



"Every year, there is one outstanding documentary that you cannot miss... That people will talk about because of its significance to the planet's future... This coming year, 'The Burning Season' is that documentary."

HUGH JACKMAN

THE **BURNING** SEASON

Every year deliberately lit fires rage across Indonesia. They destroy pristine rainforest, endanger orangutans and contribute to climate change. A young carbon trading entrepreneur goes in search of a solution.

NARRATED BY HUGH JACKMAN

<http://www.theburningseasonmovie.com>

A **STUDY GUIDE** BY ANDREW FILDES



<http://www.metromagazine.com.au>



SCREEN
AUSTRALIA

<http://www.theeducationshop.com.au>



The Burning Season

Hatchling Productions

53 mins.

Subject Areas:

- International Studies
- Environmental Studies/ Science
- English
- Economics
- Political Studies
- Business Studies
- LOTE – Indonesian Language & Culture

Key Topics:

- Habitat Loss
- Key Species Conservation
- Environmental Activism
- Environmental Economics
- Politics of Climate Change
- Treaty Negotiation
- Carbon Credit Trading
- Indonesian Politics and Lifestyle

Level: Middle to Senior Secondary

Overview

Each year, in Indonesia and neighbouring countries, great swathes of the land are burned. Peasant farmers who cannot afford machinery to clear their plots simply resort to fire – to regenerate existing plantations or to clear old-growth rainforest for new ones. The result is a choking seasonal fog of smoke that blankets the entire region for weeks, sometimes months. Everyone agrees that it's a problem – environmentalists, climate scientists, politicians, even the farmers themselves. They light the match but see little or no alternative to their traditional farming practices.

The Burning Season (Cathy Henkel, 2008) examines this problem from three points of view, three individual stories which overlap and interlock. Each of the players is attempting to solve the problem

or deal with its effects. The ultimate agenda is to preserve as much of the rainforest of Indonesia as is possible, using an innovative financial strategy.

The Businessman

The principal story and the one that locks the others together is that of Dorjee Sun, an energetic and inspirational young Australian entrepreneur who has a scheme to promote. His embryonic company seeks to be a broker, arranging for Indonesian farmers to 'sell' the carbon locked up in the forest plots that they own, rather than clear them. He has the Governors of several Indonesian provinces like Papua and Aceh onside and the ear of some major players in the financial institutions of New York and London. But it's such a new idea that we know that it will be a struggle to tie it all together.



The Farmer

Achmadi is a palm oil farmer in the Jambi Province of Sumatra where half the forest is already gone. As a small-scale farmer, he has several plots of palm trees and is in the process of clearing another, as well as preparing to clear and regenerate an existing plantation which is past its prime. While a successful farmer, he cannot afford the cost of heavy machinery to clear his land and while burning is technically illegal, following the smogs of previous years, no-one will apply the law it seems.

On the face of it he is the villain, one of those directly responsible for the problem. But here he is portrayed in no such light. We see a thoughtful and intelligent individual who is concerned with what he must do to survive. He is open to alternatives but cynical about the pressure he is under to change, the motives of his politicians and the benefits to him of any new scheme.



The Rescuer

Danish wildlife activist Lone Droscher-Nielsen rescues orangutans from cleared forest areas. Deprived of their habitat they flounder quickly. The adults are difficult and may be killed or left to their fate. The young are irresistible and may be taken as pets until they become too large to manage. In her compound, she raises the orphans, attempts to preserve family groups and tries to raise enough cold cash to move and resettle them in more remote forest areas of Borneo.

A Barrowful of Babies

If there is one truly memorable scene in this documentary, it is the sight of several orangutan orphans being loaded into a large wheelbarrow and trundled across a compound at the

wildlife rescue facility. They seem docile, trusting and a little bewildered as only baby apes can. Perhaps if they looked a little less human, their species may have been extinguished long ago. Their very name orang utan means 'man of the forest' and there can be no denying the closeness of their relationship to us – we cannot help but feel a very special affinity for these endangered cousins of ours. The huge eyes of these children look deep into you and the sense of guilt is unbearable.

Carbon Credit Trading

The one idea that might bind these stories together and provide at least a partial solution is Carbon Credit Trading. In future, some companies in western developed nations will have to buy 'carbon credits' to offset their own emissions.



The cost of these will flow to schemes designed to reduce the amount of carbon dioxide entering the atmosphere which can be as simple as preserving a forest, trees that represent a massive store of carbon. In a globalized world they can buy their credits where they are cheapest and that means developing nations. Each tract of privately owned, undisturbed rainforest in Indonesia is a carbon sink and the payments for carbon credits will pay the owner NOT to clear it. An artificial but real value is placed on a natural resource, in a way that makes sense to western economists and the income stream helps control a serious environmental problem by providing an alternative to third world farmers.

The genius of Dorjee Sun is to identify the environmental problem as a potential resource, a financial opportunity, and to sell it to the right people.

The Politicians and Financiers

While they are almost in the background of the action here,



these are the people who count, upon whose decisions everything rests. The local politicians, the administrative Governors of the Indonesian provinces are enthusiastic. They know that the burning has to stop and they are being offered a scheme that will provide cash compensation for enforcing a massively unpopular law, a win-win situation. Surprisingly, we learn that the Governor of Aceh province was a rebel, fighting in the jungles only a few years ago. He knows the people in the rural areas and can talk to them in a language they understand.

The western financiers are more cautious. They have clients who must offset their emissions by purchasing credits elsewhere but they must be sure that what Dorjee Sun has to offer is a legitimate scheme in

politically stable circumstances. His scheme is rejected over two hundred times before he manages to convince Merrill Lynch executives of its value. The US delegation to the UN Climate change conference in Bali drag their feet, unwilling to co-operate in a Kyoto-based solution that exempts developing nations from many controls – before succumbing to the inevitable.

The Palm Oil Controversy

Oil from the African Oil Palm is now the most commonly used vegetable oil on earth. Despite its origin in West Africa, the main producers are now Malaysia and Indonesia. The argument against the use of palm oil centres around a number of issues. The one explored in the documentary



is the clearance of rainforest to establish new oil plantations but there are also questions raised about its health effects – like coconut oil, it is high in saturated fat. Many people assume that the unidentified ‘vegetable oil’ in their foods is healthier but both palm oil and palm kernel oil are not unsaturated – they set solid when cold. There is vigorous debate about the effects on blood cholesterol.

Then because it is the cheapest oil available, a number of companies have built plants to convert it into biodiesel, fuel for vehicles. The use of potential food crops for non-food purposes is always questionable, especially considering the damage being done by the expansion of oil palm plantations. People use biofuel because they think it is better for the environment but in fact, a fuel produced in this way puts more carbon into the atmosphere than conventional fossil fuels.

Indonesia is about to enact legislation forcing manufacturing companies to use at least 2.5 per cent biofuel in their consumption, to reduce the nation’s dependency on fossil fuel. While in other nations, this is often ethanol blended with petrol and sourced from materials like sugar cane wastes, there is a growing trend to using ‘virgin’ products like palm oil to produce fuel and the new Indonesian regulation is likely to encourage this trend.

Consequently a number of protest organizations have been established to resist its use in



biofuels and to demand that palm oil found in products in supermarkets is ‘certified’ as being from land not cleared for plantations. However, that could lead to a situation where certified oil is exported and the rest is used locally so it may not help much.

There is a strong push to regulate that new plantations be established on existing and marginal lowland areas that are already cleared. But this may advantage large corporations that can buy up such land rather than small farmers like Achmadi in the rainforest zones.

The genius of Dorjee Sun’s solution is that once a value is attached to rainforest that approaches the value of the oil yield of the same land, then protection is automatic. There

is no point for a farmer to clear and develop land if he has a guaranteed income of almost the same level for doing nothing but protecting it. In fact, there is likely to be a rush to buy and maintain the forests. The scheme has the advantage of targeting the problem at source.

There are problems of course. The local people are likely to be cynical about the benefits filtering down to them until they see the money. It also depends on political stability – both in Indonesia which in the past has tended to co-operate with large logging and similar companies, for the revenue, and in the developed nations where the establishment of a secure trading market depends on various laws and regulations which could change.



Viewing Log



00:00 – 01:30

Introduction to problem and characters. Titles.

01:30 – 03:30

Forest clearance and burning in Jambi, Indonesia.

03:30 – 05:40

Orangutans – the wildlife rescue centre.

05:40 – 12:40

Dorjee Sun persuades the Governors to sign.

12:40 – 13:05

Patrick Anderson, local forest conservationist.

13:05 – 14:45

Achmadi's farm – palm oil production.

14:45 – 15:45

Lone and the infant orangutans.

15:45 – 16:13

Patrick Anderson explains the problem.

16:15 – 19:42

Aceh and Governor Irwandi.

18:10 – 21:45

Gov. Irwandi and Dorjee Sun in the USA.

21:45 – 22:40

Achmadi visits WALHI, the conservation group.

22:40 – 25:15

Hardi Baktiantoro rescues orangutans.

25:15 – 26:05

Achmadi's discussions with villagers.

25:00 – 27:15

Dorjee Sun visits Ebay.

27:15 – 27:55

Patrick Anderson explains doubts.

27:55 – 28:55

Gov. Irwandi visits World Bank, Starbucks, Wolfowitz.

28:55 – 30:10

Achmadi's village burn their plots.

30:10 – 31:10

Dorjee visits New York investors.

31:10 – 32:20

Achmadi and friends worry about the burning, the law.

32:20 – 33:10

Dorjee at home in Sydney with his parents.

33:10 – 35:40

Dorjee visits London, Merrill Lynch.

35:40 – 37:50

Achmadi meets with the Governor of Jambi Province.

37:50 – 39:15

Returning Orangutans to the wild.

39:15 – 49:30

Climate Change Conference, Bali, 2008.

49:30 – end

Final statement. End credits.



Web Resources

The major resource is the film's dedicated site <<http://www.theburningseasonmovie.com>>. This is an extremely wide-ranging site with pages on most of the issues raised, including the palm oil problem and orangutan rescue. It includes a number of short orangutan videos based on the documentary which students will find entertaining.

Orangutan (Pongo abeiii)

BOS – Borneo Orangutan Survival (Australia) – ‘Primates helping Primates’

(the organization which funds Lone Droscher-Nielsen)

<http://www.orangutans.com.au>

Australian Orangutan Project

<http://www.orangutan.org.au>

Adopt an Orangutan – though BOS or the Australian Orangutan Project

<http://www.orangutan.org.au/index.php?id=23>

COP – Centre for Orangutan Protection

In English and Bahasa versions

<http://www.orangutanprotection.com>



GRASP – the Great Ape Survival Project of UNEP

<http://www.unep.org/GRASP/>

GAP – the Great Ape Project – ‘Equality beyond Humanity’

(co-founded by Australian philosopher Peter Singer)

<http://www.greatapeproject.org/index.php>

Aceh Green

The first accredited project – Ulu Masen forest, Aceh

http://www.bloomberg.com/apps/news?pid=20601085&sid=aD1Vb_5uDGIA

http://news.mongabay.com/2008/0207-carbon_conservation.html

WALHI – Leading Indonesian Environmental Organization

In English and Bahasa Indonesia versions

<http://www.walhi.or.id>

Viewing Questions

1. Where does the farmer Achmadi live and what does he grow?
2. Why does he have to burn the area he's clearing?
3. Why is the burning a problem?
4. How much forest is being cleared in Indonesia?
5. Why is Dorjee Sun meeting the Indonesian provincial Governors?
6. What is his company Carbon Conservation set up to do – specifically?
7. What is palm oil used for?
8. How many orangutans are at the rescue centre?
9. Why is the forest of Aceh better preserved than in Sumatra?
10. Why was Governor Irwandi in jail when the Tsunami of 2004 hit Aceh?
11. Who is Dorjee Sun trying to sell his idea to?
12. How many orangutans do they think are in the new P.T. Makin plantation?
13. What was missing from the original Kyoto agreement?
14. What is Patrick Anderson's objection?
15. Why are Achmadi and Hari cynical at first?



16. What is Merrill Lynch?
17. Where is the Global Climate Conference being held?
18. Which well-known Australians are in attendance?
19. Why is the USA resisting global emission reductions?
20. What is the potential worth of the first contract?



Viewing Questions (Answers)

1. Where does the farmer Achmadi live and what does he grow? *He's a palm oil farmer in Jambi province, Sumatra.*
2. Why does he have to burn the area he's clearing? *Small farmers like him can't afford to hire bulldozers and other machinery – not even chainsaws.*
3. Why is the burning a problem? *It puts huge quantities of carbon dioxide into the atmosphere. It causes serious air pollution and contributes to climate change.*
4. How much forest is being cleared in Indonesia? *Approximately 300 football (soccer) fields per hour.*
5. Why is Dorjee Sun meeting the Indonesian provincial Governors? *To get them to sign an agreement with his company to represent them.*
6. What is his company Carbon Conservation set up to do – specifically? *To organize (broker) the sale of Indonesian carbon credits to the west.*
7. What is Palm Oil used for? *Cooking, cleaning, cosmetics and bio-fuel.*
8. How many orangutans are at the rescue centre? *640 – about fifty per cent over capacity.*
9. Why is the forest of Aceh better preserved than in Sumatra? *Because there was a civil war there – it was too dangerous to log the forests.*
10. Why was Governor Irwandi in jail when the Tsunami of 2004 hit Aceh? *He was involved with the rebels fighting for an independent Aceh.*
11. Who is Dorjee Sun trying to sell his idea to? *Starbucks, Ebay and others.*
12. How many orangutans do they think are in the new P.T. Makin plantation? *The plantation was known to be the home of 1500 orangutans. There were 300 located in the specific part of the plantation where the rescues took place. Hardi's team rescued eighteen in two weeks.*



13. What was missing from the original Kyoto agreement? *It did not include forests in carbon credits.*
14. What is Patrick Anderson's objection? *That a factory in Australia can buy credits in Indonesia, rather than clean up its act at home.*
15. Why are Achmadi and Hari cynical at first? *They don't think any of the money will trickle down to them.*
16. What is Merrill Lynch? *One of the world's largest investment banks.*
17. Where is the Global Climate Conference being held? *In Bali, Indonesia.*
18. Which well-known Australians are in attendance? *Terri Irwin, Kevin Rudd, Peter Garrett.*
19. Why is the USA resisting global emission reductions? *They want the same rules to apply to developing countries.*
20. What is the potential worth of the first contract? *There's an initial commitment of 9 million dollars but potentially \$400 million.*



Post-Viewing Questions

For discussion or written responses

1. What exactly are carbon credits and what do they represent?
2. Why do the farmers feel that they have no choice but to burn?
3. Is it reasonable for people in 'western' countries like Australia to avoid using palm oil in foods and other products?
4. Orangutans are cute when young but why is it so important to protect them?
5. Dorjee Sun is out to make a profit from his 'deal' – do you think that he can be trusted to help protect the environment if a green approach doesn't work?
6. Do you think that the politicians and businessmen can be trusted to follow through on the deal?

Activities

LOTE – Indonesian

Identify the locations of the documentary and map them – Aceh, Jambi, Kalimantan.

Write a letter in Bahasa from Achmadi to the Governor of Jambi province, explaining why you had to burn your plot, why you should not be punished and what help you need to stop burning in future.

Read the WALHI and COP websites in Bahasa and prepare a report on an environmental issue in Indonesia, based on the information you find there.

International and Environmental Studies

Research the international Palm Oil trade and prepare a report detailing the uses, problems and environmental concerns. Give particular attention to the environmental effects, the transnational corporations involved and the situation of subsistence farmers in growing areas.

For Environmental Studies, evaluate the advantages of biofuels, the problems with present production methods and the environmental objections to using palm oil as a feedstock for producing biodiesel compared to other biofuels such as ethanol.

Economics

Prepare a report on the Stern Review and The Garnaut Report in relation to the economic implications of Global Warming. (See the film's website – 'Storyline' for a link to the Stern Review)

Explain the precise mechanism concerned in Marginal Abatement Cost (MAC) and suggest the advantages and disadvantages for both developed and developing economies.

School Community Environmental Activities

Palm Oil

- Prepare posters designed to raise awareness of the palm oil problem, for display in communal areas like the library.



- Write to local politicians objecting to the importation of palm oil as a feedstock for producing biodiesel – explain the consequences of such behaviour.
- Identify food and other products containing palm oil. If it is not clear, write to manufacturers asking if they use palm or palm kernel oil and in which products (don't forget cosmetics).

Note: Imported products found in Asian stores are more likely to have 'palm oil' listed as an ingredient. Western products may just specify 'vegetable oil'.

Orangutans

Adopt an orangutan orphan. This is possible through BOS – Borneo Orangutan Survival (Australia) – (the organization

which funds Lone Droscher-Nielsen)

<http://www.orangutans.com.au>

... or through the Australian Orangutan Project

<http://www.orangutan.org.au>

Students could organize a fundraiser – cake stall, free dress day – to raise funds through the student representative body. The details of the adoptee and his/her progress can be posted in the newsletter or on bulletin boards.

Form a 'Friends of the Orangutan' group as a part of the school's environmental program. Publicize the issue with posters, talks, films, brochures and raise money to support one of the Indonesian project groups like Lone's rescue centre.

Topic #1 Philosophy – Ethics

- Do we have any actual right to clear rainforests?
- If an orangutan has the intellect of a human child, is killing one murder?
- Does a great ape have a higher right to life than an intellectually disabled human?

There are a number of ethical dilemmas and compromises addressed in the documentary and some that are available by extension. Many of the participants are caught in an 'is-ought' situation. They know what they ought to do but they also know what is necessary to survive or succeed and it is not the same thing.



Does a rainforest have rights?

The idea of rights is always problematic. We normally consider that only humans have genuine rights though we sometimes extend them to higher animals. But:

- We argue that people do not have the right to destroy rainforest.
- Does this then imply that rainforests have the right to survive?

Perhaps not, as we are thinking in terms of common ownership of that forest – everyone on the planet needs the rainforest as part of their habitat so no individual has the right to remove it in their own interests, no matter how sympathetic we are to their needs.

However, perhaps the best definition of a 'right' is that it is a duty that someone else owes us – and we them. It is widely accepted that we have the right to life and liberty but that is defined as an obligation that others owe us as part of the social contract and, if we commit a serious crime, the right to liberty at least will be taken away from us.

As far as legal rights are concerned, it is common for us to assign rights to non-human entities. In law, corporations are regarded as 'persons' – a sort of aggregate individual, with very human rights such as the right to sue, to vote and to enjoy freedom of speech. A company can be held accountable for unethical or criminal behaviour and punished, usually by fines or sanctions.

Given that, there is nothing to stop us assigning a right to exist to a rainforest or a building and we do, in the form of 'Heritage Listing'. We regard them as discrete entities, we



acknowledge a duty towards them and so they can be said to have rights.

We could go further and argue that even though they are not sentient – they do not think – they are self-regulating entities as is a human or animal body. An ecosystem must have the same right to survive as any of the animals that it supports. By extension, the whole planet also has that right – as expressed to some degree in the Gaia hypothesis.

TASK:

Prepare and stage a debate with environmental activists on one side and loggers or farmers on the other.

Topic: 'We have no right to clear rainforest for our own immediate needs.'

Should orangutans have human rights – personhood?

Recently, a Spanish parliament decreed that great apes are persons – they are hominids with the same essential rights as a human being within its jurisdiction. This included the right to life and liberty. They banned harmful experiments on them and their exploitation in films, television and circuses was deemed illegal.

The argument is straightforward. At worst, a higher ape like an orangutan has the intellect of a human child, possibly higher in certain cognitive and moral areas. They are clearly closely related to us – we share between 96 and 98.5 per cent of our DNA with the great apes. The two chimpanzee species at least have been redefined



biologically as 'hominids' which gives them equivalent status to earlier human species at least. In the wild, great apes behave in a very human manner, forming family groups and clans with a very similar social structure as tribal humans. Therefore we have little choice but to regard them as partly human and accord them equivalent rights.

This has been countered by the argument that rights entail

responsibilities and to this point, no chimpanzee has been charged with stealing a banana! Also we share DNA with all animal species, especially mammals.

However, we do not expect a sense of responsibility from human infants and children or hold them criminally responsible for their acts until they are at least ten years old, Despite this we accord them full human



rights, sometimes to a greater extent than adults; the right to proper care and an education for instance. And while we do share DNA with many species, the apes are close enough to be regarded as part of our genus, at least in the case of the chimpanzees.

All this can have some disturbing logical consequences. The Australian ethicist Peter Singer co-founded GAP, the Great Ape Project, which argues for 'Equality beyond Humanity'. He has argued notoriously that an ape may have a greater right to life than an intellectually disabled human – by virtue of its greater intellect and self-awareness. He is a 'preference' utilitarian and measures rights in terms of an animal's ability to express its preferences. Clearly an orangutan may be better able to express a preference for warmth, food, love and the avoidance of pain than can a severely brain-damaged human child or adult. He has attempted to redefine human as we think of it.

Obviously this is controversial and deeply offensive to many who see it as the beginnings of an argument for forced euthanasia and for eugenics.



TASK:

Construct a detailed and logical argument in favour of granting human rights to orangutans. Remember to define the terms 'human' and 'rights' carefully and to evaluate and rebut any potential counter-arguments.

Topic #2 Environmental Economics

Introduction to Emissions Trading – 'Carbon Credit Schemes'

One of the major problems with protecting the environment in an economy is that so many of the essential or attractive elements of the natural environment have no 'value' in a traditional sense. For instance, how do you put a value in cash terms on a National Park? One way suggested was to calculate how much visitors spend in getting to it for a visit, but that is a very limited approach. You can value a tree by estimating its replacement cost – usually thousands of dollars – but that's an unusual way of thinking to

most people. You can measure the effect of environmental damage such as a polluted waterway on the population around it but this 'social cost' is quite difficult to estimate.

The air and climate are essential natural resources but so far, pollution control has had limited success. Companies and individuals are penalized for polluting if laws are in place, but those laws are expensive to monitor and it can be difficult to prosecute. So, as we see in the documentary, in many parts of the world the law is simply not pursued. You can make as many laws as you wish but if they are not applied, they are meaningless.

In Australia, industries are permitted to emit pollutants under various restrictions but this often ends up with corporations seeking 'licences to pollute' from the various environmental protection authorities. They don't actually have to pay to do it although they are required to invest in equipment to minimize their emissions and comply with the law. However, there is no actual financial incentive to do it as well as possible – they balance



the cost to them of emission control against the advantages of emitting as much as they legally can.

Emission credit trading (or carbon trading) is a way of automatically creating incentive for every polluter to reduce emissions. At present, it is applied to carbon dioxide emissions to attempt to slow global warming but can be and is applied to other emitted pollutants as well. Basically it works with existing market practices by creating a whole new class of commodity that can be traded directly or as 'futures'. An artificial value is placed on a tonne of carbon emitted by a government or international agreement, based on a calculation of its impact on the environment and the social cost. Then some form of trading in that emission proceeds and a value is established.

There are two forms – 'Baseline and Credit' or 'Cap and Trade'.



Baseline and Credit

This was the original approach and was used in the USA for some time. It relies on a principal of financial reward without any complementary penalty, beyond the usual legal restrictions on polluters. However, if you can reduce your emissions below a certain threshold set by government, you are given credits. You can then trade those credits, selling them to another company which is unable or unwilling to reduce its emissions so that it can meet the quotas imposed on it.

For instance, let's say that I'm a power company and I'm allowed to emit one million tonnes of

carbon per year – that's my cap. I don't – instead I invest in emission reduction technology and the government authority tells me that if I can get it below a threshold of 700,000 tonnes, I'll get a credit for each tonne below. In fact I get down to 500,000 tonnes so I now have 200,000 tonnes credit.

Down the road is a plastics company. They have an upper limit of 400,000 tonnes but this year they will exceed that and could be fined. They would like to reduce but the control technology for their processes is quite expensive so instead, they buy 100,000 tonnes of credit from me and continue to emit at their present levels. I use the money earned to pay for my emission control equipment.

The idea is to generate an artificial value for a tonne of carbon and encourage me to control my emissions. I may not make a profit but at least it'll help pay for the reduction. This technique has been criticized because it is applied on a case-by-case basis and the thresholds are variable, determined by sometimes controversial methods. Also it is hard to reduce the thresholds and total emissions – the whole point of the exercise. Organizations that reduce their pollution simply sell their surplus to the highest bidder.



Cap and Trade

In this increasingly popular approach, an overall cap on emissions is established – a national level. Companies are then allowed to trade among themselves, to establish a carbon market, to decide who gets to emit more, or less. If you can reduce your emissions, you need buy fewer credits. In this system, a national government can set its maximum level of emission and then reduce or control it, helping to meet its international commitments under treaties like the Kyoto Protocol. It also allows the cost of emissions to swing so that it becomes more and more costly for polluting industries and their products become less competitive in the consumer market.

Under this approach, emissions of Sulphur Dioxide in the USA, a major ‘acid rain’ chemical, are expected to drop by fifty per cent between 1980 and 2010.

A variation of this is the ‘Cap and Share’ proposal where every citizen receives credits and can then sell them to corporations who need to emit – by offsetting them against their power bills for instance. This encourages individuals to use less energy.

MAC – Marginal Abatement Cost

What we see in the documentary is an attempt to take advantage of the MAC. Basically, it costs a lot more to reduce emissions in a developed country. A one-tonne carbon emission reduction in Indonesia is a fraction of the cost compared to the same



reduction in Europe or the USA. By allowing international trading in credits, exploiting this margin, it is possible to make it cheaper to effect greater global reductions.

If it costs a tenth as much to have an Indonesian farmer stop burning the forest as it does to reduce smokestack emissions in the USA, then an American corporation can afford to buy ten times as many carbon credits to offset its emissions. The Indonesian rainforest is protected, money goes into the pockets of the third world and the overall carbon emission rate drops. After all, the planet does not care where the carbon is emitted – it all has the same effect whether it comes from a power station in Detroit or a burning field in Sumatra.

More details are available at http://en.wikipedia.org/wiki/Emissions_trading.

Topic #3 Food Technology, Catering

Palm oil, like coconut oil, is different to vegetable oils. It is not a mono- or polyunsaturated oil and it sets solid at room temperature like lard. In fact, it could be thought of as a vegetable ‘fat’.

People assume that vegetable materials are healthier in some way and there is some controversy over whether palm oil is bad for people with cholesterol problems. Claims are made that it is better than animal fats but often by the palm oil industry itself – others argue that it is a saturated fat and so fundamentally as unhealthy as animal fats.

The issue is further clouded by manufacturers labelling products as containing

'vegetable oil' when they contain palm oil. This is technically and legally correct but may be designed to confuse people who wish to avoid palm oil for health or environmental reasons. Equally, calling it a 'fat' would put many consumers of the product.

It is fairly easy to identify in some products. If a jar of curry paste or similar product has a crust or rim of solid fat, usually yellowish in colour, then it is almost certainly palm oil. It is a popular and cheap substitute in countries like India for ghee – clarified butter.

In the west it may be used as a shortening for pastry, in biscuits, chips, chocolate bars, cake frosting, peanut butter, canned soups, snack foods, ice cream, sauces, margarine and microwave meals. Other uses include lipstick, soap, makeup remover, body lotions, sun cream, and other cosmetics. It can be used as an industrial lubricant.

TASK:

Students could investigate products for palm oil content



and conduct research into the health issues related to the product. Wikipedia has detailed entries for palm oil as do some of the environmental sites –

although they are seeking to persuade people to boycott it and so are one-sided in their views.

Andrew Fildes, M.Env. Sci.



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