Traffic/ No proper transport/ bad marketing for tourists / especially weekdays and weekends			Monorail / Tram (to be brought back)	
	(Island) Parking Space			Integrated Transport system (Buses, water transport system) - Tri - shows to be maintained - Taxis to be improved - Integrated car parks areas - Integrated with the public transport system	
	Connectivity Island/Mainland			Identify key hubs	
	Tourists concentrate				

	on the island			
	Bridge is expensive			
	No tourist product in the mainland and connect on the possible spots - Transportation			
	Cable Car Mainland – Island			
	Water Transportation		Cable Car / Tunnel	
	Cost to transport Tourists between Island - Mainland			
	Not enough Information available for tourists			
	Heritage - No Integration in the management, individual owners initiative, - Synergy, - Safety of buildings			
	Safety/ precautions - pedestrian walking, cycling		More CCTVS, More police on the bicycle, Pedestrian walks / fee from vehicles / only for bikes	
	Street Food - how		Must be prepared by	

	can they preserve it?, cleanliness, foreigners should not cook / serve, Authenticity of the culture Cooks be Malaysians, - Street food to be produce in the future - cleanliness			locals - Negotiation from the council - Integrated heritage Trails - Preserve Authenticity	
	Green / eco-tourism to be more prominent, to be preserved during the development			Identify and Preserve then Promote	
	(New Trend) Medical Tourism			Expand to traditional / alternative medicine instead of just modern medicine	
	Need of New Tourist Products - Man made products (Private Section) -Leisure products for the youngsters and elderly or strengthen the existing products (more events / festivities)			- More events related to heritage re-bonding - Add value – More activities, more shopping (Souvenirs) in the heritage areas - Georgetown to be more careful	

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
CITITEL HOTEL, PENANG

Logical Framework Analysis (LFA) Template
Date: 31st July 2015
Venue: Johor

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Governance	Budget Hotels / Home stay Apartment – Illegal Approval process (Cost, Bomba Requirement, Conversion form) Shortage of Licence Budget Accommodation		Orderly development	KPKI should organise, come out with strategies and policy to overcome the problem of Illegal accommodations.	
	Hawkers, Public Facilities		Well Regulated by PBT	Better design of facilities of pedestrians (shade or trees, pavement) Improve all kinds of spacing, rest areas	
	Lack of Parking Space / Facilities		Convenience and Safety of Tourist	Increase parking space / area	
	Lack of Taxi		Good image of Penang Easy to Move around	Increase availability of taxi & Buses Transport (Tram, Sky train and etc.)	

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
CITITEL HOTEL, PENANG

Logical Framework Analysis (LFA) Template
Date: 31st July 2015
Venue: Johor

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Sustainability (Beach, Hills, Heritage, City/Island/Rivers, Food & Culture) 2050 – Water, Energy, Waste, Food, Energy (Self – Sufficiency, STI & Green City) 2050 – 3.5 Mil Population	Waste - Rubbish Solution - Water Treatment				(Zero Waste) - Intensive Separation - Organic Reuse - Recycle with Advance Technology Zero waste discharge (Law Enforcement & STI) - Rain Water Capture - Untreated water flow to the river (Gray) - Technology to reduce gray water produce - Awareness on Resources Usage through education - Stakeholders participation

	Food - Traditional Food gone when the master chef retire or pass away - Seafood Pollution - Backyard Agriculture - High Yield - Vertical Farming				(Hawkers Food) - Recognising Old talent (all Hawkers) - Incorporate with Culinary School - S.K.M to train more quality chef
	Heritage - Building - Culture - Nature (River/uphill)				(Unique Selling Point) - (Heritage) Governance & Law Enforcement - (Culture) – School of Art - Education Program/ Partnership with NGO - Maintain the Traditional kampung (Zone & Gazette) - Organise regular event to formally promote special culture. - Participation of Grassroot - Nature Park to

					Expand the Buffer/ river/ Mangrove/ Marine Park (25%)
	Green City Development Plan - Transportation (Tram/Bicycle lane)				- Transportation master Plan & Execution - Green City Concept (Carrying capacity Limit) - International language (English) from primary education

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
PROMENADE HOTEL, KOTA KINABALU, SABAH

Logical Framework Analysis (LFA) Template
Date: 10th August 2015
Venue: Kota Kinabalu

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Governance	1. Overlapping Jurisdiction	• Grey area in enforcing regulations e.g.: Accidents/incidents in the sea-Jabatan laut, MOTAC, APMM-Illegal operators selling tours	• Clear jurisdiction on conflicting area	Review Acts/Enactments/By laws/Regulation	
	2. Lack of Enforcement man- power	• Not enough manpower to enforce regulation	• Increased man power to effectively enforce law	Request budget allocation	
	3. Illegal sale of prohibited items under the law. e.g.: turtle eggs	• Not enough budget	• Strong sense of appreciation towards environment/ tourism	Submit recommendation to Ministry of Education via Akademi Sciences	
	4. Strengthening				

	environmental education from young age	• Not enough emphasise on this			

Logical Framework Analysis (LFA) Template

Date: 10th August 2015

Venue: Kota Kinabalu

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Sustainability	1. Enforcement	• No enough skilled manpower • Budget for man power- Utilisation of budget efficiently • Meritocracy • Corrupted recruitment • No KPI for recruiting	Tourists should have authentic experience of the ambience, culture and lifestyle of the destination.	• Proper budget allocation • Designers should have knowledge about the local opinion, taste and preferences, tradition and culture.	• Appropriate budget allocation • Execution matching to the destinations need • Consult with right people • Process must be exactly structured at the beginning • Incorporate traditional as well as modern study of Atecture. • Using STI 'S to find alternatives for non-renewable energy resources. • Identify buffer zones in parks, rivers and marine
	2. Execution	• Not understanding the basis or objective for execution of a law or programme- corrupted and improper execution			
	3. Loss of heritage	• Not including local communities opinion, needs and culture, not adding industry inputs during execution • Improper consultation			

		• Conflict of modernised and traditional methods.			
	4.Waste management	• Master plans not integrated with waste management • Waste disposal • No collection system for waste • Culture of cleanliness-lack of education (Water villages) • Lack of accountability of civil service & local council			• Proper waste disposal • Strong NGOs • Providing awareness-starting from childhood
	5.Resources	• Poor management • Not long-term privatisation(water &energy) 50-100years-follow long term plans without diverting from ultimate aim • Poor execution			• Efficient management
	6. Polluted Cities	• Master planning		Political will	• Green City/Sustainable city • Urban renewal Programme

	7.Logistics operation	• Conflict on use of resources • Lack of Integration • Connectivity issues			• Sustainable Logistic • Improvement of connectivity among islands

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
PROMENADE HOTEL, KOTA KINABALU, SABAH

Logical Framework Analysis (LFA) Template
Date: 10th August 2015
Venue: Kota Kinabalu

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Future Tourism	1.Infrastructure 2.Talent/Human Skills 3.Transportation-access 4.Weather 5.Sustainability in eco-tourism	• Limited attractions/interests for tourists • Enhance business opportunity • Lack of skills • Knowledge • Cater the product without damaging anything • experiencing wildlife-bird-	• Maximise assets • Cruise dinner • Seasonal tourism-Night activities • Central Consortium -Centralise transportation package -3days/7days pass -Standardised price/package (with help of NGOs, MATTA, MOTAC etc.) • Cable car -Link between mountains/island to island -Scheduled maintenance • Museum -4d shows -Night at museum-themed		• Government subsidise/provide shuttle service • Investor • Centralised consortium • Marketing • Government support • Centralised transport -platform to build

		watching-flight to flight exploration of islands /language	(hologram) -3d structure(mini Sabah) • Casino • "Flight of the gibbon"/roller glider-outdoor • 24/7 Water taxi around island • Health tourism -Hot spring spa therapy-Family oriented spa-new innovations in therapies		

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP

PROMENADE HOTEL, KOTA KINABALU, SABAH

Logical Framework Analysis (LFA) Template
Date: 10th August 2015
Venue: Kota Kinabalu

Items of Interest	Items identified	Gaps	Desired Outcome 2050	Strategies to achieve desired outcome	Recommendation
Enabling Factors					
Safety	Point 1: (Within your control) Safety at the destination Facilities	No proper liability (Rolling the responsibility to others	Designated liability and high level of safety precautions at the destination		
Safety	Point 2: (Out of your control) National security Kidnapping	Kidnapping	Increasing the security forces National security forces		
Comfort	FIT Market	-Designs and maintenance -Comfort in a specific environment	Distinguish from naturalist and a tour guide	Good resident naturalist	
Comfort/ Legislations	Homestay	Abuse of definition and	Apartments are also used as homestays	Extreme lack of legislation and	

		practice		enforcement and misuse	
Connectivity	Only to fly to Chinese speaking countries Only to the eastern region Lack of direct flights	KK as a hub (No consistency in operations)	Direct flight to prominent and potential markets	Explore to the East Americas with direct and faster access	
Marketing and Promotion	Private Sectors Oversell Not specific	Stakeholders Hotels Attractions are not promoted Lacking promotion and market	(STB had a lot of budget) dedicated team Very high visibility	Focus more on backpackers market they are less vulnerable to several external issues including safety and security	
Workforce	Quality of front liners	-Service qualities, hospitality to the frontlines are not in the expected quality. No WOW factors are generated. -There is no standard training and quality maintenance in local hotels in comparison to the	Attitude and passion (Create the tourism workforce as a career). Capacity building No specific standard established The profession is still considered as professionals due to differed standards	Set standard (Attending level 1 and 2). No progression to level 3 and 4 (4 is specialised). Pinging hotels with less hotels	

		international hotel chain. -'Under cutting' due to mushrooming pinging hotels due to unhealthy competition.			
Legislation	Appropriate legislation	There is no proper legislation Significant restriction	Conduce and friendly to achieve the growth of tourism		
Community Engagement	Homestay	Association are not involved independent homestay are a failure by cutting -Currently it is 'enclave model'	A proper 'Business Module' need to be there	-Development of 'business module' for community -A dedicated body	
Maintenance	No maintenance culture	Poor maintenance			

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
LEGOLAND MALAYSIA RESORT, NUSAJAYA, JOHOR

Logical Framework Analysis (LFA) Template
Date: 17th November 2015
Venue: Johor

Items of Interest	Items identified	Gaps	Desired Outcome 2050	Strategies to achieve desired outcome	Recommendation
Enabling Factors Education as the Main factor					
Safety	Safety and security (Cross way)	Tight security, Jam No balance External: Internal	Change of mindsets (Importance of safety, security) Culture	NTO to take charge of communication with local authority and PR for image building (Tourism Matters).	Educate the importance of safety Change of mindset 2050: Module in Schools
Safety		*External*: Perception of the Place (Not safe) how the perception is being shaped *Internal*: How to work for changes the perception (Believes of			

		perception)			
Legislation	Tour Bus School Bus Factory Bus (All carrying tourists)	No identity and no job clarity for (Tourists confuses, no job identity in tourism)	Enforce the law (avoid misuse of mobility. B2B opportunity Hotel below 50 below does not need to be in Hotel Association	More efficient policies and enforcement No illegal bus and no illegal mobility Creation of identity for the industry	PPP
Comfort	Disable friendly	No Punctuality Not disable friendly	Embedded disable friendly access with all motilities.		

Connectivity	Singapore Issue: No easy access to Johor (Political) Coach: Attitude service quality Rigidity Internal Connectivity	Singapore dominate due to economic reason Rigidity BRT connectivity	Make more conducive environment to bring investors here Enhance standard - Coach bus in MRT level - Hybrid bus in 2020 - 2050 liberalisation of travel formalities. - 220 travel agent (Marketing) - Vibrant colour bus (reflect on the bus) - Technology (IC to use) - Punctuality	- Enhance standard for improved domination for Johor - Serious in enforcement and deliverance - Strategic PPP - Inclusion of academics and researchers in the project - International connectivity Partnership with Airlines. - Cost for VISA and travel documentation	Need to change the attitude
Marketing and Promotion	- Communication - JDT - Resource Identity (Lacking)	Some unique and resources are not having is identity (Beach)	- Collaboration, Compliment and Connect (CCC) - Product identity and promotions - Language	CCC (Intergovernmental collaboration). WOW factor	
Workforce		Geographical	Brain Drain	2050 (Par	

		proximity is a disadvantage	Attract investment (High value company) Pull the foreigners back to Johor 2030 (More internal and external migration) due to livability/ wok life balance 2050 (salary as par as with Singapore)	excellence with Singapore and stay in an extremely competent level)	
Legislation					
Community Engagement	Niche development of resources	Effective engagement to the community Lack of communication with community	Homestay NGO to go to community	- One spokesperson to create credibility - Action oriented	

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
LEGOLAND MALAYSIA RESORT, NUSAJAYA, JOHOR

Logical Framework Analysis (LFA) Template
Date: 17th November 2015
Venue: Johor

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Future Cities/ Smart Cities	Public Transportation (Congestion)	Transportation (MRT, LRT) - BRT + buses integrated	Sustainable City/ Preservation of values which balances between Modernity & Tradition	Tourism as a main agenda for the government	Change Mindset among the stakeholders & (Communities) - Education - Schools
Technology	Lack of "bigger picture" / support	JB is not becoming like Singapore		Political involvement	Big events for Tourism (Sport, International kites Festivals, heritage related festivals) - Promotion to sailing be strengthened - Promotion of international events
Futuristic types of	Tourism is not on	JB is more about		To improve the Coordination among	Close collaboration /

products	the main agenda (think Tourism)	souvenirs / small sellers		stakeholders	coordination among agencies
Connectivity/Cross border JB – Singapore	Lack of awareness of the importance of tourism	Information Centre		Instil tourism values through Education (Tourism Education Schools)	Local products & offerings promotion
At the moment issues of Connectivity	Lack of straight direction (e.g. Cleanliness)	JB need to have a soul / Image		Language – development of both Malay and English	
Old product are also important – heritage/ culture/ tradition - Buildings (history) – conserve – (to continue the actual project) - No skyscrapers	Budget allocation for tourism	Sport Tourism as one product		Diversity	
Current Situation – tourists wants something unique/ but JB products not organised cohesively.	People not conscious about tourism	Food / Horseshoe Crab - Food trail existing at the moment		Strengthen local government support – infrastructure	
Bring culture/heritage to	Lack of Tourism values – Local	Educational Tourism		Facilitate / Amenities (Safety) hospitals	

the next level	government (Friendliness)				
Support from EU angles – promotion, Government, etc.	Lack of planning in terms of Sustainability for the future			Strong support from the State & local government	
e.g. Heritage Trail of JB – old outlets to be kept	Too much Connectivity (how to use) – JB Transit City (Fast Train) – can be legalise for transit. (Transit Inter-cities, i.e. High Speed Rails)				
Story telling – human factor even in the future	JB as a place "in between" Singapore and Malacca/KL			Availability of information for promotional purposes	
	Broaden horizon – MUAR (not only JB)				
	Island maintenance of the Southerners Tip				
	No colonisation of kampong				
	Decentred Development			Leveraging on current trend 'Internet of things' for promotion purposes	
	Not following the				

	strategies plans				
	Too much urbanisation might lose the traditional values				

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
LEGOLAND MALAYSIA RESORT, NUSAJAYA, JOHOR

Logical Framework Analysis (LFA) Template
Date: 17th November 2015
Venue: Johor

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to achieve desired outcome	Recommended Actions
Infrastructure	Jetty has to be upgraded, Airport (International tourist) 6 jetties, Limo not available, - Timing and ticketing, - Diving expertise for the local people. - Merchant divers (Singapore) - Promoting Singapore than Johor - Method of payment (local	- The standard of service is not up to par (emergency + crisis) - Local people is not Ethical and need proper training - No main power for local authority (MOTAC) - Not able to tap high value tourist		- Well regulations, first aid, insurance for boats, - Concession for the jetty and boats (charges and services upgraded) - Tourism infrastructure – needs upgrading - Well-functioning service for tourism; crisis management plan - Privatisation / concessionaire for jetties	- Self-regulation and give power and regulation (CSO more work) - Allow the industry associations to self-regulate – devolution of power & authority from MOTAC to industry

	economy) - Regulation and licensing has to be reinforced - Government (public transportation), heritage, no budget for public transportation (taxi), - Jabatan laut focused on the fisheries,				
Enforcement	- Not following the rules - Forestry (Honorary) - Probably enough regulations but lack manpower for effective regulation			Administrative facilitation - GST refund, Visa on arrival to be made available at more points of entry exit.	Allowed the self-regulation, impose fines, Re-engineered the process

| Regulations + Enforcement | - Concentrate improvements in the main tourism spots or contact points e.g. Mersing for island bound tourists
- (Food Toilets) Rating by tourists on operators, public facilities, star rating or recognition labels for excellence in particular products, service, facilities. | | | Social media
- Use this positively – take action on false marketing, reporting or prohibited areas
- Act on complaints – with proactive –monitoring
- Promote destinations, new measures, leverage on word of mouth | |
| Tourist guides | - Quality of tourist guides has dropped

- Training quality dropped – commercialised selection

- Return back to basics- only those suited for the job | | | Raise the value derived by service providers
- Quality of service provided not integrate, needs upgrading
- Better service provision through training, systems integration; licenced operators for all players
- Awards + recognition for high performers at the local level | |

	allowed to become guides.				

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
LEGOLAND MALAYSIA RESORT, NUSAJAYA, JOHOR

Logical Framework Analysis (LFA) Template
Date: 17th November 2015
Venue: Johor

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
	1. Environment I. Water Security			- Clean water/ river sufficient / water catchment - No proper governance (WC) - Protection of marine eco-system - Rain Water harvesting	
	II. Food Security			- Bio- Technology – Perma-Culture	
	III. Energy		Start from school level – in the DNA	- Renewable Energy - Waste to Energy - Immediate protection of current rain forest in Johor e.g. Endau-Rompin National Park (UN Status) - Elevate Standard of Tourism spot to meet UN standard - Political Will (Whole Department must be Sustainable & Green)	

	2. Culture			- Capture and preserve rebranding using technology and social media e.g. Congkak using Lego use STI	
	3. Social Needs			- Manpower, age-group, facilities & packages that suit all age groups - Hotel and infrastructure - Involvement of Local community e.g. Orand Asli Community (give land). Jakoa – Strengthen the role. - Engagement between tourism and local communities. Local momentous by local people. - Up scaling local craftsman (Training, skill development) - Tourist one stop centre	
	4. Climate Change			- Sea level will rise - Plan for low lying areas	

Sustainability of tourism development in relation to environment, culture and social needs and climate change

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
RIVERSIDE MAJESTIC HOTEL, KUCHING

Logical Framework Analysis (LFA) Template
Date: 16th December 2015
Venue: Kuching

Items of Interest	Items identified	Gaps	Desired Outcome 2050	Strategies to achieve desired outcome	Recommendation
Enabling Factors to Increase Dynamism					
Safety	*(Access, logistics, Communication, infrastructure)* Safety in National park Accommodation	Water based transportation safety issues.	Logistic of boat drives	Light weight fibre glass Walking – Trails, roads leading to the areas	Innovative boats Access trails First aid Satellite phones for communication
Safety	People with disability	No ramp and comfort access	Handicapped Children friendly Access to medical facilities	Medical facilities to facilitate the tourists	Usable Ramps Handicapped elevator
Security	Tourist Police at prime attractions	No ways to detect the flow of tourists		Police station (Tourist Police) at prime tourist spots	Tourist Police Cells Circuit TV and tracking devise (who's going in and spotting where they are).

					Self-guided system
Maintenance	Maintenance (jungles are very big and several missing incidents)	No tracking of maintenance	Tourist attractions	Continuous monitoring of technology, infrastructure,	More sustainable materials.
Education and legislation	No benchmark standard			Equip standard equipment	Legislation and supervision
Comfort	Cleanliness and hygiene Maintenance	No education and awareness in this regard	Rating system is not enforced	Rating by the users than	Integration of comfort and cleanliness (Tourism and city council). Embed into the education system
Connectivity	Sustain the connectivity	Rail connectivity	Landscapes and terrains (Not cutting the terrains but crossing through)	Direct flight to international destination	New generation aircraft Elevated Rail Travel (Through terrains)- Internal connectivity TTPA- Have a seamless integration in connectively

Marketing and Promotion	No more word of mouth 'Regeneration of Business Model'	Technology will completely takeover the marketing and promotion		Turnaround education system (Tourism and Hospitality). Digitalisation of education system	AI (Virtual reality): AI enabled marketing and promotion techniques (Virtual reality box) Tourist guide become a creative product creator. 'Internet of Things'
Workforce	Robotic hospitality Migration of current manpower	National HR framework need to change A person born in 2030 will have completely different education system when he reaches 20 years by 2050.	Landscape of the education and business integrate (Significantly different from the current)	Humans become creator of product creator to feed the robots	Transformation Digital education Integration of technology into the traditional business. TTPA (Everything is available in one place-flatten the regulation) AEC (ASEAN Economic Community)
Community Engagement	Urban centric development	No more 'rural' concept in 2050.		Enhance facilities in the rural areas Rural tourism need to redefine as there won't be any	Balance of rural urban migration Bring more facilities to the rural areas Make facilities in the

				'rurality'	rural areas (Entrepreneurial activities in the so called rural areas) Enhanced online connectivity (Technology penetration) – (technology has to go into rural areas)

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
RIVERSIDE MAJESTIC HOTEL, KUCHING

Logical Framework Analysis (LFA) Template

Date: 16th December 2015

Venue: Kuching

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Governance	• Haze from Indonesia *Heritage and Environment* • Knowledge and creating sensitivity to natural environment • Deeper understanding of local folklores, knowledge-linking to tourism • Safety and security -prevention of epidemic and disease • Maintenance and promotion of National parks, nature reserve, wildlife sanctuaries -Foreigners stealing seeds etc., smuggling	• Lack of resources, manpower to maintain park facilities. • Tourist should value local culture and lifestyle • Linkage with traditional knowledge and tourism • Lack of affinity for youth with natural setting of the country • Communication from top to bottom authority	• Should know to preserve the cultural heritage and environment • Railway connectivity • Connectivity between cities.	• Impose rule to ban open burning for commercial purposes (Incorporating NREB) • Promote local handicrafts and Sarawakian products. • Include in school curriculum (long term) -Knowledge -Behaviour (changing mindset	

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	them out of the country *Preservation of local culture*	• Agency to preserve and promote ethnic groups in Sarawak • Preservation of Borneo's literature and ethnic literatures and translate those which are in Dewan Bahasa and Pustaka		from early age) • Educate young and adults. • Changing behavioural patterns through hard way (Law) and soft way • NGOs • Border controls on illegal entry.eg. Biometric system/ Data bank • Effective imposition of laws.
	Cleanliness of Public facilities • Cleanliness of toilets	• Water Catchment management (Addressing pollution, waste management, watering plantations, developing areas with less water catchment.		
	Flow of ideas to policy makers and government agencies	• Political parties should not be based on race.		
	Safety and Security (Night walk)			• Practice from schooling • Redesign of facilities
	Influence tourist behaviour			• Improve communication

	to be consistent with local culture *Increasing number of crocodiles in Kuching* • Not promoting its attractiveness in tourism			• Use more community involvement in tourism projects and planning	

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
RIVERSIDE MAJESTIC HOTEL, KUCHING

Logical Framework Analysis (LFA) Template
Date: 16th December 2015
Venue: Kuching

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Future Tourism • Eco-tourism (No.1 in the world) • CAN (Culture, Adventure, Nature) • Involvement of WWF, NGOs and conservation bodies. • Conservation and preservation of the bio diversity-	• Connectivity • Accessibility • Communication -one body exists to coordinate; but requires specialisation -Nobody regulating • Limited budget for tourism promotion • Lack of synergy (Federal and State) • Lack of enforcement • Lack of conservation • Infrastructural development • Compartmentalised expertise	• Destination image and branding • Stable government policies. • Issues of staged authenticity and constructed authenticity. • Culture not promoted properly • No support from state government • Limited budget • No synergy	• Persistency, enforcement, regulation • CAN • Sarawak as Eco-tourism Playground for the world by 2050 • No hunting • Bring eco-tourism to the top	• Engage conservation organisation -Provision of incentives -Promote research tourism • More environmental documentaries -Involvement of celebrities • Common guidelines/ plans for tourism development -Kuching as hub of Borneo -To develop all the stake holders	• Sarawak needs to be focus area for nature tourism in the world. • Replace oil palms with tropical rain forest trees. • More funding for Tourism Development

flora and fauna • Preservation of culture and community-heritage and history		between local and federal government • No funding for highways, railway • No good policy • Tourism not considered as part of planning • Limited involvement of people and local community • Consideration from the federal		• Synergies between tourism authorities at federal and state level • More funding and subsidies for tourism promotion, tourism development and infrastructural development • Enforcement for protection in administration	

MEGA SCIENCE 3.0-TOURISM INDUSTRY SECTOR-WORKSHOP
RIVERSIDE MAJESTIC HOTEL, KUCHING

Logical Framework Analysis (LFA) Template
Date: 16th December 2015
Venue: Kuching

Items of Interest	Issues	Gaps	Desired Outcome to 2050	Strategies to Achieve Desired Outcome	Recommended Actions
Sustainability	• CULTURE: What needs to be preserved: *Heritage building:* -Main Bazaar -Fort Margherita -Old court house -Chinese museum -Textile museum -Longhouse tour (Education, community involvement) -Sarawak Museum -River cruise -Festivals- Art and craft, RWMF, food, Gawai festival. • ADVENTURE:	• Education and communication issue (Bureau) • Tourist friendly opening hours • Innovation (Festivals) • Marketing and promotion of events (Advanced planning) • Safety and insurance • Professional guides		• Continuous training	

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	-Accessibility -Controllable capacity -Transportation -Licenced tour guides -Signage -Rules and regulations • NATURE: -Beach -Resort -Cave -National Park -Forest Reserve -Mountains -River	(passion & attitude) • Local involvement • Waste management (Energy, water wastage)		• Stop pollution • No waste • Close loop system • Green technology for construction (last 100 years) • Buffer zone for parks, rivers • Decentralised resources • Community must be self-sustainable.	

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