Tourism in tropical rainforests, a blessing or a curse? Is eco-tourism the way forward?

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Tourism In Tropical Rainforests, a Blessing or a Curse? Is Eco-tourism the Way Forward?

Introduction

Equatorial tropical rainforests cover less than 7% of the earth’s surface\(^1\) yet are one of the most biologically diverse areas of the planet and arguably the most important biome in terms of resources. With high temperatures, on average 27 degrees Celsius, but often reaching 32 degrees, and annual precipitation of a minimum of 2000mm\(^2\) it creates the ideal conditions for plant growth resulting in a very high NPP (net primary productivity). This allows the biome to support vast numbers of organisms and complex food webs. The tropical rainforests are extremely biologically diverse; home to 90% of all primates, 1/5 of the world’s birds, over 50 million different species of invertebrates and 2/3 of the world’s plants\(^3\). Many of these plant species are used in medicine and around 2000 plant species\(^4\) which are found only in the tropical rainforest have anti-cancer properties. However with increased pressure on the environment many of the plants and species in the rainforest are becoming extinct or endangered such as the Bornean orangutan, pygmy elephant and sun bear\(^5\). Due to the large range of wildlife, the tropical rainforests are becoming increasingly popular with tourists. There are more and more visitors to rainforests resulting in many benefits especially to the economy, however there are many potential downsides to this increasing number of travellers, especially on the environment.

\(^1\) COMMONLY ASKED QUESTIONS AND FACTS <http://www.rainforestfoundation.org/commonly-asked-questions-and-facts/> [accessed 7 April 2016].
\(^2\) Gillett, Meg, Ecosystems (2005), p. 53-64. - : (Hodder Education 30 Dec. 2005)
\(^3\) Gillett, Meg, Ecosystems (2005), p. 54. - : (Hodder Education 30 Dec. 2005)
\(^5\) The IUCN Red List of Threatened Species <http://www.iucnredlist.org/> [accessed 12 December 2015].

Figure 1 - <http://www.ducksters.com/science/ecosystems/world_map_rainforest.jpg>
Benefits and
Problems of Tourism Discussed.

Economic

Tourism can have huge economic benefits for the country contributing to the GDP but also supplying jobs for the people in the local surrounding areas. Tourism’s contribution to Costa Rica’s GDP has increased massively from 2002 where it contributed 1.1 billion US$\textsuperscript{6} to the economy to 2014 where its direct contribution increased to 2.4 billion US$ and the total contribution rose to 6.2 billion US$. The direct contribution is set to rise by 2025 to 3.8 billion US$.\textsuperscript{7} Tourism generates large amounts of money which is increasing every day, supporting and growing the Costa Rican economy allowing more money to be spent on education, transport, health and other public services. The economic theory known as the ‘multiplier effect’ plays an important role here. The number of jobs created and supported by the industry has also increased from 140,000 in 2002\textsuperscript{8} to 247,500 in 2014\textsuperscript{9}. This is helping to lower unemployment and means the locals can generate an income and support their families by getting jobs in transport and services. However there is a downside as many of the jobs created are poorly paid and with the large hotels and organisations the majority of the money made is sent back to the company headquarters in other countries, often MEDCs. With small locally run hotels, the money generated stays in the country and can be fed back to the people and the economy of that specific country. Overall I feel that the positives outweigh the negatives as although the jobs in large hotel chains may not always be the best paid, they are still jobs for the local people in areas where unemployment can be high and where there are greater social issues in the community.

Social and Cultural

Tourism has benefits socially as it allows people to experience different cultures and ways of life. For example in the tropical rainforests there are many indigenous tribes with different cultures and rituals such as the The Penan of Sarawak in Borneo and The Huli tribe in Papua New Guinea. This tribe live by

\textsuperscript{6} John Rutter, ‘An Ecotourism Case Study Costa Rica’, Geofile online, (September 2004).

\textsuperscript{7} World Travel and Tourism Council, ‘Summary tables: Estimates & Forecasts’, Economic impact 2015

\textsuperscript{8} John Rutter, ‘An Ecotourism Case Study Costa Rica’, Geofile online, (September 2004).

\textsuperscript{9} World Travel and Tourism Council, ‘Summary tables: Estimates & Forecasts’, Economic impact 2015

\textsuperscript{9} Costa Rica, (2014),
hunting and gathering, and use pigs as their currency, and also to pay for weddings and funerals\textsuperscript{10}. The Huli are known for their tradition of wearing wigs used as intricate headdresses laden with feathers, as shown in figure 2. They use these for ceremonies where they also cover their bodies with coloured clay. These wigs are created by a specific group, the Huli Wigmen who live separately from the rest of the tribe and there is a strong belief that to be a master Wigman you need to have special powers.\textsuperscript{11} By visiting the rainforests people can gain new experiences and really broaden their knowledge of the world and of the people within it. However one of the downsides is that with more and more visitors indigenous tribes may become increasingly westernised and lose their traditions and beliefs. Often the younger generations are being influenced by tourists and western culture and aspire to the wealth, bright lights and technology of western society, so they do not wish to learn any of the traditional skills or crafts resulting in the elders’ wisdom not being passed on. Customs and traditions may be lost forever. One example is The Sapanahua tribe on the boarder of Peru and Brazil, who first made contact with the modern world in 2014. They used to wear traditional outfits made of very little with the resources they found and hunted with tools and spears they made themselves\textsuperscript{12}. After having contact with modern Brazilian people they have taken up modern clothes and tools which is an advantage to them as it helps improve their survival in the jungle. However it means their traditional way of living is altered.

Often Westerners may not respect these different cultures and this can sometimes result in conflict between the tourists and the local people, leading to violence and the occasional murder of tourists. In one incident a group of tourists from Britain, Canada and Denmark posed naked on the top of Mount Kinabalu, a sacred mountain in the Malaysian state of Sabah. There were also reports that they urinated and insulted their guide. The photos were posted on social media and then a few days later there was an earthquake of magnitude 5.9 which killed 16 people including children on a school trekking trip. This led the Deputy Chief Minister of Sabah to believe that the tourists caused the earthquake by disrespecting the sacred mountain. He said 'There is almost certainly a connection. We have to take this as a reminder that local beliefs and customs are not to be disrespected.'\textsuperscript{13} A complaint was made

\textsuperscript{10} TRANS NIUGINI TOURS , Huli Culture <http://www.pngtours.com/huliculture.html> [accessed 21 May 2016].

\textsuperscript{11} Huang Nellie , Meet The Huli Wigmen of Tari Highlands, Papua New Guinea. (February 12, 2014) <http://www.wildjunket.com/2014/02/12/tribal-culture-papua-new-guinea-huli-wigmen-tari/> [accessed 21 May 2016].

\textsuperscript{12} Mclaughlin Kelly, 'Canadian, Dutch and German tourists who posed naked on top of 'sacred' mountain are blamed by Malaysian government for causing earthquake that killed 16', Daily Mail, (June 2015), in <http://www.dailymail.co.uk/news/article-3114759/Malaysian-government-blame-naked-tourists-causing-deadly-earthquake-violated-sacred-mountain.html> Canadian, Dutch and German tourists who posed naked on top of 'sacred' mountain are blamed by Malaysian government for causing earthquake that killed 16> [accessed 15 July 2016].

Figure 2 - <http://blog.powersof10.com/wp-content/uploads/2012/01/png-huli-men_25542_600x450.jpg>
by a park ranger and five out of the ten tourists were arrested. Tan Sri Alfred Jabu, the
deputy first minister of Sarawak state, also believed the tourists were to be held responsible
for the earthquake and that they should be punished for their actions. Tribal elders have also
called for the case to go to court and for each involved to be fined the head of a buffalo,
sticking with local customs. This incident just shows how important it is for tourists to
respect the beliefs of the country or place that they are visiting; Tan Sri Alfred Jabu stated
that “Some places have their own historical background and are sacred to the local
community and, as such, visitors to these places should respect the place, the local
traditions and cultures.”

So when the ‘west’ meets ‘traditions’, respect is vital; especially in
this modern world where people can travel so easily with minimal cost and effort.

Locals may also feel that the rainforest is their land and belongs to them, and is not there for
hotels to be built on, or for tourists to visit, resulting in tension and a disconnect between
the richer tourists from MEDC’s and the local people. For example, The Virunga National
Park in The Democratic Republic of Congo is a nationally protected area of around two
million acres. There are more than 700 bird species, 200 mammals and 480 of the worlds
remaining mountain gorillas. There are huge amounts of people living in extreme poverty
around the edges of the park, many are refugees fleeing from Rwanda due to ongoing
conflict. Essentially the park is in the middle of a war and this does cause issues when trying
to protect the gorillas and the environment. As the park is protected the local people are not
allowed to use any of the natural resources within the park, so there is no fishing, foraging,
wood gathering, farming, poaching or mining permitted. This has caused a lot of resentment
towards the park and the tourists and often results in illegal industry but also resistant
groups and rebel militia. They ignore the laws and many, in defiance, will kill the wildlife,
take over sections of the park and have even been known to murder the park rangers who
aim to protect and care for the mountain gorillas and the area; 140 rangers have been killed
in the past decade. Although a first class hotel was opened in 2012 and another in 2015,
there are very few tourists due to all the violence and rebellions against the park. This is an
example of national parks and tourism not working in harmony with the complexities that
may exist in more politically volatile areas of the world and with the surrounding people,
which then escalates massively into serious issues. A concern is that as we live in a
‘shrinking’ world these situations will increase into the future.

14 Alexander Harriet, Patrick Sawyer and Victoria Ward, 'British tourist Eleanor Hawkins ‘scared, upset
and sorry’ after arrest for naked photo on top of Malaysian mountain', The Telegraph, (June 2015),
in <http://www.telegraph.co.uk/news/worldnews/asia/malaysia/11665218/British-tourist-Eleanor-

15 Worrall Simon, National Geographic , A Prince Battles to Save Gorillas Amid Brutal Conflict (11
June 2015) <http://news.nationalgeographic.com/2015/06/150611-virunga-national-park-
emmanuel-de-merode-africa-world/> [accessed 15 July 2016].

16 Draper Robert , 'The Battle For Virunga', National Geographic, (July 2016),
Figure 3 - <http://intelligenttravel.nationalgeographic.com/2015/12/30/dian-fosseys-living-legacy-
the-mountain-gorillas-of-rwanda/>
Dian Fossey Case Study

Dian Fossey was a primatologist and zoologist, who undertook extensive studies into Mountain Gorilla groups for approximately 18 years, most of it spent in the Rwandan side of the Virunga’s, Africa. She had extremely strong feelings towards the conservation of the gorillas, and was against any form of tourism in the Virunga’s. She became increasingly aware of the threat to them from humans through things such as deforestation, cattle farming and poaching. Due to this she began destroying traps and confronting poachers, and hiring guards to protect the park. She was adamant that without immediate action the gorillas would not be able to be conserved in the long term. To truly study and research into the gorilla behaviour and daily life she needed to be able to identify specific individuals. To do this she needed to gain acceptance by the gorillas and for them to become familiar to her (figure 3). She would imitate their noises, their way of walking on their knuckles and would often chew on wild vegetation. Through these actions she was able to gain their trust and conduct vital research into the species.

Fossey was strongly opposed to tourism for the reasons that gorillas are extremely susceptible to human diseases such as influenza. Tourism was also viewed as an interference into their natural behaviour and she criticized tourist programmes even though they generated money for conservation. Close contact between animals and humans can cause diseases to be passed on to the animals. The apes, especially gorillas and orangutans, are very susceptible to respiratory diseases and infections due to their immune systems not being adapted to human diseases and also due to them being genetically similar to humans. Diseases which can be passed over are polio, diarrhoea causing pathogens, measles, influenza, colds, pneumonia, human respiratory syncytial virus (HRSV), human metapneumovirus (HMPV) and Ebola which is the most serious. A report showed that between June 28th and August 6th 2009 there was an outbreak of a human respiratory disease in Rwanda which caused 11 of the 12 gorillas in one group to fall ill; 2 of whom died.

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17 Dian Fossey A Legendary Biography <https://gorillafund.org/who-we-are/dian-fossey/> [accessed 9 June 2016]


However, tourism to visit the gorillas does generate money which is used to further help conserve them and allow there to be more guards and rangers to prevent things such as poaching. The Dian Fossey Gorilla Fund has a different view to Fossey and actually promotes tourism due to the money it generates and the way it creates a stable community which aims and strives to protect the gorillas. Fossey’s thoughts on tourism are understandable however one could argue that her own views are counteracted by her work with them. Fossey herself was spending so much time at close contact with the gorillas she was also a threat to them and was still very capable of transferring human diseases to the creatures that she was working with. The really interesting dilemma is that the gorillas’ biggest threat are humans, but ironically humans are also their best chance at survival in the future. The ideal situation would be for the gorillas to live in a protected area with absolutely no human influence whatsoever, but this would be near impossible to do; due to limited funding, the threat from oil companies wanting to explore Virunga and ongoing conflict in the region. Overall there are not a huge number of cases documented of apes getting human diseases and being severely impacted by it, so I believe currently tourism is the best option for the gorilla’s survival in the future.

Environmental and Conservation Areas

One of the benefits of tourism on the environment is that it can create areas of the rainforest which are protected from poachers and illegal loggers. Clearing the rainforest for agriculture accounts for 80% of the destruction of the rainforest, so having protect areas is vital. These parks and reserves are able to thrive without being destroyed or damaged by human interference. The Central Amazon Conservation Area, (Jau Park) is one of the largest protected areas in Brazil which contains the entire Jau river basin. The park is classed as an IUCN national park protected area (category II). This means the objective is to protect the ecosystem and there are aims to help contribute to local economies and listen to the local and indigenous people’s needs and views. They also try and promote tourism on a scale which will not severely impact or reduce the success of the conservation efforts. The park was also declared by UNESCO as a world heritage site.

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in 2000\(^{22}\), so it is very well protected and any tourism in the area is monitored carefully. You have to pay a daily maintenance fee of R$ 3 per person per day and then an additional charge of R$ 16 to R$ 64 is paid by each boat when you arrive, depending on the size. This money generated can then be used to further protect the area and go towards any improvements or repairs to infrastructure within the park. Any visitors to the park can experience the wildlife and large biodiversity but with minimum damage to the environment. Many reserves for example Mulu national park in Borneo will have specific trails and routes all with wooden walkways to prevent the trampling of plants on the forest floor. By doing small things like this and allowing tourists to visit the rainforest but in a more sustainable way, it raises awareness of the threats to the environment and helps to try and get the visitors to change the way they travel and become more sustainable in their actions. It’s a ‘top –down’ approach as the governments and big organisations such as UNESCO and IUCN protect the parks and manage activity but it also helps encourage individuals to improve how they travel.

**Political Issues**

There are a lot of politics surrounding endangered species in the world and whether it is worth maintaining the huge range of biodiversity or if this is the process of evolution and the weaker species just simply die out. Many organisations such as the WWF believe that biodiversity should be maintained and the main reason many are becoming endangered is due to the human impact on them and the environment in which they live in. On the 24\(^{th}\) of September 2016 a CoP17 meeting of the Conference of Parties to the Convention on International Trade in Endangered Species (CITES) began in South Africa. This was where experts from around the world discussed the future of the planets endangered animals and tackled 62 different proposals concerning over 500 species\(^{23}\). The future and survival of the endangered species is a very current topic which is being addressed by a variety of meetings and groups such as COP21 and G8 meetings, however although many agreements are being made action needs to take place for there to be any success in preserving species from further extinction

Furthermore scientists still don’t know the full extent of which all the plants in the rainforest could help fight diseases and cancer. Therefore clearing the rainforest for space not only has a negative impact on the biodiversity of the area but may also be reducing the chances of curing cancer, due to the loss of important plant species. GSK are a British pharmaceutical company with headquarters in London which was established in 2000. It invests its resources in a variety of different areas but currently has specific interest in rare diseases, HIV, and

\(^{22}\) Central Amazon Conservation Complex <http://whc.unesco.org/en/list/998/> [accessed 9 June 2016].

respiratory diseases. They help fund and get involved with a range of projects and research programmes however the majority of these are found in the UK or other MEDC nations. This large TNC only really funds other major projects in MEDCs rather than starting or getting involved in smaller projects in less developed countries. Again there is a disconnect between the richer more developed nations and the poorer, less developed nations of the world. For the rainforests and their huge medicinal value to be saved from deforestation and the negative effects of tourism, it is so important for the powerful political G8 countries and organisations to work in partnership with weaker LEDCs.

**Water Issues**

Tourism also has an effect on water supplies. Often in warmer climates tourists drink and use much more water than they normally would or than the locals do. Moreover, things like golf courses and swimming pools in luxury resorts use huge amounts of water causing excessive extraction. This may result in a scarcity of water. An average golf course in a tropical country such a Thailand uses as much water as 60,000 rural villagers, but also 1500kg of fertilisers and pesticides. Therefore there is also the issue of contamination and pollution of fresh water sources. Sewage, chemicals and waste are often pumped into the rivers or sea polluting them, this can harm wildlife and plants so has a real negative effect on the environment but also the local communities. Many of the locals may use the river for water or washing, so by polluting it there is also an effect on the people. This shows again a massive disconnect between the richer MEDC visitors and the locals in more LEDC nations. It’s important for there to be less of a divide and split between the two types of nation as it not only has an effect on the local communities but makes it harder for tourism to be sustainable. The high flying luxurious experience many richer visitors may want in the rainforests is not at all sustainable and does have huge impacts on the environment.

Overall tourism has huge benefits to the economy of a country and massively helps with development due to the increase in GDP and jobs. It’s also positive for the visitors to the country as it allows them to experience new cultures and embrace the rich biodiversity in the area, however there are negatives to the locals like poorly paid jobs and disrespect to their culture. There can also be huge negatives to the environment which I feel is the most severe consequence of tourism; so it is both a blessing and a curse. Regular tourism is not entirely bad but things should be done to make it as eco-friendly and sustainable as possible to help minimise the negative effects. This is where ecotourism should be examined further.

**Case Studies: Costa Rica and Borneo**

In this section I will compare the eco-tourism in both Costa Rica and Borneo. I chose Costa Rica as it is often seen as a good example for eco-tourism around the world due to the large

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numbers of Eco lodges, national parks and laws in place to protect the rainforest. I chose to compare Costa Rica against Borneo as I travelled there in 2014 and experienced first-hand the tourism which goes on in the country. It is not necessarily seen as being big on ecotourism but it is becoming an increasingly popular holiday destination with tourists; so there is a growing pressure on the island to increase their sustainable tourism and protect the rainforest. However the question is, is ecotourism really the way forward for both of these countries and other nations in the rest of the world? Is it able to minimize the negative effects of tourism? To what extent can countries make their tourism sustainable and are Costa Rica and Borneo doing the best that they can?

Costa Rica welcomed approximately 2.4 million tourists in 2013\textsuperscript{26}, many attracted by the rich wildlife and biodiversity of the tropical rainforests which cover around 21% of the country\textsuperscript{27}. Due to the increasing levels of tourism Costa Rica has invested in encouraging eco-tourism and protecting the rainforest; so that the country could still receive the economic benefits from tourism while reducing the impact to the local people and the environment. One big part of eco-tourism in Costa Rica are Eco lodges, an example being Lapa Rios (figure 5). Lapa Rios tries to be as sustainable as possible with their seventeen bungalows and 1000 acre private rainforest reserve. There are lots of small scale specific things they do to ensure sustainability as well as broader things such as education. They use biodegradable soaps and shampoos in the rooms and there are very few electronic devices to ensure electricity usage is low. There are two showers a cold water one and then one which the water is heated up by solar panels. They used local natural materials to build the rooms and the main lodge of which 70% of the materials are renewable. The lodge also reports illegal logging and other activities to the local authorities and there is also a forest guard on duty to make sure no illegal poaching goes on in the reserve. The lodge also has aims for the future such as expanding the nature reserve and the land protected. Lapa Rios stresses the importance of education and raising awareness. All their staff are local people from the communities around the reserve. Some used to be loggers or cattle rangers but after education and training they are now working with the rainforest and the lodge, many as guides giving tours. They believe that “Acres of sustainability”\textsuperscript{26}.  

\textsuperscript{26} Sustainability \texttt{[http://www.anywherecostarica.com/sustainable]} [accessed 15 June 2016].

\textsuperscript{27} Costa Rica Forest Information and Data \texttt{[http://rainforests.mongabay.com/deforestation/2000/Costa_Rica.htm]} [accessed 16 April 2016].

Figure 5 - \texttt{[http://www.laparios.com/lodge/]}
land are not needed nearly as much right now as acres of attitude.”

So the attitude to the rainforest and the environment is the driving force behind protecting and conserving it. The lodge was also the first hotel in Costa Rica to be awarded five stars from the Certification for Sustainable Tourism (CST) in 2003. The Certification for Sustainable Tourism is a program which aims to help Costa Rica’s businesses to take the view of maintaining the country’s rainforest in the long term rather than focusing on expanding their business massively in the short term with disregard to the effects on the environment. The program rates businesses on their sustainability and interaction with the environment and also the local communities; giving them a rating from zero to five. It’s a great way to encourage sustainability as it gives companies and businesses something to aim for and to try and achieve. However these methods and developments are very small in scale in what is a booming tourist industry. Tourists from the developed areas of the world are extending their influence and impact all over the world rapidly. So it is doubtful that places like Lapa Rios in Costa Rica are really enough to manage these fragile environments. For eco-lodges to make a seriously noticeable difference in protecting the rainforests they need to be developed to a large scale which is currently not occurring.

There are Eco lodges in Borneo although they are less well known and there is less attention from the rest of the world which surrounds eco-tourism there. An example of a good eco lodge in Borneo is The Rimba Orangutan Eco lodge located in Kalimantan, 90% of their electricity is generated from solar panels, so a renewable resource meaning carbon emissions are limited. Sukau Rainforest Lodge on the Kinabatangan River also has a green policy in place. All hot water is supplied by solar hot water heaters and the lodge is 100% self-sufficient with water. They collect rainwater, filter and chlorinate it for use. Nothing is discharged into the river, there are sceptic tanks at the lodge, organic materials are composted and the rest is returned to the nearest city for disposal and recycling. This prevents the water in the river from being polluted but the non-biodegradable waste is simply moved to a different area so the process is not entirely without flaw as it creates pollution in other areas. For a lodge to be fully sustainable they need to implement the smaller things such as LED light bulbs and have biodegradable shampoos as well as the larger scale choices such as making sure all the energy comes from sustainable and renewable resources and becoming self-sufficient with water.

Overall I feel like the Eco lodges in Costa Rica are better on a whole and implement more eco-friendly ideas. However there are things which can be taken from Borneo lodges, such as having solar panels to supply the electricity, which Costa Rica and more lodges in Borneo could implement to become more sustainable.
should look into and potentially take up to become as sustainable as they can. Also having programs in Borneo such as the Certification for Sustainable Tourism would definitely help more businesses to become as sustainable as they can be. Again I am not sure this is enough. It is a great start at moving tourism forward into something more sustainable and eco-friendly but many hotels and lodges develop without any sustainable links at all in the rush for development and to be successful in the growing industry. It is a huge concern that this is occurring and ultimately greed may be the winner and the awareness and appreciation of the wildlife may not be enough to conserve it for generations to come.

The main issue with Borneo is the geopolitics. The island is run by three different independent countries, Indonesia in the south, and Brunei and Malaysia in the north, figure 6. Indonesia controls most of the island’s land at 73%, then Malaysia with 26% and Brunei with only 1%\textsuperscript{32}. The Malaysian side is split into two different areas, Sarawak and Sabah, and the Indonesian side is known as Kalimantan. The politics of the island has an impact on the rainforests and ecotourism, as the three governments can have contrasting ideas over the future of the island and its development as a whole. Rather than the rainforest being looked at as a whole and working together as one, it is split into three separate areas resulting in pockets of protected forest. This makes it difficult for animals to move around between areas to look for food sources and mates. There is a lack of integration and a co-ordinated approach when it comes to protecting the country. This may also cause tension if one government does much more to help conserve the rainforest than another does. There is definitely a difference within the three governments about environmental laws. Brunei is still in the early stages of creating and developing laws to conserve the environment, and although they only control one percent of the island it is still important to have these types of laws in place. This vastly contrasts to Kalimantan and Malaysian Borneo who both have several laws already in place. The Malaysian wildlife law contains provisions which help with the conservation and protection of all wildlife and their habitats, Sarawak and Sabah have further laws made more appropriate towards the tourism

\textsuperscript{32} Borneo Futures - Science for Change, Scenery <http://www.borneofutures.org/scenery.html> [accessed 9 June 2016].
Figure 6 - <https://1.bp.blogspot.com/-nJDgZlfWew8/VsDuM4f4t8I/AAAAAAAAAYc/7OhaPZ63w3U/s1600/Film-Tv-Photo-in-Borneo.jpg>
industry. Kalimantan has laws very similar to Malaysian Borneo which act as a framework for the development of the ecotourism on the island and there are strict rules for tourists.

There is quite clearly a disparity between the laws in the three areas reflecting not only the different levels of development but also how much effort is truly being taken to protect Borneo’s biodiversity by the three countries. The number of national parks in the varying areas is also a good indicator of this. For example the number of national parks in the three areas of Borneo differs greatly. In Sarawak there are 22 national parks and in Sabah 7 national parks resulting in a total of 29. However in Kalimantan there are only 8 national parks, so although the area of Kalimantan is massively bigger than Sarawak and Sabah there are fewer national parks. Therefore politics and control from the governments, a ‘top-down’ approach is hugely important in order to achieve sustainability, and as Borneo shows this can be difficult to achieve especially when multiple different governments are involved. These three governments are very different but then very geographically close so it is difficult to say if these issues can be overcome, but for the future of the Bornean rainforests the issues between the three nations will need to be pushed aside. Costa Rica currently has over 160 protected areas; of which 26 are national parks, shown in figure 7, and then there are further privately run reserves protecting the remaining rainforests, cloud forests, wetlands, and tropical dry forests. The country has been a world leader in conservation for many years with the highest percentage of landmass protected in the entire world. The national parks are run by SINAC (Sistema Nacional de Areas de Conservacion) which is a specific department of Costa Rica’s ministry of environment and energy. An example is Braulio Carrillo National Park where the protected zone covers 108,970 acres of rainforest and Barva Volcano. The park is home to 6,000 species of plant, 500 bird species and 150 mammals including jaguars, tapir and white faced monkeys. There are two entrances to the park which charge an entrance fee of $7, by

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doing this it supports the local communities and allows the park to be maintained. There is a highway which runs through the park which although making the park more accessible for the 12,000 visitors a year, does result in some pollution to the surrounding area. In terms of only national parks then Borneo has more compared to Costa Rica but the total area which is protected Costa Rica covers more of the rainforest. Costa Rica, however is much smaller than Borneo at 51,100 km\(^2\) contrasting to 743,330 km\(^2\), making Borneo the third largest island in the world\(^37\). Due to Borneo being such a large island there are still going to be many areas rich with biodiversity that are not protected and are vulnerable. Borneo needs to follow in Costa Rica’s footsteps and conserve as much of the rainforest as they can. Costa Rica is a world leader in conservation and sustainable tourism and so it’s not just Borneo but many other nations which could use Costa Rica’s past and present experiences to help them and improve tourism in their nation.

In Borneo and Costa Rica there are various wildlife rehabilitation centres and sanctuaries which help injured species found in the forest. Sepilok Orangutan Rehabilitation Centre in Borneo was founded in 1964, and is located in the Malaysian district of Sabah. The centre is made up of 43 square kilometres of protected rainforest in which 60-80 orangutans live freely. There is also a centre built to care for the orangutans where approximately 25 young orphans are cared for\(^38\). The orangutan centre is open to the public and is one of the main tourist attractions in Borneo. There are two feeding times at 10am and 3pm; this is where a keeper will put a pile of fruit onto a platform and the tourists stand on a different platform to watch the orangutans (figure 8) As the orangutans are semi wild there is no guarantee that they will come to the platform for food, it is completely their choice. Generally it is the young ones which come down but if the fruit is ripe in the forests then they are less likely to come down from the trees. After the feeding all the tourists leave the park where the orangutans are so there is a limited human impact on them and they can have time to roam the forest with no human interference. The

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Figure 8 – Image taken by Cassie Senn, Borneo August 2014
money generated from the tourism supports the orangutan sanctuary and allows new buildings to be built or existing ones to be improved. This means the rehabilitation centres capacity can be increased so more injured or orphaned orangutans can be rescued and helped. With the rapidly growing tourism industry this would result in more visitors and potentially allow the park to expand. However despite all the positives and how sanctuaries like this are a great way of allowing tourism but with a reduced impact on the orangutans and surrounding environment, it is most likely not going to be enough. The rainforests need developments like this on a much larger scale to truly help make a difference and for tourism to move more in the direction of being sustainable.

Similarly in Costa Rica, The Costa Rica Animal Rescue Centre is a non-profit organisation that rescues injured or abandoned animals which are found by local people, volunteers or sometimes even tourists. Staff and volunteers work to care for the animals, rehabilitate them and eventually release them into the wild. In 2015 eight two-toed sloths, one toucan, one anteater and one kinkajou were released back into their natural habitats. The rescue centre is not open to tourists but relies on donations from the public and money donated from volunteers who work at the centre for a minimum of seven days. To further expand the centre and rescue and rehabilitate more animals they could open up to tourists like Sepilok Orangutan Centre, as it would provide a more stable influx of money. Tourists could be educated on the wildlife and the importance of not harming the environment while the income would allow more animals to be cared for. However again this is a development on a very small scale which is unfortunately not going to make a vast amount of difference in the grand scheme of things. The tourism industry is growing exponentially and therefore many developments are rushed without any consideration into sustainability or the impact on wildlife. For there to be a real noticeable difference rescue centres and sanctuaries need to be on a much larger scale than they currently are, but also need to raise awareness of the dangers of tourism on these creatures globally and not just to those that visit.

Conclusion

In my view Costa Rica is definitely the better nation at managing tourism in a more sustainable way than Borneo, through their political stability, national parks and true focus on eco-tourism. There are however ideas which both countries can take from each other such as making sure their energy is coming from renewable resources and that the governments are working together. Although the majority of the plans and ideas which have been implemented are small scale and will not make a global difference it does all contribute. It is a start at moving forward and creating a better future for the rainforests. Therefore eco-tourism is a very good and effective answer to reducing the negative impacts of tourism although it’s still not perfect.

Although both Costa Rica and Borneo nationally are doing well to make tourism sustainable with the implementation of laws and programs, eco lodges, national parks and animal

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39 About Us - Our Objectives and The People <http://www.costaricaanimalrescucenter.org/> [accessed 21 May 2016].
rehabilitation centres; it is not going to be possible for tourism to be fully sustainable due to a few things. Firstly the travel to reach the destinations such as Borneo and Costa Rica, for many results in long haul flights. Airplanes consume huge amounts of energy and release carbon emissions, as well as sulphates and nitrogen oxides by burning large amounts of toxic fuel. Long haul flights produce on average two times the emissions per mile travelled in a car and short haul flights three times as much\(^40\). This all contributes to global warming and climate change which in turn may affect the rainforests and other habitats. Unless there are huge advances in air travel making planes more efficient and less polluting, travelling to your destination will not be fully sustainable.

To allow tourism to move forward the differences and disconnect between the MEDC nations and the LEDC ones, which are quickly becoming popular tourist destinations, need to be addressed. Nations such as the G8s need to work with the less developed countries as do powerful TNC’s and help to fund projects and developments and raise awareness. The high flying luxurious lifestyle that is often a part of those in MEDC’s is not sustainable or really appropriate in many situations in the rainforest, so there is also the need for the MEDC’s to educate their people on more sustainable behaviour in the rainforest regions. A lot is now down to the tourists themselves, there needs to be a ‘bottom-up’ approach and not just a ‘top-down’ one. They need to be educated and change their attitudes to value the environment more and respect it. For example not littering, not taking extremely long showers to avoid wasting too much water, not leaving electronics charging for huge amounts of time, but also not expecting as much luxury. By not expecting the hotel or lodge to be five stars with a top quality golf course it allows lodges to focus on being sustainable rather than having to have the facilities to accommodate demanding visitors. By expecting less you can actually gain more by having a sustainable trip with a limited effect on the environment. Nevertheless, not all tourists would be willing to adapt and go to Eco lodges so again tourism is never going to be fully sustainable, but it can be sustainable to a great extent if the countries implement as many ideas, laws and programs as they can while visitors work alongside this and travel in an eco-friendly manner.

The biggest concern is perhaps the scale of worldwide tourism particularly as more and more nations, especially those which are largely populated such as China and India move along the development continuum. This causes a rush for development to cater to all the increased visitors and their needs, with very little thought for the negative implications of this on the rainforest. The demand for a perfect environment, wildlife and culture becomes even more pressurised with the influx of people. Eco tourism is definitely a way forward and an effective one too as long as the leaders and governments of countries and tourists cooperate and are fully committed to making tourism sustainable; not just on the surface but deeply. Sustainable tourism needs to be the focus for it to truly be achieved.

\(^{40}\) [http://www.flyingclean.com/impacts_airplane_pollution_climate_change_and_health] [accessed 15 June 2016].
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