GEOGRAPHY BULLETIN



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GEOGRAPHY BULLETIN

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Cover: Fishing Trawler, Coffs Harbour and Fish farming, NZ Sounds

The Geography Bulletin is a quarterly journal of The Geography Teachers' Association of New South Wales. The 'Bulletin' embraces those natural and human phenomena which fashion the character of the Earth's surface. In addition to this it sees Geography as incorporating 'issues' which confront the discipline and its students. The Geography Bulletin is designed to serve teachers and students of Geography. The journal has a specific role in providing material to help meet the requirements of the Geography syllabuses. As an evolving journal the Geography Bulletin attempts to satisfy the requirements of a broad readership and in so doing improve its service to teachers. Those individuals wishing to contribute to the publication are directed to the 'Advice to contributors' inside the back cover. Articles are submitted to two referees. Any decisions as to the applicability to secondary and/or tertiary education are made by the referees. Authors, it is suggested, should direct articles according to editorial policy.

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GEOGRAPHY BULLETIN

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EDITORIAL

This second special edition of the Geography Bulletin is dedicated to case studies for People and Economic Activity. Many of these articles are also relevant to studies on Interconnections in Stage 4 and Sustainable Biomes in Stage 5.

Many thanks to the following people for their contributions to this edition.

Economic Activities

Rae Dufty-Jones from Western Sydney University for an interesting article titled '*Going Bananas'* on the global and local economics of the Australian Banana Industry.

Drew Collins for his insight into *dairying* as an economic activity.

Lorraine Chaffer for a short piece illustrating the variety of PDF and visual resources that are available to support studies of different Economic Activities with mentions of *tourism, viticulture, livestock, coffee* and a focus on the *dairy industry* at a local and global scale.

Patricia Dybell for a comprehensive collection of information sources on *coffee* with a brief synopsis of each corresponding to the syllabus dot points.

Susan Bliss for an intriguing series of articles on '*Big Data'* as an economic activity – a very contemporary choice of study given the explosion of digital technologies and global data.

- Part 1: Big Data. Products and services
- Part 2: Big Data. A changing world
- Part 3: Understanding Big Data Student activities

Economic Enterprises

Susan Bliss has provided two economic enterprise case studies for coffee

- Gloria Jeans
- Starbucks

Susan's article on coffee in the Geography Bulletin Edition 4 also provides the foundation for a study of coffee as an Economic Activity.

GTANSW Senior Geography Conference

The first GTANSW conference for teachers of senior Geography was held at Federation Conference Centre in Surry Hills on Monday 6th November. Presentations included: 'Busting the Bands' (Matt Carrol); the Senior Geography Project (Grace Larobina); Current Trends relevant to years 11 and 12 topics (Grant Kleeman); Some more difficult skills (David Latimer); People and Economic Activity (Alexandria Lucas); Local to global – incorporating your own geography into senior lessons (Martin Pluss) and ICT for Senior Geography (Andrew Toovey).

Thank you to all presenters and participants for making the day a success. Feedback indicates that most participants took something valuable away from the day. It was always going to be difficult catering to the needs of a diversity of teachers at different stages of their senior Geography teaching. It was wonderful however to see more experienced senior Geography teachers share their teaching strategies, ideas and resources and the beginnings of some networking between teachers and schools.



Lorraine Chaffer, Editor



Image: Matt Carroll presenting at the GTA NSW Conference for Senior Geography Teachers.

The Conference was organised to focus on sharing ideas, resources and teaching strategies and not the delivery of content for different topics, as some participants had anticipated. With the variety of different case studies that could be taught, the inclusion of content based workshops was minimised, with a plan to provide these as part of the Annual Conference in April 2018 where teachers will have a choice of options from Stages 4–6.

It is also hoped that a session on HSC marking can be incorporated, however some clarification from NESA is required before GTA can proceed with this plan.

Facebook and Google Drive

To further support HSC Geography teachers, GTA has set up a Facebook Group titled *GTANSW Teachers of HSC Senior Geography*. Membership is limited to teachers in NSW, particularly those teaching or who might teach senior Geography in the future. When applying to join the group there are three questions that require answering.

A *Google Drive* folder has been created for the collation and sharing of resources to support the teaching of Geography in Years 11 and 12. Members of GTANSW and the Facebook support group can access and contribute to this drive and folders it contains. In the HSC Folder is a copy of all *HSC stimulus books* from 2001–2017 and the Examination papers and exam feedback for 2011–2016. There is also a folder for teaching programs

GTANSW website

A page on the GTANSW website has been created to make files available to those members who are not Facebook users. This can be found under the Resources tab.

This page also contains the video-taped sessions from the Senior Geography Conference.

Lorraine Chaffer

Editor

SURVEY RESULTS

Senior Geography Conference November 2017

Feedback

Many thanks to the teachers who provided valuable feedback on our inaugural HSC Conference for teachers. Your answers will help inform planning for future events

GTANSW are fully aware of many of the issues raised in the feedback.

- The air conditioning was out of our control and unfortunately did make conditions uncomfortable, which led to the decision to change the program a little by moving lunch earlier and changing the afternoon format.
- The venue itself was convenient for most participants and the actual facilities were good. Should we use the venue again we would be more aware of the difficulties associated with accessing the food tables at morning tea and lunch.
- When the conference was first organised we cautiously booked for 50 teachers with participants organised around tables (the preferred option for GTANSW and most participants based on the feedback). When the demand was so great a decision had to be made whether to keep numbers small or to go theatre style to allow more teachers to attend. A larger venue was unavailable at that stage. The decision was made to allow up to 100 participants. In future a larger venue that allows up to 100 participants seated around tables will be booked.
- This conference was not going to be about specific topic content given there are so many different options for case studies. This type of session will be incorporated into the Annual Conference where teachers have a choice of the sessions they attend.
- There is some uncertainty about what GTANSW and HSC markers can present re the HSC Exam. Until this is clarified any sessions on marking HSC questions cannot be included in our programs. We are however looking at options on this to address this during the Annual Conference. The feedback tells us this what teachers want.

Thank you again to those who attended and provided feedback. Lorraine Chaffer President GTA NSW and Conference Convenor



SURVEY RESULTS: SENIOR GEOGRAPHY CONFERENCE





SURVEY RESULTS: SENIOR GEOGRAPHY CONFERENCE



nswered: 47 Skipped	9 ANSWER CHOICES	RESPONSES	ŧ.
	Make the events more Interactive	27.66%	13
	Take more breaks during the event	0.00%	0
	Have more knowledgeable speaker(s)	12.77%	6
	More convenient location	10.64%	5
	Use a more comfortable space to host the event	34.04%	16
	Address more relevant topics	19.15%	9
	More small group sessions	36.17%	17
	Longer but fewer sessions	6.38%	з
	Greater focus on topic content	44.68%	21
	Hold the event on a weekend.	8.51%	4
	Hold the event during school holidays	8,51%	4
	Total Respondents: 47		

SURVEY RESULTS: SENIOR GEOGRAPHY CONFERENCE

Answered: 55	Skipped: 1		
	ANSWER CHOICES	RESPONSI	ES
	Developing Assessment Tasks	12.73%	7
	HSC style marking using exam questions and marking criteria.	32.73%	18
	HSC Skills	14.55%	8
	Case Studies with links to appropriate resources	20.00%	11
	Literacy strategies to improve HSC responses	7.27%	4
	Fieldwork for HSC topics	5.45%	3
	Spatial technologies linked to senior Geography topics	7.27%	4
	TOTAL		55

Q: Which of the following are you likely to use to stay connected to other senior Geography teachers and share resources following the conference

ANSWER CHOICES	RESPONS	ES
GTA NSW Events	10.91%	6
GTANSW Facebook page	18.18%	10
GTA NSW Facebook Group for NSW Senior Geography Teach	ers 52.73%	29
Other Facebook groups	0.00%	Ō
Twitter #geographyteacher	1.82%	1
LinkedIn	0.00%	0
Google Drives shared resource folder	14.55%	8
Scoop.it pages	1.82%	1
TOTAL		55

PEOPLE & ECONOMIC ACTIVITY: BANANAS

GOING BANANAS The global and local economics of the Australian banana industry Rae Dufty-Jones

Senior Lecturer in Human Geography, Western Sydney University

Introduction

When Cyclone Yasi hit Far North Queensland (Qld) in 2011 we saw over 50% of the nation's banana production wiped out. Subtropical banana growers in South-Eastern Qld and Northern New South Wales (NSW), usually the poor cousin producers of their Far North Queensland counterparts suddenly found their product in huge demand.

In the weeks that followed the cost of bananas in our supermarkets skyrocketed from less than \$5 per kilo to around \$15 per kilo. Bananas shifted from being an everyday fruit option amongst the apples and oranges in the fruit bowls of the average Australian household to a luxury item that only a few could afford. One television commentator half-jokingly remarked that when invited to dinner he now gave the host a bunch of bananas instead of a bunch of flowers. There soon followed calls for Australia to start importing bananas into the country from major banana export countries like the Philippines (Eslake, 2011). Such calls were quickly shouted down by the national banana growers association.

While 93% of Australian households buy bananas weekly (Australian Banana Growers Council (ABGC), 2017), the Australian banana industry finds itself buffeted by unpredictable environmental and biosecurity challenges and complex global economic and political winds of free trade and Transnational Corporate (TNC) interests. To understand how Australia fits we must first examine the global banana industry.

The global banana industry

Bananas are the most popular fruit in the world (UNCTAD 2016). Originating in South-East Asia, banana plants are understood to be one of the first food crops to be domesticated by humans (UNCTAD 2016). Because of the specific growing conditions required (bananas grow best in tropical climates) the production of bananas is concentrated mostly in the world's developing nations. In these countries bananas perform an important dual role:

1. They are an important commodity for export incomes of developed countries; and

2. They are also a fundamental staple food (like rice, wheat and maize) necessary for the sustenance and survival of many populations.

Bananas are therefore a complex global commodity that present a range of economic, social, political and environmental challenges.

The global production and trade of bananas

As Figure 1 shows, the majority of the world's banana production occurs in developing countries predominantly located in tropical and sub-tropical regions. India is by far the largest producer of bananas in the world producing up to 27.6 million tonnes per year or 26% of total production (Actualitix 2016). India is followed by China (12%), the Philippines (8%), Brazil (7%), and Ecuador (6%) as the top 5 global producers of this food crop (UNCTAD 2016).

Figure 1: World Banana Production (2013)



Source: Actualitix 2016

While only 15% of the total global banana production is traded between countries, the geography of global banana trade looks very different to its total production. As Figure 2 demonstrates, when we zoom in on global banana exports the dominant banana producers like India, China and Brazil do not play a part. Instead Ecuador becomes the global leader (cornering 34% of the global market) followed by Costa Rica (12%), Guatemala (12%), Colombia (9%) and the Philippines (9%). According to the UNCTAD (2016) the top five major banana producing countries account for more that 75% of total banana production in 2014.

A number of features should be noted about banana exporting nations. First, all of the major banana export countries are classified as developing. Second, these countries have become dominant exporters of bananas not only because they offer the right climatic and rainfall conditions for the successful commercial farming of bananas but also because they offer very low labour costs. Such an economic advantage is difficult to surmount through mechanization as banana production is, in general, labour intensive due to banana plants requiring extensive care to ensure that the fruit arrives in a high-quality state. Last, the banana exporting countries are highly dependent on bananas for income and employment. For instance, in many of the Windward Islands countries, like St Vincent and the Grenadines, banana exports can account for up to 22% of total value of exports (UNCTAD 2011). This makes these countries extremely vulnerable to volatility in global banana prices.



Figure 2: Major Banana Exporting Nations

Source: Data used from UNCTAD 2016





Source: Actualitix 2016

When we examine the main destination countries for these banana exports (see Figure 3) the geography shifts from the southern hemisphere to the north, with the European Union (44%), the United States (17%), Russia (7%) and Japan (6%) being the top four destinations for banana exports (UNCTAD 2016). These three destinations tend to source their bananas from specific regions: the US mostly from Latin America, the European Union from the Caribbean, African and Pacific exporting nations, and Japan from the Philippines.

The above geographies of global banana trade are not just an outcome of natural economic advantages (e.g. proximity to markets, costs of production etc). Rather the trading relationships that exist today are very much a product of the colonial and corporate relationships that developed between different regions in the nineteenth and twentieth centuries. For example the European Union countries tended to source their bananas through those countries (predominantly African and Caribbean) that had been colonies of those European countries (mostly British and French). Such relationships became the focus of trade tensions between the US and the EU in the 1990s known as the 'banana wars'.

Historical development of the global banana trade and the role of Transnational Corporations

Due to their perishable nature, exporting bananas is a challenge and up until the late-nineteenth century was almost impossible. It was not until two key technological developments occurred the development of refrigerated marine transport (reefers) and railway transport – that bananas began to be exported in a substantial way. With these two developments bananas could be harvested in their tropical locations and transported quickly and at the correct temperature to arrive in their destination markets in North America and Europe in a consumable state. As a consequence the world trade of bananas did not begin until the late-nineteenth century. However, when bananas finally overcame these geographical barriers, they very quickly became the most important globally traded fruit in the world (UNCTAD, 2016).

The perishable nature of bananas has in the past favoured a highly coordinated integrated supply chain beginning from the growing and picking through to the packing, transport, handling, ripening and distribution of the fruit to the consumer. This resulted in a highly vertically integrated agriculture sector that from its early development in the late-nineteenth, early twentieth centuries has been dominated by Transnational Corporations (TNCs) that have tended to control

extensive aspects of the supply and marketing chain from direct growing of bananas in producing countries, through to ownership of specialised refrigerated shipping and ripening facilities, to distribution networks in the importing countries. While there is a high requirement for capital investment, these companies make significant profits from the economies of scale they achieve, as they are able to provide consistently large quantities of high quality bananas at lower costs and from different geographical sources as well as through their ability to capture much of the value-adding aspects of the product as it moves through the supply chain. Until recently the production and trade of the global banana industry was tightly controlled by three banana TNCs: Dole, Chiguita and Del Monte (see Table 1), all are either US-owned or represent substantial American interests (Fagan, 2006). The introduction of long-term contracts between producers and supermarkets appears to be fragmenting the market and diluting the control of the traditional banana trading companies.

Table 1: World market shares of banana TNCs

	Chiquita	Dole	Del Monte	TOP 3 SHARE
1966	34%	12.3%	1.1%	47.4%
1997	24-5%	25-6%	16%	65-67%
2007	25%	26%	16%	66%
2014	13%	12%	13%	38%

Source: Fagan (2006, p.37), UNCTAD (2011)

The history of the development of the global banana trade is one associated with colonial exploitation, the rise of the TNC and its influence in politics, and environmental degradation. However the average banana consumer has not just stood idly by.

The concerned consumer: political, social and environmental dimensions of global banana trade

World production of dessert bananas (mainly the Cavendish variety) has increased steadily over the last three decades. This increase in production is due to both an increase in the area under cultivation (that usually comes about through the clearance of rainforests) and an increase in yields (made possible through the development of petrochemical technology such as fertilisers, pesticides and herbicides). Over the same period consumption of bananas have increased on average by 1% per year. Yet, while production and consumption of bananas has increased, the price of bananas as a global commodity has declined on average of 2% per year. The above circumstances of banana production for global trade meant that in the latter decades of the twentieth century the global banana industry has been challenged by a number issues. Key among these issues are:

- 1. the problem of banana gluts; and
- 2. the social and environmental consequences of banana production.

The problem of banana gluts

Since the mid-twentieth century, and especially since the early-1990s, the banana industry has been beset by a number of banana gluts (periods when the oversupply of bananas drives prices for the commodity below their cost of production). These gluts made the global banana trade, already operating on small margins, extremely volatile. As a means of managing the economic risks associated with banana gluts and the impacts of environmental events like hurricanes and cyclones the banana TNCs have begun to move away from the growing and harvesting stage of the banana production process. For example Chiquita has reduced the number of plantations it owns in Central America from 64% of its total exports in 1984 to 49% in 2002 (Arias et al 2003). However this shifted with companies specifically focusing on the marking and distribution aspects and sourcing the product through direct contracts with local producers. By doing this the banana TNCs are able to outsource much of the risk of growing while still controlling the key value-adding aspects of the global banana industry.

The banana glut problem that emerged in the 1990s was also a product of the colonial histories of the global banana trade and the anticipation of the Big Three banana TNCs of the opening up of the European Union consumer markets and new markets in the post-Soviet states of Russia and China emerging. However the consumer markets in Russia and China did not emerge as expected, nor did the EU did open its markets. Instead through the formation of the Common Organization of the Market in Bananas (COMB) in 1993 traditionally open markets like Germany were suddenly restricted with preferential access made available to countries in the African, Caribbean and Pacific that were former colonies. Companies like Chiquita, who had increased production in their Latin American holdings in preparation of expanded consumer markets did not anticipate this restriction to the global banana trade and found its European market share cut from 30% to 19% (Arias et al 2003). Chiquita had to divert its surplus stock to other areas in the world effectively driving down the price of bananas.

In response to effective lobbying from the banana TNCs (Chiquita had supported the 1992 Presidential campaign of Bill Clinton, while Dole backed the Republican candidate), the US Government filed a complaint with the World Trade Organisation (WTO) in 1995 against the EU's granting of preferential access to ACP countries. In 1996 the WTO ruled that the EU's quota system violated international trade rules and gave it until 1999 to reform its trade rules in relation to the importing of bananas. The EU found itself caught between its obligations as a member of the WTO and its commitment to former colonies (Fagan 2006). When it failed to remove these barriers by 1999 the US imposed trade sanctions against a range of European imports. The 'Banana Wars', as they came to be known, between the EU and US, were not resolved until 2001 when the EU sought a bilateral approach and came to an agreement directly with the US instead of through the WTO. By 2007 any concept of quotas for banana imports into the EU were removed. However tariffs, while declining, remain, as do the agricultural subsidies (such as the 'Banana Accompanying Measures' and 'Programme of Options Specifically Relating to Remoteness and Insularity' (POSEI)) for European banana producers.

2. Social and environmental consequences of banana production

There are also a number of social and environmental challenges associated with global banana production. Socially the global banana trade has produced highly exploitative labour and contractual conditions in export countries such as:

- Lack of power for small-holder producers
- Long working hours and poor remuneration
- Child labour
- Sexual harassment
- Poor workplace health and safety (e.g. exposure to chemicals)
- Denied the right to collectively bargain and the freedom to associate as workers

Similarly, the environmental sustainability of the banana industry has also been of concern. The expansion and intensification of banana production in large plantations in the 1980s and early 1990s gave rise to a series of environmental problems including:

- 1. Deforestation
- 2. Heavily reliant on agrochemicals (product of the monocultural approach to cultivating bananas) which has lead to the emergence of resistant pests and diseases to existing agrochemicals

3. Pollution (inadequate disposal of chemical, plastics and biological waste)

These social and environmental issues however have not gone unchallenged with many consumers becoming aware and concerned about the conditions under which the bananas they purchase have been produced. This consumer awareness has been further enabled and responded to by the role of consolidated supermarket/retail chains.

In recent years the market dominance of the banana TNCs have also been challenged by the rise of consolidated supermarket/retail chains that are increasingly able to move backwards through the supply chain and go around the banana TNCs to source their product (UNCTAD 2011). The supermarkets have both responded, and encouraged as part of the competitive strategies, increasing consumer interest in 'fair trade' commodities and those which can be marketed as having lower environmental impact or associated with improvements in (highly exploitative) labour conditions (Fagan 2006, p.37)

As a consequence, banana TNCs have begun to respond to these social and environmental concerns of consumers. For instance, an important part of Chiquita's strategy to shore up its EU market share involved responding to rising consciousness amongst western consumers about environmental and labour conditions in supply countries signing a labour agreement with the International Union of Foodworkers (IUF) and to the 'better bananas project' with the American Rainforest Alliance.

The success of this move to more socially and environmentally responsible production of bananas has met with varying success and are best supported when large retail outlets commit to these standards such as when Sainsbury's and Waitrose supermarkets in the UK sought to sell only Fairtrade bananas (UNCTAD, 2016).



The Australian banana industry

History and development of the Australian banana industry

The development of the banana industry in the 1870s in Australia emerged through our own colonial relationships with Pacific Island Countries. Specifically it was the importation of Fijian workers (Kanakas) for cane cutting in Qld that are believed to be the source of the first banana plants brought here. However it was not until 1891, that Herman Reich started plantations in the Coffs Harbour region of the NSW mid-North Coast that a substantial banana industry began to develop.

Figure 5: Coffs Harbour's Big Banana



Source: Wikimedia Commons

While the mid-North Coast of NSW is actually 'subtropical' and therefore should not offer the optimum growing conditions for large-scale banana production, this region offered unique conditions for growing bananas and proximity to early consumer markets that made it initially more viable for establishing a national banana industry than North Queensland in the early twentieth century. Geographically, the mid-North Coast is where the Great Dividing Range meets the east coast of Australia, providing steep gradients (to prevent frost) and relatively temperate climates all year round to enable the growing of an albeit smaller, but sweeter banana. Initially, bananas were grown on a relatively small scale in the region, mainly to supply local shops. It was not until the 1930s, when an outbreak of the 'bunchy top' virus in Qld decimated the local banana industry, that NSW experienced an increased demand for its disease-free fruit. Furthermore, the region's relative proximity to the southern consumer markets in Sydney and Melbourne meant that, prior to the extensive use of refrigerated transport, mid-North Coast bananas arrived in these major consumer markets in a 'fresher' state compared to Queensland produce. As a result, by the 1960s NSW supplied as much as 80% of Australia's bananas (Banana Industry Restructure and Recovery Project (BIRRP) 2000).

Today the Queensland banana industry supplies Australia with over 90% of the nation's bananas (see Table 2). The decline of the NSW banana industry had its origins in the 1970s when regular periodic gluts and declining profits in the industry began to emerge (BIRRP 2000). This situation deteriorated during the 1980s and 1990s and was exacerbated by the inability of the NSW industry to organise and manage these gluts effectively. Fragmented marketing, a lack of regional cohesion and the consequent inconsistent quality in the bananas produced in the mid-North Coast area meant that when large-scale banana plantations were established in North Queensland in the late 1980s and early 1990s, the NSW industry found itself unable to respond to this heightened market competition.

The mid-North Coast/NSW banana industry was also disadvantaged by a number of physical characteristics of the region. For example, the steep coastal slopes that prevented frost damage to crops and on which many banana plantations had been established meant that bananas could not be harvested mechanically. A lack of mechanisation meant that the economies of scale that could be achieved on the large flat North Queensland plantations could not be obtained in this NSW region. The steep gradients of mid-North Coast banana plantations also meant that topsoil was more easily eroded. Plantations thus required increasing quantities of costly chemical inputs, such as fertiliser, to compensate for a decline in soil quality. The cooler climate meant that a banana crop would take three months longer to mature than the North Queensland equivalent and that the bananas grown in the mid-North Coast region tended to be smaller and less 'yellow' and therefore less aesthetically appealing to the consumer (BIRRP 2000). The growing domination of Queensland banana production and concurrent decline in NSW, especially since the early 1990s, is summarised in Table 2. By the early 2000s, the mid-North Coast banana industry was unequivocally an industry in decline, with ongoing survival essentially relying on the occurrence of freak events such as disease or cyclones wiping out the North Oueensland competition.

Table 2: Australian banana market throughputs as a percentage proportion of national total by NSW and Queensland

Year	New South Wales	Queensland
1993	25%	68%
2000	14%	81%
2007	5%	94%
2016	4%	94%

Source: Australian Banana Growers Council (2010, 2016)

The fierce competition from large plantations of bananas in far North Queensland became more aggressive when Chiquita Brands South Pacific, a subsidiary of world banana giant Chiquita Brands International, entered the Australian market in the 1990s, pursuing the agenda of leading the "rationalisation of Australia's \$4 billion horticultural industry" (Featherstone 1999, p.14). This included the purchase of large banana holdings in the Tully Valley in North Queensland.

The Australian-Philippino banana wars

Bananas are Australia's biggest horticultural industry, generating around \$350 million for the economy each year. The Australian banana market is unique in that we do not import our bananas from overseas. This is because of the biosecurity risk (the main diseases and pests of guarantine concern are Moko, black Sigatoka, and Freckle) that imported bananas pose to the local industry. The monocultural nature of bananas means that whole crops are particularly prone to being wiped out by these diseases. However Australia's island status means that it has been able to remain relatively disease free. As a consequence of these quarantine restrictions the Australian banana industry has been able to remain relatively protected from the low cost banana imports (due mainly to the low cost of labour) from major banana exporting nations like the Philippines.

Figure 6: 'No Banana Imports' sticker protesting the consideration of importing bananas into Australia



However, like the US-EU 'banana wars', the Philippines challenged Australia's biosecurity justification for preventing banana imports through the WTO in 2003. The Philippines argued that quarantine restrictions breached trade laws and threatened to place trade sanctions on the importation of Australian dairy products. In 2004 Biosecurity Australia responded by reversing its decision to restrict Philippino banana imports. Biosecurity Australia deemed that the risk of disease was not as high as previously determined. This was challenged by Australian banana growers and the initial decision was suspended for a number of reviews to take place. In 2009 Biosecurity Australia found that banana imports could come in under more stringent quarantine conditions for 27 pests and diseases of concern. However, the bar has been set so high that no import application has been made under the new protocol, with Philippine exporters saying the measures are too strict and too costly to attempt to begin exporting bananas to Australia.

Woolgoolga: a local case study of the changing fortunes of the Australian banana industry

Travelling north along the Pacific Highway, approximately 25 km from Coffs Harbour (a coastal community in NSW), a large white temple appears on the right as you enter the township of Woolgoolga (Figure 7). The temple is a *gurdwara*, one of two in a town that has a population with fewer than 4,000 people. People of the Sikh faith, the majority of whom come from the Punjab region in northern India, use this gurdwara for religious and community events. Members of the Woolgoolga Punjabi-Sikh community are also major participants in the local agricultural industry of bananas.

Figure 7: Sikh Gurdwara Woolgoolga NSW



Source: Dufty-Jones, 2007

The migration of Sikh people from the Punjab region in British India began during the nineteenth century. According to Bhatti and Dusenbury (2001, p.39) poverty was rarely the driving reason informing this early period of migration. Rather, it was the desire to improve the family's position – or *izzat* – at home that often motivated an individual's decision to move to Australia. The migration provided opportunities to remit the money earned in Australia back to the Punjab, using it to acquire land, build a brick home or to provide a sufficient dowry for a daughter to 'marry well'. This was particularly important as many of the Punjabi-Sikhs migrating to Australia at this time were Jats, a rural landowning caste (De Lepervanche 1984, Bhatti and Dusenbery 2001). This rural background meant that early Punjabi-Sikh migrants tended to look for and obtain work as seasonal labourers in agricultural industries, travelling between the Atherton Tablelands in Queensland and the Northern Rivers Region in NSW. Early migrants regularly worked as cane cutters and farm hands on cane and banana farms in these areas. While the introduction of the White Australia Policy in 1901 made such migration more difficult for Punjabi-Sikhs, unlike many other non-Anglo-Celtic ethnic groups, this legislation did not make migration to Australia impossible. This was because of India's position as a colony of the British Empire which meant that its citizens could migrate if they could pass a dictation test or prove, through a certificate of domicile, that they had resided in Australia prior to the introduction of the White Australia Policy (Bhatti and Dusenbery 2001, p.44). As a consequence, Punjabi-Sikh migration to Australia continued throughout the early decades of the twentieth century, although at a reduced rate.

Prior to World War II, Punjabi-Sikh migration to Australia was generally pursued as temporary 'sojourn', – an opportunity for men to accumulate savings through their work in Australia and, on their return to the Punjab, use those earnings to contribute to the family's *izzat* (Bhatti and Dusenbery 2001). A number of events during and after WWII, however, shifted this migration from being a temporary visit to becoming a permanent move. Central to this was the partitioning of India and Pakistan in 1947 and the political, economic and social instability that ensued. Work also became more readily available in Australia during this time. For Punjabi-Sikh migrants, now wishing to establish themselves in Australia permanently, Woolgoolga emerged as a preferred location.

According to Bhatti and Dusenbury (2001, p.129), 'for the Punjabis, the banana industry has been solely responsible for their firm establishment in the Woolgoolga-Coffs Harbour area'. Seeking employment during the 1930s and 1940s, a number of Punjabi-Sikh men had moved south from the Northern Rivers Region in NSW to work on banana plantations in the Woolgoolga-Coffs Harbour area. By the early 1940s, a number of men had decided to stay in the region, with the employment in bananas, along with some itinerant cane cutting work, being sufficient to warrant establishment in the area. As they became able to support their families, these Punjabi-Sikh settlers brought their wives and children to join them. Eventually these families were able to buy their own banana plantations and their success drew other Punjabi-Sikhs from India and northern Australia to migrate and establish themselves in Woolgoolga (Bhatti and Dusenbery 2001).

Described as a 'poor man's (sic) industry' (De Lepervanche 1984, p.90), banana farming provided a comparatively easier start than most other agricultural industries (for example, cane, wheat, dairying). This was due to the relatively low level of capital needed to establish a plantation. Bananas required little outlay for machinery and other equipment, with success mostly relying on a farmer's access to sufficient manual labour, something that was provided through family and community networks (Bhatti and Dusenbery 2001). Punjabi-Sikh settlers were also assisted by the NSW State Government's policy at the time to lease State Forest land to facilitate its development for agricultural purposes (De Lepervanche 1984). This enabled individuals to transition from labourers, to sharecroppers, to eventually becoming owners of banana plantations within a relatively short time frame. Banana farming also offered the advantage of being familiar work for those who had come from an agricultural background in India. Furthermore, the independence of being farmers, and therefore their own 'boss', meant that Punjabi-Sikh settlers were able to more easily capture the profits from their own labour. This independence also provided many members of the community with the flexibility of pursuing and maintaining important religious and cultural traditions (Bhatti and Dusenbery 2001). The success of this community in establishing themselves in the region's banana industry over the last 70 years can be marked by the fact that Punjabi-Sikh men and women were by the turn of the twenty-first century the dominant growers in the region, accounting for more than 90 per cent of the industry around Woolgoolga and more than 50 per cent around Coffs Harbour (Bhatti and Dusenbery 2001: 129).

As previously mentioned, the past two decades have witnessed a decline in the viability of the NSW banana industry. This has been largely attributed to the movement of the banana industry to Queensland, which currently produces over 90% of Australia's banana stock. This industry decline in NSW has impacted on the economic status of the Woolgoolga community, and in particular the local Punjabi Sikh community. The declining viability of banana farming in the region coupled with the high cultural status attributed to land ownership and farming in the Punjabi Sikh community has produced a variety of strategies designed to cope with the changing economic circumstances of the local banana industry. These include:

PEOPLE & ECONOMIC ACTIVITY: BANANAS

- Pluriactivity especially female family members becoming employees of the large-scale blueberry farm Blueberry Farms Australia (BFA)
- Diversification into other high-value horticultural products (e.g. blueberries, avacados, etc)
- Sub-division for residential development
- Selling-up and moving away especially as younger generations show less interest in continuing the family farm.

It is important to recognize that the changes to the banana industry have also brought about significant socio-cultural changes to the community as well. For instance cultural activities associated with the Punjabi-Sikh community have shifted from being something that could occur any time of the year to predominantly taking place in the winter months when there is little work to be obtained at BFA. This change has occurred due to the centrality of women to the maintenance of these cultural practices as a local community worker noted

We plan all of our programs that involve ethnic groups for winter. The whole community is affected. From April to August [winter time] I have no Saturday free because there is always something have to go do at the temple... these things [community and cultural activities] are all planned around the blueberries. ... And people say things like 'Oh the women are not going to be available to do the cooking'... so people try to have all the stuff in the winter. And it's been like that for a number of years. So that's affecting the community.

References and resources

Global banana production and trade information

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- United Nations Conference on Trade and Development (UNCTAD): INFOCOMM on bananas http://www. unctad.org/infocomm/anglais/banana/sitemap.htm
- Nation Master (useful for producing maps, barcharts and pie charts of global banana production, banana exporting and banana importing countries go) http://www.nationmaster.com

Australian banana production and trade information

- Australian Banana Growers Council http://www.abgc.org.au/
- Australian Bananas http://www.australianbananas.com.au/
- Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES) http://www.abares.gov.au/
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GTANSW Annual Conference My challenging Geography Classroom

Monday 9th & Tuesday 10th April 2018

Introduction

GTANSW is seeking Expressions of Interest from teachers and other professionals who would like to present at our 2018 Annual Conference.

Focus: The demands facing Geography teachers to meet syllabus and education requirements while creating stimulating and challenging learning environments for students that promote engagement with the world and a passion for Geography.

Sessions can be either presentation or workshop style.

Preference will be given to those abstracts that include one or more of the following:

- Subject knowledge and programming (content linked to specific topics from K – 12)
- Pedagogy (e.g. geographical inquiry, differentiation, PBL, flipped classroom, teaching strategies)
- General capabilities (e.g. literacy, critical and creative thinking, intercultural understanding, ICT)
- Geographical skills and tools
- Assessment
- Leadership

Length of presentation: 50-minute morning sessions OR 80-minute afternoon sessions.

Those teaching in schools will receive a 50% discount on their conference registration costs for the day(s) they are presenting.

Use the following link to complete your EOI before Friday 15th December 2017

PEOPLE & ECONOMIC ACTIVITY: DAIRYING

Dairy Production: Using beestop

Drew Collins Head of Geography, The King's School



Up until recently undertaking a study of the dairy industry within the Year 12 unit of People and Economic Activity has been about as niche as the proclaimed benefits of camels milk. However, with the recent rise in mainstream media coverage (The Project and Waleed Aly – Ch.10, The Checkout, Gruen Transfer, Landline and 7:30 Report – ABC, A Current Affair Ch.9), alongside Australia's ever increasing desire to know where our food products come from, there are many benefits if global dairying was chosen as the economic activity study for HSC Geography. Certainly not mainstream, and delivery is without textbook help, but the global dairy industry is changing, as too is the Australian landscape. There is more to moo about milk these days!

The challenge may well be getting an in-depth analyses of the enterprise. This can certainly let your students down if unattainable. So investigate these options first. Taking students to the farm is an amazing and an eye opening experience. It solidifies the knowledge learnt in class. "I didn't know that about milk" is often heard from students who readily consume the white goodness without knowing much about the production line. Getting to a farm can be achieved if a relationship were established with a local dairy farm. There are local options and depending where you are in NSW, it might be BEGA or South Coast Dairy, Norco in northern NSW, or the number of dairy farms operating across greater western Sydney and surrounds.

FACTORS AFFECTING DAIRY PRODUCTION: BEEOPST

Biophysical – Cows need to eat and therefore pasture needs to grow with a long growing season.

- Rainfall = average 1200mm. Less than this can be met with irrigation.
- Temperate = $4 24^{\circ}$ C. Outside of these production can drop by as much as 30%.
- Topography = flat or slightly undulating so the most energy as possible is put into milk production and not muscle mass needed to walk up and down steep hills.
- Soils = nutrient rich alluvial soils often found on floodplains.

PEOPLE & ECONOMIC ACTIVITY: DAIRYING

Ecological – The key point here is sustainability. Farmers are getting better at this and dairy farmers certainly know the benefits of farming in an ecological sustainable way.

- Keeping animal waste on site, instead of letting it wash into local watercourses, provides a ready made fertilizer.
- Utilizing stable waste from the equine industry and cardboard waste to inject into the soil increases moisture content and soil nutrients.
- Strip grazing and paddock rotation.
- Grey water use, underground irrigation and Natural Sequence Farming methods when used with long rooted (5-10m) lucerne have proved to be the system in a dry climate.
- Most recent studies into methane capture from pig farms are being investigated and changes to feed supplements have shown very promising results to help combat climate change.

Economic – there is so much information that relates to the economics of the dairy industry.

- Global deregulation and regional free trade agreements in Europe, between China and Australia, and TNC's like Fonterra (NZ), Parmalate www. parmalat.com.au/brand/ (Italian), or even the global brewery giant Kirin (Japan) have established a very competitive market. But at what cost?
- \$1/L "milk wars" (Coles and Woolworths where 70% of Australian milk is bought)
- Other primary factors have always had an influence like; consumer demand, capital, mobility of labour, establishing a competitive advantage and concepts like land rent mechanisms are dependent on whether the farm is producing market orientated milk (liquid milk) or materials orientated (milk products like cheese, yoghurt, ice creams)

Organisational – how the industry is arranged and how it operates.

Trends:

- Smaller number of farms with larger herds "Get big or get out" was the catchcry of many
- Traditionally family owned and operated, now more agribusiness and even TNC's
- Dominance of a few retailers, some emergence of niche or boutique products from smaller farms
- Co-operatives emerging to compete with the larger players in the processing and retail areas e.g. www.southcoastdairy.com.au

Political – factors where decisions made by governments influence the nature & location of productive activity. These decisions have a greater impact on other BEESTOP points e.g. economics with free trade agreements between countries, and are made at a variety of scales.

- Local rezoning of land for residential purposes
- Regional European Union Common Agricultural Policy (CAP) – government financial support to support agriculture within the EU
- National former regulation ensured milk was available all year round for health and nutrition. Many remember milk left outside the primary classroom door only to curdle in the Australian heat. Deregulation of the dairy industry has opened it up to market forces with both good and bad consequences.
- Global Greenhouse gas emissions and future targets

Socio-cultural – traditions, changing lifestyles, labour participation rates. The rising middle class in Asia dominates this point, despite a traditional lactose intolerance. Globalisation and the ease at which refrigerated products are now being transported around the world, even from a highly perishable material like milk, is becoming a realistic possibility.

- Primarily milk products like cheese, yoghurts, ice creams etc.
- Traditional powdered milk for use in westernised restaurants and canned baby formula.

Diagram showing how the industry operates

Producer (Dairy Farm) Individual dairy farm Processor Dairy Farmers/Pura et Retailer market/restaurant/takea Consumer (YOU)

PEOPLE & ECONOMIC ACTIVITY: DAIRYING



Rotolactor milking equipment. Source: Wikimedia Commons

- Increasing opportunities for quick highly regulated raw milk international exports and imports.
- Consumer choice just slowdown next time you walk down the dairy aisle, it may take a while, or look at the many items which contain milk products.
- Some consideration needs to be given to other nondairy alternatives too e.g almond milk and the huge variety of milk itself (see Pauls Smarter White Milk Commercial)

Technological – the dairy industry is like others and not immune to the technological advances which have reduced the need for farmers and manual labour, but have increased efficiencies along the way.

- Gone are the milkmaids, in are mechanised milking systems. From in line semi-automated parlours, to robotic or rotary dairy systems, and on to fully automated tracked and scientifically analysed systems where an IT degree is more useful.
- 'Sexting' of sperm to ensure female offspring (heifers) are produced on the dairy farm.
- Selective breeding www.abc.net.au/news/ rural/2017-01-19/holstein-heifer-calf-breaksaustralian-auction-record/8194220



Source: CSIRO_ScienceImage_3357_Dairy_cattle.jpg



Source: https://www.youtube.com/watch?v=z9D52e4TaFk

 Even desert dairying in Saudi Arabia where, due to lack of water for pasture growth in the desert, feed is grown in the USA and imported into feedlots.
 Featured on National Geographic's Mega Factories – Almarai is a site you must see! www.almarai.com/en/ media-center/video-center



Source: Peter Broelman – broelman.com.au

There are plenty of options to explore in the People and Economic Activity unit of work. Naturally, a study where the enterprise is local will benefit students with a close connection to the activity. Many options are available to the dedicated teacher and the interested student. However, if you are thinking of doing something different next time around, why not try milk!

Useful links

- Dairy Australia www.dairyaustralia.com.au
- Natural Sequence Farming www.nsfarming.com/ Principles/principles2.html
- Shop Ethical http://guide.ethical.org.au/guide/ browse/guide/?type=15
- Diet Change Cuts Methane Emissions www. theage.com.au/victoria/diet-change-cuts-methaneemissions-in-cow-burps-20150804-girf6l.html
- CHOICE Milk buying guide www.choice.com.au/ food-and-drink/dairy/milk/buying-guides/milk
- Pauls Smarter White Milk Commercial www.youtube.com/watch?v=z9D52e4TaFk

Lorraine Chaffer, President GTA NSW Editor Geography Bulletin

Industry websites

Industry websites provide educational resources and links to recent publications

Examples

World Tourism Organisation (UNWTO) http://www2.unwto.org/

International Organisation of Wine and Vine http://www.oiv.int

Livestock Industries: Meat and Livestock Australia https://www.mla.com.au/about-mla/cattle-sheep-goat-industries/ industry-overview

Coffee: International Coffee Organisation (ICO) http://www.ico.org





Publications

There are many publications available at a global and national scale for most large economic activities such as tourism, viticulture, fisheries and aquaculture and in this example the dairy industry.

These publications are a wealth of factual, statistical and graphic information. They often contain infographics that summarise key trends and connections.

Documentaries

Landline – current and archived programs Recent examples for Beef Farming and Abalone Aquaculture





ILLUSTRATIVE EXAMPLES FOR THE DAIRY INDUSTRY

This small selection illustrates the wealth of contemporary information available online that can support the teaching of People and Economic Activity.



Australian Diary Industry Situation and Outlook 2017

https://www.dairyaustralia.com.au/industry/dairy-situation-and-outlook/situation-and-outlook-2017





Australian Diary Industry Sustainability Report

http://www.australiandairyfarmers.com.au



DELOITTE CONSUMER BUSINESS REPORT: Diary Industry Trends and opportunities

https://www2.deloitte.com/content/dam/ Deloitte/ie/Documents/ConsumerBusiness/ie_ Dairy_Industry_Trends_and_Opportunities.pdf



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Executive summary

Executive Summary vingo

2016 Progress snapshot



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Sustainability Report 2016

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Bulletin of the World Dairy Federstion 2017 http://www.idfa.org/docs/default-source/dnews/world-dairy-situationsample.pdf



2005 2011

Region	2005	2015
Asia	92%	90%
Europe	106%	111%
EU	109%	112%
Non-EU	101%	108%
North America	102%	108%
South America	102%	101%
Africa	84%	83%
Central America	75%	78%
Oceania	245%	309%

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ETIN OF THE INTERNATIONAL DAIRY FEDERATION 485/2016

AGTA ANNOUNCES AN ESSENTIAL NEW GEOGRAPHY RESOURCE **GEOGRAPHY LITERACY UNLOCKED** has been written for secondary geography students seeking to improve their literacy skills. It includes a focus on written, visual and oral literacy. GEOGRAPHY LITERACY UNLOCKED is published

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Introduction



- A focus on the responsible use of social media
- A comprehensive coverage of the principal forms of visual and oral texts students encounter in geography
- Templates or scaffolds to support the interpretative skills students are expected to demonstrate.

GEOGRAPHY LITERACY UNLOCKED is available for purchase via the AGTA website: www.agta.asn.au/Products

PEOPLE & ECONOMIC ACTIVITY



STAGE 6: Geographical investigation

'Students will conduct a geographical study of an economic enterprise operating at a local scale. The business could be a firm or company such as a chain of restaurants.

- 1. Nature of the economic enterprise chain of restaurants, Starbucks
- Overview of coffee restaurants types sizes and growth. Latte towns, coffee shops in gentrified inner suburbs and coffee sold in grocery stores, petrol stations and book stores. Drive through coffee places and mobile coffee carts. Order via technology-on demand. Evolving coffee culture.
- Growth of coffee restaurant chains

2. Locational factors

- Refer to website for store locations and Google Earth
- Site, situation, latitude, longitude
- Scale global, national, local
- Reasons for location advantages
- Growth in Asian countries https://www.starbucks. com/store-locator?map=40.743095,-95.625,5z

3. Flows

- People: customers ages
- Goods: coffee, milk, sugar, food
- Services: training, different types of coffee, drinks and food sold
- Ideas: new technology, coffee species and brewing methods. Social media – Facebook, Apps. Waves of coffee. Re-invent Starbucks –'Reserve' stores

4. Linkages

- Internal linkages: mission statement, goals, brand, revenue, business operations, managers, staff, roasting and brewing methods, packaging, advertising. Business times, types of coffee, drinks and food, gifts, incentives, promotions
- External linkages: trade, commodity prices, transport, advertising. Digital links, Wi-Fi. Growth in Asian markets-production and consumption. Links to Australia

5. Ecological dimension

- Inputs: coffee, sugar, milk, food, energy, water, transport, buildings
- Outputs: carbon and water footprints; waste.
- Environmental goals: sustainability.'Grounds for your garden', green power, reduce ecological footprints and waste, recycling, corporate social responsibilities, farmer equity practices, Fairtrade, Ethos water, donations of leftover food
- **6. Environmental constraints**: climate change, environmental laws (local, national).

7. Effects of global changes on enterprise:

prices, trade agreements, tariffs, climate change, competition (e.g. McDonalds, soft drinks, tea, water), changing consumer tastes. Growth of organic and speciality coffees. Future trends – Waves of Coffee

Starbucks chain of restaurants

Today Starbucks is the largest coffee chain in the world, as well as the premier roaster and retailer of specialty coffee. Originally an American company founded in 1971, is now located in over 72 countries, and operates in more than 23,768 places. This \$19 billion a year company, also has 4,962 independently licenced Starbucks. The majority of Starbucks stores are located in USA, followed by China and Canada.

In the 1980s Howard Schultz purchased Starbucks and became CEO and chairman of the company. At this time Americans were ignorant of the difference between coffee made from high grade coffee beans and Nescafe instant coffee. Shultz's mission was that Starbucks would provide 'premium coffee to the masses', while copying the style of 'Italian espresso bars', as well as become the 'third place' in a person's life-after work and home.

Schultz said, 'We're not in the business of filling bellies; we're in the business of filling souls.' Over time the ambiance and service provided by Starbuck stores evolved into a social phenomenon, copied by many of its competitors.

Location of Starbucks - globalisation (external linkages)

As of 9 June 2016, Starbucks is in 72 countries and territories

AFRICA	NORTH AMERICA	OCEANIA	SOUTH AMERICA	ASIA	EUROPE
Egypt	Aruba	Australia	Argentina	Azerbaijan	Austria
Morocco	Bahamas	New Zealand	Bolivia	Bahrain	Belgium
South Africa	Canada		Brazil	Brunei	Bulgaria
	Costa Rica		Chile	Cambodia	Czech Republic
	Curaçao		Colombia	China	Denmark
	El Salvador		Peru	Cyprus	Finland
	Guatemala			Hong Kong	France
	Mexico			Macau	Germany
	Panama			India	Greece
	Trinidad and			Indonesia	Hungary
	Tobago			Japan	Ireland
	United States			Jordan	Luxembourg
	– Puerto Rico			Kazakhstan	Monaco
				Kuwait	Netherlands
Map showing Starbucks locations globally				Lebanon	Norway

Map showing Starbucks locations globally



ASIA	EUROPE
Azerbaijan	Austria
Bahrain	Belgium
Brunei	Bulgaria
Cambodia	Czech Republic
China	Denmark
Cyprus	Finland
Hong Kong	France
Macau	Germany
India	Greece
Indonesia	Hungary
Japan	Ireland
Jordan	Luxembourg
Kazakhstan	Monaco
Kuwait	Netherlands
Lebanon	Norway
Malaysia	Poland
Oman	Portugal
Philippines]	Romania
Qatar	Russia
Saudi Arabia	Slovakia
Singapore	Spain
South Korea	Sweden
Sri Lanka	Switzerland
Taiwan	United Kingdom
Thailand	– Guernsey
Turkey	
United Arab	
Emirates	
Vietnam	
Thailand Turkey United Arab Emirates Vietnam Table: https://en.v	– Guernsey – wikipedia.org/wiki/Starbucks

Global percentages of Starbucks stores



Pie graph – Source: https://staticseekingalpha.a.ssl.fastly.net/uploa ds/2012/9/2983141_13486987343659_rld8.png

Cartoon: Starbucks located all over world



Cartoon: https://s3.amazonaws.com/lowres.cartoonstock.com/sportmountain_climbing-mountain_climber-climb-climber-mountainsmb070124_low.jpg

Starbucks sells comfort, convenience and self-indulgence

Starbucks, a large transnational corporation (TNC) sells 30 coffee blends and single premium Arabica coffee. It also offers sandwiches, salads, pastries, roasted beans, coffee accessories and teas. Starbucks promotes its taste, quality and customer experience as superior to other coffee serving venues in USA, but is threatened by higher input prices and competition from lowerprice fast food chains, such as McDonald's and Dunkin' Donuts. Recently Starbucks experienced a decline in sales that forced the company to re-engineer its supply chain and re-think its image.

Starbucks Mission and Aims

'Our mission: to inspire and nurture the human spirit – one person, one cup and one neighbourhood at a time.' Its mission is greater than its beverages. Instead it aims to create and expand a uniquely branded Starbucks experience all over the world.

Starbucks aims to:

- Create atmospheric stores that heightens the desirability of its brand
- Provide attractive outlets in desirable and busy locations
- Produce an enviable brand image
- Provide quality products and service

Perspectives linked to management (problems and goals)

- Commit to environmental leadership work towards 100% usable or recyclable cups, recycling, biodegradable disposable plates and cutlery (Biogasse plates, BioCutlery)
- Sustain ethical sourcing of coffee
- Support coffee farmers
- Purchase green energy
- Make their coffee the world's first sustainable product
- Strengthen communities donate unsold food to communities, hunger relief (FoodShare program)
- Create employment opportunities and inclusive workplaces – hire veterans, military spouses and refugees
- Engage with current technology e.g. 'Tweet-a-Coffee', Starbucks app
- Expand business, especially in Asian countries, as well as in airlines and cruise ships
- Overhaul sales products produce skinny line of drinks, sell salads, and avoid baked goods with high fructose, corn syrup to attract health and cost conscious consumers.
- Expand its new 'Reserve Roasteries' to reflect unique character and taste of coffee.



Starbucks Supply Chain – Flows and linkages

Starbucks has a large supply chain. With more than 70,000 outbound deliveries a week to retail stores, distribution networks and outlets, the movements from suppliers to customers is complicated.

Effectively managing the coffee supply chain is complex as it is multifaceted with a network of multiple businesses and contracts. The outsourcing of inputs (e.g. coffee), increasing volume of regulations, striking workers, growing competition, trade agreements, and mounting economic volatility, frequently disrupts the smooth operation of the supply chain. Additionally, the impacts of climate change, pests, diseases, droughts and hail storms have led to changes in the production of Arabica coffee species sold by Starbucks.

As a consequence a simpler more transparent supply chain has evolved aimed to reduce costs and inefficiencies, eradicate delayed orders, improve quality and become environmentally and socially sustainable.

Starbucks supply chain-external linkages and flows



Map: http://www.supplychain247.com/images/article/starbucks_sourcemap_ article_image3.jpg

From 'Bean to mug' – External and internal linkages and flows

Starbucks roasts its own beans and manages distribution of products to all retail locations.

Starbucks buys green coffee beans Primarily from Africa, South America and Asia C.A.F.E regulates contaminated coffee e.g. fungus, diseases



Green coffee beans transported by ship to warehouses and roasting plant locations e.g. Gaston USA, Amsterdam



Roasting, Cooling, Blending, Waste produced



Quality testing (Failed beans are discarded)



Storing, Packaging, Labelling



Transported to:

- nine regional distribution centres: Five in the USA, two in Europe and two in Asia
- 48 other distribution centres contain dairy, paper and baked goods for Starbuck stores-33 in the USA, seven in Asia, five in Canada and three in Europe





Coffee Beans – Linkages and flows

Starbucks sources Arabica high quality coffee from Latin America, Africa, and Asia- Pacific. However, their 'signature coffee blends' are mostly from the Asia-Pacific region. Starbucks seeks coffee that is environmentally and socially responsibly grown and ethically traded. This means farmers produce coffee that benefits their business, community and environment. Starbucks ethical sourcing also extends to merchandise, furniture and other items in their stores.

The popular Arabica species from countries such as Kenya, Sumatra and Guatemala have a narrow genetic makeup. This means the strains have been around for only a few centuries. This is a relatively short span for the species to naturally mutate and develop resistance to diseases. As a result, climate change has caused a growth in pests and diseases such as the Coffee Berry Borer and leaf rust.

Coffee farmers are facing constant challenges to their sustainability. Starbucks is assisting these farmers by buying a research coffee farm in Costa Rica and aims to train 200,000 coffee farmers by 2020 on sustainable farming practices

Main source of coffee beans to Starbucks - Latin America, Africa and Asia



Tre map:https://www.bloomberg.com/news/articles/2014-02-13/to-stop-the-coffee-apocalypse-starbucks-buys-a-farm

Stop the coffee apocalypse!

A massive fungus outbreak hit Central and South American coffee crops, reducing harvests of Arabica species up to 40% over two years. As a consequence, in 2013 Starbucks bought a Costa Rican coffee farm to cultivate disease-resistant beans. The farm called Hacienda Alsacia, located on the slopes of the Poas Volcano, was converted into a global agronomy and research centre. Work included the development of hybrid coffee tree seedlings to address impacts of climate change including increased incidences of coffee leaf rust. Howard Schultz, said '*It also opens up an opportunity for Starbucks to innovate coffee varieties that support development of future blends.*'

Starbucks Global Agronomy Centre in Costa Rica focuses on an 'open-source agronomy'

- Open-source refers to sharing information
- Agronomy the science of soil management and crop production.

Location of Hacienda Alsacia, Costa Rica



Map: https://dg9f2badvburd.cloudfront.net/media/1912pike/2016/06/21/ hacienda-map-illustration.png

Starbucks linkages to organisations

Coffee and Farmer Equity (C.A.F.E) is an environmental, social and economic coffee buying guideline to support coffee farmers, ensure high quality coffee is grown, and promote equitable relationships. In 2012, 93% of Starbucks coffee was ethically sourced through C.A.F.E, Fairtrade and other certified programs.

Starbucks works in partnership with Conservation International (CI) and shares research and resources through Farmer Support Centres – located in coffeeproducing countries. The company, now part of the Sustainable Coffee Challenge, aims to make coffee the world's first sustainable agricultural product.

Starbucks – Farmer Support Centres

Starbucks currently operates Farmer Support Centres in key coffee producing countries from Costa Rica to Rwanda. There, farmers obtain free access to the latest findings from agronomists, including new varieties of disease-resistant trees, and soil management techniques.

Starbucks Farmer Support Centre Locations: Guatemala; Kigali, Rwanda; Mbeya, Tanzania; Addis Ababa, Ethiopia: Manizales, Colombia; Yunnan, China: Alajuela, Costa Rica (Hacienda Alsacia): North Sumatra, Indonesia; and Chiapas, Mexico

Map – Farmer Support Centre



http://www.starbucks.com/responsibility/community/farmer-support/ farmer-support-centers



Farming community support



https://www.starbucks.com.au/Farmer-Support.php; https://globalassets. starbucks.com/assets/84265bac47674ea4a3c25b9e17bf314a.jpg;

Production linkages – Vertical and horizontal integration

Howard Schultz calls Starbucks's business model 'vertical integration to the extreme,' because the company buys and roasts its own coffee and sells it through company-owned stores.

Starbucks vertical integration – flows and linkages

- Ability to control all stages of production
- Controls coffee sourcing, roasting and retail sales around world.
- Purchasing coffee bean farms in China and Costa Rica- – backward vertical integration (i.e. increasing number of value chain stages that move farther away from a product's ultimate customer). Backward vertical integration is an effective means of innovation and experimentation.
- Training and educating employees
- Purchase agreements with coffee growers, roasting plants, warehouses and distribution facilities.
 Agreements with growers in three mains growing regions Africa/Arabia, Latin America and Asia-Pacific.
- Advantages-controlling value chain to maintain higher level of quality rather than employing external partners
- Problems-more people working and business units to manage. Leads to higher complexity and too many layers in the command structure for a quick response. Everything occurs at a slower pace.

Starbucks horizontal integration - flows and linkages

Starbucks is in 72 countries and territories. It is the largest coffee chain in the world. Over the years Starbucks has developed mergers and alliances with other companies to expand into new markets.

- In 2003, Starbucks executed a horizontal merger with "Seattle's Best Coffee" to reduce competition and exploit distribution channels. As a result Starbucks acquired 129 North American stores and 21 stores in Italy. This acquisition extended reach into other markets and acquired wholesale contracts to 12,000 stores that distribute Starbucks coffee beans. https://kabrown9.wordpress.com/
- In 1993, Starbucks partnered with Barnes and Nobles bookstores to offer their coffee products benefiting both companies Since then Starbucks has created successful alliance with the Pepsico bottling company and an alliance with United Airlines to offer their drinks on flights.

Source: https://kabrown9.wordpress.com

In addition to the company's Starbucks-branded businesses, it also owns and operates other beverage and food companies– Seattle's Best Coffee, Teavana, Evolution Fresh, Torrefazione Italia Coffee and Ethos Water

Improved linkages in Starbucks supply chain

As a result of the improved supply chain, by 2010 Starbucks had reduced costs by \$700 million.

Manages a Centralised System

- Starbucks manages its complex and large supply chain across six continents.
- The centralised the company to operate and manage multiple global distribution centres (five in USA, two in Europe and two in Asia).
- Starbucks uses a 'scorecard system' to evaluate supply chain efficiency, costs and savings

Uses digital technologies

- Production and distribution plans are developed and modified giving Starbucks's supply chain flexibility to address sudden changes in demand.
- Digital technologies, constantly update information on stock, transport scheduling and storage capacity. Starbucks leverages cloud technology like Enterprise Resource Planning (ERP) systems

Ensures a green and sustainable supply chan

• The company's Coffee Sourcing Guidelines (CSG) sets strict standards for its coffee-producing suppliers and ensures that they support the company's sustainable, green and efficient approach to business. In addition, suppliers must meet Starbucks's social responsibility standards, such as a Zero Tolerance policy regarding working with suppliers who employ anyone under the age of 14

> Original Starbucks store, Pike Place Seattle Image source: https://upload.wikimedia.org/wikipedia/commons/5/53/ Starbucks_street_musician.jpg

Constant innovation

- Faced with a decline in production due to a fungus, Starbucks addressed the serious threat to its supply chain by purchasing a farm in Costa Rica.
- It is also engaging with social media (Facebook, Twitter) and introduced apps to receive customer feedback and develop new ideas

Sustains beneficial supplier relationships

• With Coffee and Farmer Equity (C.A.F.E) and Supplier Relationship Management (SRM). The later ensures the majority of its suppliers in isolated, rural locations are an integral part of Starbucks operations. Starbucks maintains control of the production processes by communicating with farmers to secure beans. The Starbucks' C.A.F.E. practices requires suppliers to inform Starbucks what share of the wholesale price paid, reaches the farmers.

Refer to this website for video on Starbucks supply chain http://www.supplychain247.com/article/behind_the_ scenes_at_starbucks_supply_chain_operations



PEOPLE & ECONOMIC ACTIVITY: STARBUCKS



Towards a sustainable coffee future



Diagrams from starbucks.com/socialimpact - https://globalassets.starbucks.com/assets/9265e80751db48398b8bdf09821cc56.pdf;

Steps towards a sustainable business model

Addressing Climate Change

- minimise use of energy
- greater use of renewable energy
- upgrading existing stores and building new stores to use 25% less energy
- more than doubling 'green' energy purchases
- work with Conservation International to address climate change by protecting tropical forests that surround coffee farms

Caring for the environment

 Reduce environmental footprints through energy and water conservation, recycling and use of 'green' energy

Working towards 100% reusable or recyclable cups

Encourage customers to use their own reusable
 mugs

Striving towards 100% recycling in all stores

Progress – Internal and external linkages

Using biodegradable disposable plates and cutlery in all stores

• Bagasse plates: Biogasse is the cane fibres left (waste) after the extraction of sugar. It is pulped to produce disposable tableware

• BioCutlery: Made from 70% starch (renewable resource) and 30% polypropylene. This material has a smaller carbon footprint than conventional plastic cutlery.

Committing to community (local and global)

 Starbucks V2V (Volunteer to Volunteer) is an online social network that helps connect volunteers all over the world, especially countries where coffee is grown

Triple Bottom Line

• The company strives to achieve the Triple Bottom Line-sustainable business economically, environmentally and socially





PEOPLE & ECONOMIC ACTIVITY: STARBUCKS

Internal linkages

Starbucks is linked to people, as stores have become a place where people can start and end their day. Other linkages include:

- Located at strategic locations where customers can easily access their coffee drinking ritual
- Offers fast service in a pleasant atmosphere
- Created a 'third place' for everyone to go between home and work
- Contemporary design and décor of stores appeals to 25–40 year olds
- Offers free Wi-Fi to attract a young clientele. Ideal location of 18–24 year old college students to spend their leisure time and meet friends
- Starbucks coffee, ice cream, and bottled cold coffee drinks are also sold at grocery stores
- 'Starbucks Evenings' stores offer beer, wine and appetisers

Diversified products-craft beer



Diagram: https://beersportsbabes.files.wordpress.com/2012/02/starbucksmakes-plans-to-serve-beer-and-wine-and-is-one-step-closer-to-worlddomonation.jpg-

Exclusive water bottles

Lilly Pulitzer is collaborating with Starbucks Coffee and S'well (the reusable water bottle company) to create four exclusive 17oz. bottles. Each bottle is hand-painted by Lilly Pulitzer Print Studio.



Bottles: http://i1.wp.com/pmcwwd.files.wordpress.com/2017/02/sara-kaussphotography-0218.jpg?crop=0px%2C688px%2C1366px%2C912px&resize=6 40%2C415&ssl=1



Branding (internal linkages)

Paramount to sustaining customer loyalty, Starbucks nurtured its brand with logos and designs. However, recently a decline in sales and increased competition, forced Starbucks to redesign and reinvent itself, to accommodate current and future customers. The chain's high-end coffee has the letter "R" which stands for "Reserve"

Core competencies and competitive advantages (internal linkages)

The company has developed core competencies to gain competitive advantages.

'Starbucks core competencies can be defined as high quality coffee and products at accessible locations and affordable prices, a community to share in the coffee drinking experience, and a variety of choices. Starbucks also values ethics and good business practices. Starbucks competitive advantage is based off of: quality, service, ambiance, and culture. Starbucks directly controls every important step of its business, from buying high-quality coffee beans to designing its franchise decor. Starbucks is also so large that it has enormous influence over its suppliers and it can ensure competitive prices, superior quality, and the necessary quantities at the right time. To keep its competitive advantage, Starbucks is constantly innovating, improving its menu, and starting new businesses, such as selling energy drinks or coffee machines. Starbucks has recently concentrated on redesigning its sandwiches and bakery business, as well as integrating its Teavana products into stores.

Source: https://www.linkedin.com/pulse/core-competency- competitive-advantage-patrick-connors
Core competencies



Diagram: https://www.slideshare.net/DavidSorianoMcGuinness/starbuckscoffee-analysis

Competitive advantages



Diagram: https://image.slidesharecdn.com/starbuckscoffee-120306122143phpapp02/95/starbucks-coffee-strategy-8-728.jpg?cb=1331087440

Drivers of Starbucks' success (internal linkages)



Diagram: https://image.slidesharecdn.com/howardschultzstarbucks-150413102130-conversion-gate01/95/howard-schultz-starbucks-11-638. jpg?cb=1429008031

Corporate social responsibilities (internal linkages)

- Starbucks has a positive impact on communities they serve. 'One person, one cup and one neighbourhood at a time'
- Community involvement-provides employment opportunities. Promotes diversity and inclusion.

- Hiring 25,000 Veterans, Military Spouses, Guard and Reserve members by 2025
- Ethical sourcing-ensure sustainability of premium products from coffee farms
- Environment-water and energy conservation and recycling to reduce waste
- Global responsibly-pioneering green retail



Diagram http://s3.amazonaws.com/libapps/accounts/119951/images/ csr_starbucks.png

In 2017 Outgoing CEO Howard Schultz pledged that the company would hire 10,000 refugees in its stores worldwide, including some who helped the U.S. military, in response to President Donald Trump's executive order to bar entry of refugees from several predominantly Muslim countries. The statement from Schultz sought to reassure his employees after Trump's immigration ban. However, Starbucks faced boycotts after pledging to hire refugees http://fortune. com/2017/01/30/starbucks-boycott-refugee-hiring/

Upstanders (internal linkages)

In 2016, Starbucks unveiled an original content series called *Upstanders*. The series highlighted ten individuals across USA working to make a difference in their communities. The series features podcasts and videos distributed via the Starbucks mobile app, online, and through the company's in-store digital network. It bolsters Starbucks' image as a valued- based organisation.



Poster http://mms.businesswire.com/media/20160907005637/en/542989/5/ Upstanders%2C_a_original_Starbucks_series.jpg

More details at http://www.businesswire. com/news/home/20160907005637/ en/%E2%80%9CUpstanders%E2%80%9D-Starbucks-Original- Series-Inspires-Positive-Change

Setting prices (internal decisions influenced by external forces)

How much you could save in one year, based on where you buy your cup of coffee in the morning in the UK. Of course, you can spend as little as £1 a cup in Wetherspoon's, compared to nearly £3 in Starbucks



Column graph: http://www.cityam.com/226358/where-does-your-morningcoffee-cost-the-most

Marketing a socially engaged brand (internal linkages)

Starbucks has successfully incorporated digital marketing and social media into its operations. Social media allows Starbucks to develop products, services and new revenue streams by observing how customers interact with them as well as listening to their feedback. Starbucks has built a large fan base on social media:

- Facebook-over 36 million likes.
- Twitter-tweeting about 10 times a day. It re-tweets and replies to most customers. The customers feel their voices are heard. 11.4 million followers
- Instagram-posts eye catching images of products to attract customers-7.5million followers
- Pinterest-daily coffee recipes and boards such as Coffee Crafts

More than 130,000 'ideas' were submitted to Starbucks over the past five years. 'Ideas' implemented include: Free Wi-Fi; New Flavours e.g. Mocha Coconut Frappuccino, Pumpkin Spice latte; Frappuccino Happy Hour; Mobile Payment Drive Thru; and Free Birthday treats.

Diagram: (left) http://my.mastersindigitalmarketing.org/digitalmelodie/wp-content/uploads/sites/553/2015/10/starbucks-story-digital-strategy- social-integration-23-638.jpg

Digital media strategy



Poster: https://image.slidesharecdn.com/finalpresentation-141125122609conversion-gate01/95/starbucks-digital-strategy-plan-5-638. ipg?cb=1416918417

ICT links

Starbucks supports the Power Matters Alliance (PMA) along with Google to create a wireless charging standard that customers use to recharge smartphones. It has also released the 'Mobile Order and Pay' app allowing a customer to choose a close Starbucks location and order their Starbucks online to have ready when they arrive.

Marketing – Flywheel effect (internal linkages)

Starbucks has become a wave of acquisitions and growth spurts. The massive wheel of Starbucks' is grabbing consumers looking for coffee, food, grocery items, tea, and smoothies. Although selling physical goods is what ultimately drives revenue, the company spends vast sums of money investing in **marketing**, mainly through digital media and other innovative techniques. This drives consumers back into stores. Adapted: https://seekingalpha.com/article/1612552-the-flywheel-approachfor-starbucks

THE FLYWHEEL EFFECT

Types of media

- Social media and email databases
- Earned media-'other' people promote Starbucks
 products
- Traditional media- advertisements using a variety of media

Promotions

- Sales promotion through their loyalty program. For every transaction a customer can earn stars for free beverages or food. The company runs competitions, provides discounts, and has holiday promotions
- Starbucks Vampire Frappuccino is offered during Halloween, and eggnog latte at Christmas
- In the Asian market gift cards are decorated with Swarovski crystals
- Starbucks Green Apron Delivery Service –tenants in the Empire State Building can order food and beverages

Components of Starbucks digital flywheel



Diagram: https://cdn.geekwire.com/wp-content/uploads/2016/12/fourparts-of-digital-flywheel-3-630x353.png

Personalisation and digital flywheel (internal linkages)

'Starbucks digital flywheel has gained momentum with the launch of one-to-one personalisation. Starbucks hyper-personalised e-mail reward offerings – with more than 400,000 variations have more than doubled customer response rates over previous segmented email campaigns, translating into increased customer engagement and, importantly, accelerated spend.

With Starbucks Rewards[™], the company's new spendbased loyalty program, customers are finding increased value when being rewarded for bigger purchases.'

Source: http://www.supplychain247.com/article/starbucks_unveils_plans_ for_12000_new_stores_over_next_5_years

Personalised order using technology



Diagram: https://cdn.geekwire.com/wp-content/uploads/2016/12/sbux3-1240x726.png

Future of personalisation – artificial intelligence

Big Data is providing Starbucks with more information about you, aimed to boost sales.

Imagine pulling into a Starbucks drive-thru and seeing not just your drink order but your name on the screen — along with the suggestions of what foods you might like with your drink, automatically generated by the weather, your buying history, and the choices that others with similar preferences have made.

Coming soon to a Starbucks drive-through near you and to your smartwatch, and possibly to each store's cash register — are serving suggestions generated by artificial intelligence. It's all part of the coffee giant's plan to use AI and the cloud to drive sales and growth,

> Source: https://www.geekwire.com/2016/starbucks-using-artificialintelligence-connect-customers-boost-sales/

Starbucks using artificial intelligence to connect with customers and boost sales



Diagram: https://www.geekwire.com/2016/starbucks-using-artificialintelligence-connect-customers-boost-sales/

Coffee Waves (internal and external linkages)

In the 1970s Starbucks was the main representative of 'second wave coffee', initially distinguishing itself from other coffee-serving venues in USA by taste, quality and customer experience.

Since the 2000s, 'third wave coffee' customers have become knowledgeable about coffee and as a consequence Starbucks targets hand-made coffee based on different roasts. At the centre of third wave coffee shops are the baristas, and their ability to use a range of equipment to make coffee acceptable to knowledgeable coffee connoisseurs. Brewing methods can vary from aeropress, chemex, V-60 and cold-drip coffee.

Today coffee is a culinary experience focusing on where the beans are grown, different brewing methods and the nuances of its flavours. Speciality coffee is challenging Big Coffee like Starbucks that no longer has such a strong influence on the market, as customers are more aware of specialty and organic brands as well as Fairtrade, ethical and sustainable business practices. To cater for changing tastes and competition, Starbucks' is promoting craft-inspired coffee drinks at stores across USA, such as the Nitro Cold Brew launched at 500 Starbucks locations and the introduction of Reserve Coffees.

Coffee has gone through various waves over the last 100 years. These movements have spurred changes that effects corporations, growers, coffee shops and customers. Mat North, owner of a coffee shop in the UK said the 'fourth wave isn't about the coffee, or agronomics, or espresso machines, or superstar baristas, these are all third wave concepts. The fourth wave is about people.'

Future: Premium Starbucks experience

Inside Starbucks' ambitious plan to combat the 'seismic shift' that could kill its business it plans to build 12,000 new stores by 2021, aimed to increase its annual revenue by 10%. These will be classified as Reserve Roasters and Reserve Tasting Rooms. The chain's highend coffee will have the letter 'R' which stands for 'Reserve'.

Since opening two years ago, the Starbucks Reserve® Roastery in Seattle has become recognised as the most dynamic coffee retail experience in the world, with handcrafted, small-batch coffees within metres from where they are roasted. The New York Times called it 'part retail store, part manufacturing facility and part theatre.'

Starbucks plans to accelerate the Roastery experience around the world, opening in Shanghai in 2017, Tokyo and New York City in 2018, and a fifth location in Europe.

Starbucks is simultaneously innovating and expanding its food menu with a variety of products such as the Sous Vide Egg Bites – a wheat-free, low calorie, high protein and convenient breakfast



Image: Reserve Roaster https://medium.com/the-starbucks-collection/the-starbucksreserve-roastery-675144de1065

STARBUCKS RESERVE®COFFEES Discover these rare and exotic coffees from around the world.	STARBUCKS RES Exotic, rare & exquis Individually brewed on	ite. the	Pour Ou GRANUE	Ier Cone.
<u>Dust arrived:</u> Finca Nuevo Mexico Toasty aromas with candied citrus	Finca Nuevo Mexico	28	35	165
Notes and a brown sugar sweetness. Sun-Dried Ethiopia Yirgacheffe Rich layers of strawberry, bing cherry and baking chocolate notes.	Ethiopia Tirgacheffe BLENDS & SINGL Individually brewed or	E-OI the	RIGIN Pour O GRANDE	COFFEE ver Cone WHOLE BEA
ALSO PROUDLY CELEBRATES	Sumatra Lake Toba	28	33	21
Starbucks Sumatra Lake Toba	Sumatra	20	22	12
with a syrupy, full-bodied mouthfeel	Kenya House Blend	20	22	9

Blackboardhttp://3.bp.blogspot.com/-vSWBIMsOGnA/UzJEqf301Ll/AAAAAAAAF6s/6a6kLt4BjJl/s1600/P3200501.JPG

SWOT analysis of Starbucks (internal and external linkages)



Diagram: https://image.slidesharecdn.com/starbuckscoffee-120306122143-phpapp02/95/starbucks-coffee-strategy-5728.jpg?cb=1331087440

Asia Perspective (external linkages and flows)

The growth of new competitors and changing consumers' coffee tastes is an evolving management issue. However, Starbucks has significant growth opportunities in the Asia region especially China, by expanding from 1,700 stores at present to 3,400 by 2019. As the domestic supply of coffee in China is small, the company has ventured into China's Yunnan Province for Arabica coffee. For example Starbucks Farmer Support Centre in Pu'er has trained 10,000 farmers in Yunnan Province on sustainable farming practices. More than 1,200 farms, covering nearly 11,000 hectares of land, are certified through the company's Coffee and Farmer Equity (C.A.F.E.) Practices. C.A.F.E ensures high-quality coffee is grown in a socially and environmentally responsible manner.

While Starbucks business in China is in the early stages of development, the company has made strategic moves by engaging digital and mobile technology to extend customer engagement, to further sales.



Starbucks in Yu Garden, Yuyuan China. Source: Wikimedia Commons



China fastest growing market for Starbucks General facts about Starbucks

1971

- Creaated by three students
- Starbucks Coffee, Tea and Spice

1972

- Howard Schultz hired
- Most important acquisition ever made

1985

- Schultz acquired Starbucks
- Joined with Il Giornale

2000

• 88th in the 100 Best Global Brands

2011

- 24,000 outlets in USA and Canada
- 100 in the United Kingdom
 - 700 in China

2017

- Starbucks fully owns 1,500 outlets across China
- Buys out joint partner in 1,300 stores in Shanghai, Jiangsu and Zhejiang
- Starbucks owns 100% of its China stores (http://www. rtvchannel.com.au/starbucks-to-own-100-of-its-china-storesafter-buyout-deal/?lang=en)

Time line: Adapted https://www.slideshare.net/alexadima/starbucks-productstrategy-in-the-chinese-market

Forecast change in coffee consumption – China versus Australia



Bar graph: https://static.seekingalpha.com/uploa ds/2017/4/6915901_14921187992089_rld9.png

Price of Starbucks' grande latte in China

'Imagine walking into Starbucks and discovering that your grande latte cost \$27. China's per capita income, at about \$7,200, is around five and a half times less than the American figure. Yet at a Starbucks in Beijing, a grande latte costs about \$4.80—or a dollar more than it costs in United States. An espresso and steamed milk is pretty damned expensive in China.'

Pricing Ground	Is Starbucks grand	e latte in China
		Total: \$4.80
	Other operating expense Equipment costs Tax General and administrat	es \$0.23 5% 0.17 4% 0.24 5% ion 0.28 6%
63	Raw materials	0.41 9%
- AMBINE	Store operating expense	es 0.72 15%
and the	Profit	0.85 18%
	Note: Figures don't add up to	1.25 20%
	Source: SmithStreet	The Wall Street Journal

Graph: https://cdn.theatlantic.com/assets/media/img/posts/wsjstarbucks.jpg

Starbucks outlet within the Forbidden City, Beijing.



Source: Wikimedia Commons

Cultural issues in China

In 2007 Starbucks was forced to close a coffee house in China's Forbidden City in Beijing. It highlighted Chinese sensitivity about cultural symbols and its uneasiness over an influx of foreign popular culture. Despite this hiccup Starbucks has a 70% market share of coffee in China

Starbucks outlet in North Kunming, China

Source: Wikimedia Commons

STARING WHILE MY COFFEE GROWS COLD

Starbucks' stock price rose more than 10-fold between 2009 and 2015. But the winning streak ended in 2016, as slowing sales growth cooled investors' ardor.

In 2017 Starbucks shares fell 3.5% t after the company posted its lowest store sales growth since 2009. The slow and steady decline of retail that's shuttering department stores and putting malls out of business is also taking a toll on Starbucks.

Howard Schultz said we can't hide behind the fact that there is a seismic change that we're experiencing as a brick-and mortar retailer. As customers increasingly shop online instead of in person, Starbucks can no longer rely on foot traffic as a way to get people in the door. Despite the challenging retail climate Starbucks plans to open 12,000 new stores around the world in the next five years, with projections of 10% revenue growth. Schultz said that, in order to make this growth a reality, the company is banking on two strategies: becoming a destination and investing in digital. Additionally it is investing in Reserve Stores serving up small-batch coffee and a menu of food made in-house.

Additionally, Starbucks Corp. says it has become a victim of the success of its mobile order app. The coffee chain created the app to reduce long lines at the cash register, but Starbucks Operating Chief Kevin Johnson said the lines have just shifted to the pickup counter.

Source: https://www.businessinsider.com.au/starbucks-battles-death-of-in-store-retail-2016-12?r=US&IR=T

ACTIVITIES

Refer to the graph and information to answer the following questions:

- 'Is Starbucks coffee growing cold?' What is the evidence behind this statement?
- 'It is difficult to grow at an outsized rate, says Jeffrey Bernstein of Barclays Capital. Why is it hard to keep growing at a high rate that attracts investors?
- Will the Reserve Stores be the answer?
- How can digital technology change the decline in business?

Fieldwork/ Investigation – Australia

Whatever your style – long black, latte, espresso or flat white - Australians love a good brew. And let's face it, everyone's day starts better with a solid shot.

In most cities around the world you'd be hard pressed not to find a Starbucks on every corner – but on our turf they just haven't delivered.

Starbucks opened the doors to its first store in Australia in July 2000. To date, Starbucks Australia has coffee houses in Sydney, Brisbane, Gold Coast and Melbourne. In Sydney they are located in the following places: Sydney CBD (4); Parramatta (2); Manly; Sydney Airport; and Mt Druitt.

Competition - can't crack the Australian market

In an Australian takeaway coffee market worth about \$2 billion, Gloria Jeans has more than 450 branches in Australia while Coffee Club has 350 outlets. In comparison, there are a mere 22 Starbucks. Racking up losses of \$143 million on its Australian operations, in 2008 Starbucks sacked 700 staff and closed 66 branches leaving a rump of cafes in the CBDs of Melbourne, Sydney and Brisbane mostly serving tourists familiar with the brand.

In 2016, Starbucks leased a prime beachfront site at Manly, described as *'the jewel in the crown'* of commercial real estate. This store focuses on the reinvention of Starbucks.

Problems - failure of Starbucks in Australia

- Competition from McDonalds, Gloria Jeans and specialist coffee shops. Gloria Jeans dominates the coffee retail market followed by McCafe and Coffee Club
- High price low quality
- Insufficient stores
- Cultural differences between Australia & USA. Australians prefer their coffee stronger without any flavoured sugary syrups, unlike Americans
- Unsustainable business mode
- Declining service quality
 Prezi https://prezi.com/upi6nba2zwmk/starbucks-failure-in-australia/

Starbucks at Manly, Sydney

Photograph: http://www.dailytelegraph.com.au/newslocal/manly-daily/ american-coffee-giant-starbucks-confirms-lease-of-prime beachfront- sitebut-is-met-with-lukewarm-response/news-story/310fcea92cb8141f1704c12 06350c8f2

Fieldwork/Investigation

- Survey your local supermarket and a coffee shop. Include questions in your survey such as: What brands of coffee do they sell? Where do they get their beans? Who are the main distributors? How many sell Fairtrade coffee?
- Compare the price of Fairtrade coffee with other brands
- Discuss how you can become a responsible consumer of coffee. Present findings as an oral report to the class
- Draw a map locating the shops/mobile vans selling coffee in your local area. Compare the prices. Discuss the reasons for differences in prices.

Large coffee chains in Australia

- Starbucks store locator http://www.starbucks.com. au/Store-Locator.php
- Gloria Jeans http://www.gloriajeanscoffees.com.au/
- McDonalds/McCafe Australia, location and differences – https://mcdonalds.com.au/mccafe; https://mcdonalds.com.au/find-us/restaurants
- Coffee Club http://www.coffeeclub.com.au/
- Oxfam Visit an Oxfam shop and interview the employees about the success and problems of the Fairtrade Coffee campaign – http://www.oxfam.org. au/explore/trade/fairtrade-coffee- campaign. Oxfam shops in Australia http://www.oxfamshop.org.au/retail

Investigation: Starbucks store in Australia

Refer to the Starbucks Australia store locator at https:// www.starbucks.com.au/Store-Locator.php. Download a map showing the location of stores in Australia. Annotate the map

- Select three Australian Starbuck stores and list the reasons for the location of these stores.
- Visit a Starbucks or another coffee retailer and interview the manager. Ask questions such as:
 - When did the business start?
 - Why select this location?
 - What competition does the store face?
 - What are the most popular coffee drinks?
 - Where do the coffee beans come from?
 - Who does the roasting and distribution?
 - What are the prices and profit margins on coffees?
 - How many people are employed? How are they staff trained?
 - What are the links between Australian stores and head office in USA?
 - What are the waves of coffee sold first, second, third or fourth wave coffees?
 - What are the stores' environmental and social responsibilities?
 - What are the stores' links to ICT?
 - How does the store accommodate the millennials?
- People perceive Australians as 'coffee snobs' and the main reason for the closure of Starbucks in many Australian places. Do you think this is the major reason for the closures? Why do you think Starbucks has problems establishing a business in Australia?
- In 2016, Starbucks coffee quietly expanded in Australia after a humiliating retreat eight years before. Investigate the present progress

Extended response

Discuss the operation of an economic enterprise such as Starbucks and include the following questions

- 1. What is the nature of the economic enterprise?
 - Starbucks-global chain of coffee shops
- 2. What are the locational factors of a Starbucks coffee shop in Australia?
 - Site, situation, latitude, longitude
 - Reasons for location advantages. Refer to the Starbucks Australia store locator at https://www. starbucks.com.au/Store- Locator.php. Download

a map showing the location of stores in Australia. Annotate the map

- 3. What are the different flows essential for the operation of the economic enterprise?
 - People: customers-ages
 - Goods: coffee, milk, sugar, food
 - Services: training, different types of coffee, drinks and food sold
 - Ideas: new technology, coffee species and brewing methods. Social media-Facebook, Apps.
 - Waves of coffee
- 4. What are internal and external linkages involved in management of the economic enterprise?
 - Internal linkages: goals, revenue, business operations, managers, staff, roasting and brewing methods, packaging, advertising. Business times, types of coffee, drinks and food, gifts, incentives, promotions
 - External linkages: trade, transport, advertising.
 Digital links, Wi-Fi
- 5. What are the ecological dimensions of the economic enterprise?
 - Inputs: coffee, sugar, milk, food, power, water, transport, buildings
 - Outputs: carbon and water footprints; waste. energy
 - Environmental goals: sustainability. reduce ecological footprints and waste, recycling, corporate social responsibilities, Fairtrade, Ethos water
- 6. What are the environmental and social constraints imposed on the economic enterprise
 - What are the Environmental laws (local, national)?
 - Is the business sustainable (environmentally, socially and economically)?
 - What are the future environmental plans?
- 7. What are the effects of global changes on the enterprise?
 - Prices
 - Competition (e.g. McDonalds, soft drinks, tea, water)
 - Changing consumer tastes
 - Growth of organic and speciality coffees.
 - Future trends- decline of shopping centres

However, next time you drink their coffee, contemplate on what percentage of the cost of coffee is returned to the farmer and whether the coffee is produced using environmentally and socially sustainable practices.

Cartoon: http://www.cartoonaday.com/images/ cartoons/2014/05/complicated-starbucks-coffeecartoon2-598x363.jpg

Geofacts

- The rollout of food service now accounts for 20% of sales.
- In 2017 Howard Schultz was replaced by Kevin Johnson as CEO of Starbucks
- Logo was inspired by Moby Dick and the seafaring tradition of the early coffee traders.
- How many Starbucks coffees do we drink every year? Four billion cups are used – 35 times longer than the Great Wall of China; 100 million gallons of milk, enough milk to poor over Niagara Falls for two minutes
- If everyone gave up drinking Starbucks it would be enough money to tackle 33% of world hunger
- Starbucks averaged two new locations daily between 1987 and 2007.

Starbucks Park St, Sydney. Source: Wikimedia Commons

Starbucks advert above destination board, Beijing Railway Station foyer. Source: Wikimedia Commons

ICT

- Starbucks NGO Partnerships. A corporate social responsibility facade – https://gps.ucsd.edu/_files/ faculty/gourevitch/gourevitch_cs_cebrian.pdf
- Analysis of Starbucks Corporation https://scholar. harvard.edu/files/nithingeereddy/files/starbucks_ case_analysis.pdf
- Starbucks supply chain. Prezi and video https://
 prezi.com/exahcrxysnaa/supply-chain-management/
- Starbucks linkages https://image.slidesharecdn. com/starbucks-140923185308-phpapp01/95/ starbucks-supply- chain-13-638.jpg?cb=1485436794
- Environmental impacts https://www.starbucks.
 com/responsibility/environment/water-and-energy
- Behind the Scenes at Starbucks Supply Chain Operations – http://www.supplychain247.com/ images/article/starbucks_sourcemap_article_ image3.jpg
- Starbucks Global Social Impact Report Summary 2017 – https://globalassets.starbucks.com/assets/926 5e80751db48398b88bdf09821cc56.pdf

PEOPLE & ECONOMIC ACTIVITY

Today Gloria Jean's Coffees is Australia's leading specialty coffee house, serving more than 35 million customers each year across the country.

- Franchised specialty coffeehouse company similar to fast food chains
- Organisation's board consists of Chairman Nabi Saleh, and Directors John Dwight, Peter Irvine and Andrew Tyndale.
- Strong international and domestic footprint
- About 1000 companies across 39 markets. Over 460 in Australia and 110 in USA.
- Location of Gloria Jean's Coffees Australia, Azerbaijan, Cyprus, India, Bangladesh, Malaysia, USA, Ukraine, Pakistan, Philippines, Vietnam, Cambodia, Thailand and Taiwan. List of coffee chains – https:// en.wikipedia.org/wiki/List_of_coffeehouse_chains

Gloria Jean's Group (GJG) – global locations (external linkages)

Map and table http://www.aspecthuntley.com.au/asxdata/20141024/ pdf/01566122.pdf

Licenced Territories		
APAC	EMEA	
New Zealand	Saudi Arabia	
China	South Africa	
Fiji	Azerbaijan	
Indonesia	Cyprus	
Singapore	Ireland	
East Timor	Kazakhstan	
Malaysia	Romania	
Brunei	Turkey	
Cambodia	Ukraine	
Japan	Bahrain	
Korea	Egypt	
Macau	Jordan	
Philippines	Kuwait	
Taiwan	Lebanon	
Thailand	Oman	
Vietnam	Qatar	
Bangladesh	UAE	
India	1 million - 1	
Pakistan	Americas	
Sri Lanka	Hawaii	
	Mexico	

http://prelive.gloriajeanscoffees.com/mo/ About/Products.aspx

About Gloria Jean's Group Australia

- Established footprint in the domestic specialist coffee shop market:
 - 358 stores
 - \$242.0m retail sales in FY14
 - Outlets franchised
 - c. \$8.6m contribution to pro-forma normalised FY14 Group EBIT
- Diverse revnue streams:
 - Franchise and development fees c. 6% (excluding marketing)
 - Licence fees
 - Coffee supply
 - Allied product supply
 - Initial training and other relevant fees
- Outlet rationalisation program substantially completed:
 - Outlets peaked at c. 500 in Australia
 - Commenced store consolidation and rationalisation program in 2012
 - Additional 40 potential closures provisioned
 - Outlet proliferation to be re-energised with pilot concepts
 - 2.4% average weekly sales increase over PCP

FY14 Outlet Population by Territory

Map: http://www.aspecthuntley.com.au/asxdata/20141024/pdf/01566122.pdf

History

Since 1979 Gloria Jean's Group (GJG) has been transformed into an internationally recognised brand:

- 1979 first store opened Chicago, USA
- 1995 Jireh International Pty Ltd holds the right to franchise Gloria Jeans in Australia. It also purchased rights to Gloria Jeans for other countries
- 1996 first Gloria Jean's coffees in Sydney-Miranda and East Gardens. Now established in every state in Australia
- 2014 Gloria Jeans purchased by Retail Food Group (RFG) for \$163.5 million. The company had 519 coffee outlets in Australia and 183 internationally, under the following brands: Michel's Patisserie, Esquires, BB's, Coffee Guy and Cafe2U. Gaining Gloria Jean's made the Retail Food Group (RFG) the leader in retail food franchises specialising in coffee.

Gloria Jean's Group - timeline

Gloria Jean's Group – acquisitions and growth

Diagram: http://www.aspecthuntley.com.au/asxdata/20141024/pdf/01566122.pdf

Time line http://www.aspecthuntley.com.au/asxdata/20141024/pdf/01566122.pdf

https://commons.wikimedia.org/wiki/File:Gloria_Jeans_Sydney.JPG

Gloria Jean's Group-enterprise summary (internal linkages)

Vision

The Gloria Jean's Coffee Vision is to be the most loved and respected coffee company in the world. Additionally its vision encompasses"

- Pursuit of highest quality coffee-commitment to excellence
- Provide personalised service in a vibrant store
- Fostering a culture of joy and passion throughout the company
- Maintain growth
- Open 1500 stores worldwide
- The drive through concept allows the brand to reach customers by responding to their busy lifestyles and need for convenience
- Future-remote ordering and delivery service

Imports

- Industrial and consumer goods
- Ingredients-coffee beans, sugar

Products

- There are over 30 varieties of single origin, blends, flavoured infusions and decaffeinated whole bean coffees. Both hot and cold drinks are available.
- The Gloria Jeans Caffe Italy Capsules are sold in their shops and are also available at Woolworths Supermarkets.

Diagram http://www.aspecthuntley.com.au/asxdata/20141024/pdf/01566122.pdf

Types of products

Source: https://www.croozi.com/upload/loc1024/1486730851location789.jpg

STRENGTHS

- Offers lower prices and fast service
- Located in strategic positions
 - high traffic areas to attract more customers
 - vehicular and pedestrian access
 - proximity to major residential areas and major retail businesses
 - location of store within a shopping centre or street front
- Offers variety of quality coffees with popular flavours
- Provides food to support coffee e.g. cakes, sandwiches and light snacks
- Sales of products in supermarkets
- Provides comfortable atmosphere for students and families
- Co-branding with other food products

PEOPLE & ECONOMIC ACTIVITY: GLORIA JEAN'S COFFEES

- Changes with consumer tastes
- Engages with current technology- constant updating; integrate with social media (Facebook, Twitter, Instagram)
- Developed production equipment
- Trains and recruits staff

WEAKNESSES

- High operating costs
- Profits dependent on quality of the coffee
- People becoming more health conscious and reducing their intake of coffee
- Many customers are moving to smaller specialist coffee cafes
- Accused of high sugar and fat content in some of their products
- Failing to provide nutritional information to their customers
- Franchise at Caulfield in Melbourne was accused of under paying staff by Fair Work Ombudsman
- Competition from small coffee specialists crowded market place

Corporate Social Responsibility COMMUNITY INVOLVEMENT

- Responds to needs in the community
- Invests in children, young people and families
- Supports more than 300 children from the coffeeproducing regions of Brazil. Provides them with improved health and educational opportunities.

A good coffee stimulates whole communities

Poster http://www.bestadsontv.com/files/print/2011/Jul/38327_Rainforest_ Alliance.jpg

• Supports charities such as Jeans for Genes, Variety and Salvation Army

ENVIRONMENTAL SUSTAINABILITY

- Promotes sustainable farming
- Better working conditions for farmers
- Collaboration with Rainforest Alliance
- Supporting sustainability in agriculture, forestry and tourism.
- Focusing on the impact of packaging on the environment
- First Australian company to receive the Corporate Green Globe Award

PEOPLE & ECONOMIC ACTIVITY: GLORIA JEAN'S COFFEES

STAGE 6: PEOPLE AND ECONOMIC ACTIVITY

'Students will conduct a geographical study of an economic enterprise operating at a local scale. The business could be a firm or company such as a chain of restaurants.

- 1. What is the nature of the economic enterprise? Gloria Jeans-global chain of coffee shops
- 2. What are the locational factors of a Gloria Jeans coffee shop in Australia?
 - Site, situation, latitude, longitude
 - Reasons for location

Download map showing location of stores in Australia. Annotate map.

- What are the different flows essential for the operation of the economic enterprise? People: customers – ages
 - Goods: coffee, milk, sugar, food

Services: training, different types of coffee, drinks and food sold

Ideas: new technology, coffee species and brewing methods. Social media-Facebook

4. What are internal and external linkages involved in management of the economic enterprise?

Internal linkages: goals, revenue, business operations, managers, staff, brewing methods, packaging, advertising. Business times, types of coffee, drinks and food, gifts, incentives, promotions External linkages: trade, transport, advertising. Digital links, Wi-Fi

- 5. What are the ecological dimensions of the economic enterprise?
 - Inputs: coffee, sugar, milk, food, power, water, transport, buildings
 - Outputs: carbon and water footprints; waste. energy
 - Environmental goals: sustainability. reduce ecological footprints and waste, recycling, corporate social responsibilities, Fairtrade
- 6. What are the environmental and social constraints imposed on the economic enterprise

What are the Environmental laws (local, national)? Is the business sustainable (environmentally, socially and economically)?

What are the future environmental plans?

7. What are the effects of global changes on the enterprise?

Prices, Competition (e.g. McDonalds, soft drinks, tea, water), Changing consumer tastes. Growth of organic and speciality coffees. Future trends

PEOPLE & ECONOMIC ACTIVITY

TOWARDS SUSTAINABLE COFFEE

Green Commodities Program

After water, coffee is the most consumed drink worldwide. It is an important commodity that involves more than 25 million producers at global level. Peruvian coffee has managed to position itself worldwide for its quality, particularly in the area of specialty coffees. Currently, Peru is the second largest exporter of organic grains, after Mexico, and reaches a market of over 50 countries, mainly the United States, Germany and Belgium.

However, the field faces a number of problems that limit its competitiveness and affect the social, economic and environmental development of the coffee-growing areas where thousands of families continue to live in poverty and extreme poverty.

The coffee production

Coffee is produced in the eastern slope of the Andes Mountains, between 800 and 2000 masl, under conditions that are demanding for the producer. Its cultivation is concentrated in the Arabica coffee (Coffea arabica), in the varieties Typica, Bourbón, Pache, Caturra and Catimor.

Although it is produced in 14 regions of the country, 95% of the area and coffee production is concentrated in only seven regions: Cajamarca, San Martín, Junín, Amazonas, Cusco, Huánuco and Pasco.

A family business

Coffee farming in Peru is essentially family friendly. Small plots production is the most common (85% of producers handle plots of less than 5 ha), which are characterised by the intensive use of labor. The producers invest long hours together with their families, in activities that go from the selection of the seeds for the seedlings, the handling of the crop, the harvest and post harvest, the storage, until the commercialisation of the product. All this process, which involves work and dedication by families, makes the country recognised as a producer of special and high quality coffee.

Source: https://pnudperu.exposure.co/towards-a-sustainable-coffee

Meeting challenges

The United Nations Development Program (UNDP), with the support of the Swiss Cooperation – SECO, implements the Green Commodities Program in Peru, with the objective of promoting the sustainable production and competitiveness of Peruvian coffee.

The Green Commodities Program seeks to improve the economic and environmental performance of the agricultural commodity sectors, with emphasis on coffee and cocoa, to improve rural livelihoods, as well as to mitigate climate change and protect forests and biodiversity. The aim is to achieve compatibility between productive activities and the conservation of ecosystems.

PEOPLE & ECONOMIC ACTIVITY: SUSTAINABLE COFFEE

The active participation of women

Women play a crucial role in the coffee process. She is present in all stages: production, harvest, post harvest and marketing. Women are producers, association leaders, union representatives, scavengers and baristas who actively participate along the coffee value chain.

The increasing participation of women in coffee cultivation has resulted in greater well-being for their families and communities.

The challenges faced by the sector

Coffee continues to face a number of challenges that limit its development and competitiveness. A high percentage of producers are not organised in any way (77%) and conduct their farms in a traditional way (85%), without technical or business management and without access to credit, which results in low levels of production and productivity. In turn, pests and diseases, such as coffee rust, have severely affected coffee production and decapitalised coffee-producing families.

The low competitiveness of the coffee production chain has put its sustainability at risk by affecting the farmers who depend on it. Meanwhile the extractive and expansive pressure on the Amazonian forests keeps on increasing. Promoting changes in farmers' production practices is essential to fighting rural poverty, deforestation, biodiversity loss and climate change.

Faced with this situation, the joint work between the national and sub-national Government, the private sector and the support of international cooperation is necessary.

A SUSTAINABLE APPROACH

The expansion of coffee cultivation is a potential cause of deforestation; this is why it is important to achieve sustainable production. Conserving forests will contribute to making coffee crops more productive, by enhancing pollination, the regulation of the water and climate cycle, soil fertility, and other services that a healthy ecosystem has to offer.

To this end, the government's capacity to articulate and mobilize the public and private sectors and their respective stakeholders will be strengthened in the design of a National Coffee Action Plan, integrating Peruvian coffee production through sustainable production systems and a landscape approach.

Notes: Daniela Tocce – Luciana Mendoza / PNUD Perú Photos: Adrián Portugal Translation: Daniela Montesinos

PEOPLE & ECONOMIC ACTIVITY

Coffee Production

Patricia Dybell, Head Teacher HSIE/LOTE Belmont High School

"Coffee – the favourite drink of the civilized world." Thomas Jefferson

This is a collation of resources aligned to syllabus requirements for Stage 6: People and Economic Activity

Syllabus outline: People and Economic Activity

The focus of this study is a geographical investigation of economic activity integrating the local and global context.

Students learn about:

Global economic activity

- a description of the nature, spatial patterns and future directions of ONE economic activity in a global context.
- factors explaining the nature, spatial patterns and future directions of the selected economic activity such as
 - biophysical: climate, soils, topography, site
 - ecological: sustainability and resource use
 - economic: competitive advantage, consumer demand, mobility of labour and capital
 - sociocultural: tradition, changing lifestyles, labour participation rates
 - organisational: ownership, decision making and control
 - technological: transportation, information transmission and flows, biotechnology
 - political: quotas, tariffs, compacts, agreements
- the environmental, social and economic impacts of the economic activity such as pollution, resource depletion, labour exploitation, cultural integration, provision of infrastructure, job creation, transfer pricing.

Local case study

• a geographical study of an economic enterprise operating at a local scale. The case study should explore

- the nature of the economic enterprise
- locational factors
- ecological dimensions including environmental constraints, climate, and human impacts on the environment such as pollution and ecological sustainability
- internal and external linkages and flows of people, goods, services and ideas
- effects of global changes in the economic activity on the enterprise.

An introduction to Coffee

A great resource for introducing the topic is *Black Coffee*, a 2007 Canadian documentary film examining the complicated history of coffee and detailing its political, social, and economic influence from the past to the present day.

The film details how coffee is the eighth most traded legal commodity in the world. It is also the fourth most valuable agricultural commodity. However, only one cent of a \$2 cup of coffee goes to the grower. This inequality has helped shape the history of continents and the Cold War.

Episode 1 – The Irresistible Bean This episode explores coffee's origins in Ethiopia and its spread over five Continents and associated consequences such as slavery.

Episode 2 – Gold in Your Cup This episode examine coffee's 19th century dominance in Brazil and Central America.

Episode 3 – The Perfect Cup Examine coffee as the first global industry to experiment with Fair Trade practices and co-operative farming.

Source: http://www.imdb.com/title/tt0963976/plotsummary

A description of the nature, spatial patterns and future directions of ONE economic activity in a global context

HISTORY

The National Coffee Association of the USA website provides a detailed history of coffee production.

Source: http://www.ncausa.org/About-Coffee/History-of-Coffee

Global production

A brief extract

"Coffee grown worldwide can trace its heritage back centuries to the ancient coffee forests on the Ethiopian plateau. There, legend says the goat herder Kaldi first discovered the potential of these beloved beans.

The story goes that that Kaldi discovered coffee after he noticed that after eating the berries from a certain tree, his goats became so energetic that they did not want to sleep at night.

Kaldi reported his findings to the abbot of the local monastery, who made a drink with the berries and found that it kept him alert through the long hours of evening prayer. The abbot shared his discovery with the other monks at the monastery, and knowledge of the energizing berries began to spread.

As word moved east and coffee reached the Arabian Peninsula, it began a journey which would bring these beans across the globe"

Headings in this resource include:

- The Arabian Peninsula
- Coffee comes to Europe
- The New World
- Plantations around the World
- Comin to the Americas

Coffee in Australia

The following website examines the development of coffee production and a coffee culture in Australia

'For the love of Beans' (A Blog about coffee) https://steaming.wordpress.com/tag/australian-coffee/

A brief extract

"The first big coffee boom was in the mid 1800's when a couple of farmers in Queensland took advantage of the perfect growing climate. The taste was also above par because, according to Australia's nationwide coffee consultant, Gary Trye, the <u>'</u>low acidity in Australian soil, gives Australian coffee its mild body and caramel flavour.' Australian coffee won awards throughout Europe in the late 1880's. It was 'roasted and ground on the premises' in most food stores nationwide and a staple in the Australian diet. Unfortunately, the lack of cheap labour and a tsunami wiped out our coffee market in the early 1900's; it has only become popular to grow in the past three decades."

What is Coffee?

Students need an understanding of the source of coffee to understand how and where it is grown

The National Coffee Association website provides a detailed examination of the coffee plant and the steps involved in producing a cup of coffee. http://www.ncausa.org/About-Coffee/What-is-Coffee

A brief extract

'Coffee trees are pruned short to conserve their energy and aid in harvesting, but can grow to more than 30 feet (9 meters) high. Each tree is covered with green, waxy leaves growing opposite each other in pairs. Coffee cherries grow along the branches. Because it grows in a continuous

cycle, it's not unusual to see flowers, green fruit and ripe fruit simultaneously on a single tree.

It takes nearly a year for a cherry to mature after first flowering, and about 5 years of growth to reach full fruit production. While coffee plants can live up to 100 years, they are generally the most productive between the ages of 7 and 20. Proper care can maintain and even increase their output over the years, depending on the variety. The average coffee tree produces 10 pounds of coffee cherry per year, or 2 pounds of green beans.

All commercially grown coffee is from a region of the world called the Coffee Belt. The trees grow best in rich soil, with mild temperatures, frequent rain and shaded sun'

Images of coffee bushes, the flower and beans Source http://www.ncausa.org/About-Coffee/What-is-Coffee

Source http://www.ncausa.org/About-Coffee/What-is-Coffee

A brief extract: The anatomy of a coffee cherry

The coffee cherry's outer skin is called the exocarp. Beneath it is the mesocarp, a thin layer of pulp, followed by a slimy layer called the parenchyma. The beans themselves are covered in a paper-like envelope named the endocarp, more commonly referred to as the parchment.

Inside the parchment, side-by-side, lie two beans, each covered separately by yet another thin membrane. The biological name for this seed skin is the spermoderm, but it is generally referred to in the coffee trade as the silver skin.'

A selection of infographics about coffee production can be analysed in conjunction with using the websites. A Google Search can be used to find the most recent images.

Source: https://myvirtualcoffeehouse.com/coffee-from-around-the-globe

Source: https://naturalon.com/facts-world-coffee-coffee-world-infographic/

Factors explaining the nature, spatial patterns and future directions of the selected economic activity such as – biophysical: climate, soils, topography, site

Biophysical factors

For a detailed coverage of the physical requirements for coffee production the Coffee Research Organisation, National Coffee association has comprehensive information

Coffee Research Organisation – http://www.coffeeresearch.org/agriculture/environment. htm

National Coffee Association – http://www.ncausa.org/About-Coffee/Coffee-Aroundthe-World

Information on these sites includes:

- the best climate for growing coffee beans
- what impacts the flavour of coffee including production in over 50 different countries.

Factors explaining the nature, spatial patterns and future directions of the selected economic activity such as – ecological: sustainability and resource use

Ecological factors

Information about the sustainable production of coffee can be found on the following websites.

The Coffee Reaerch Organisation – http://www. coffeeresearch.org/politics/sustainability.htm

International Coffee Organisation – http://www.ico.org/sustaindev_e.asp

Sustainable farming

Extracts

'There is no clear definition of a sustainable farm or sustainable farming, and definitions that have been proposed are never agreed upon by those individuals who wish to make "sustainability" a term used to market coffee. The definition of coffee sustainability, however, is logical. Sustainable coffee is coffee grown in a manner that is kind to the environment and its people'

A sustainable farm gives back as much to the land and people as it receives. It seeks independence from nonrenewable resources, using renewable resources when possible. Sustainable farming also minimizes pollution, takes steps to care for the environment, and cares for its employees.

A sustainable farm will reuse coffee husks as heating fuel rather than cutting down eucalyptus trees. It will plant new trees for those used during heating, or it will implement pollution free coffee dryers such as the solar coffee dryer developed by Coffee Kids.

Sustainable farming implements practices to minimize water consumption and to clean the water used. Water from the fermentation tanks should never be returned to rivers or lakes, but rather filtered naturally through the earth and then used for coffee irrigation. Some excellent farms such as Agribahia in Bahia, Brazil ferment pulped coffees without water for a short time before sending the coffee to demucilating machines. This cuts down on water waste while allowing them to consistently provide some of Brazil's best coffees.

A sustainable farm will replace the natural nutrients of the land by spreading fertilizers and organic matter (composted coffee pulp) under the coffee trees and between the coffee trees. This type of fertilization has been found to increase yields over time and to produce a more uniform and natural mineral content in the ground.

Sustainable farms will also engage in practices such as shade growing, biodiversification, organic farming, and sustainable agriculture. In addition to seeking renewable energy resources, they will promote education programs, provide medical care for workers, and provide decent wages and working conditions for their employees'

Source: http://www.coffeeresearch.org/politics/sustainability.htm

Environmental and social sustainability

Extracts

'The contribution made by coffee growing and trading to environmental and social issues is highly positive, certainly compared with most alternative economic activities. On the environmental side coffee is an evergreen shrub, hence an important contributor to carbon sequestration, and is effective in stabilizing soils. It also permits the preservation of much of the original bio-diversity in planted areas.

One of the main problems for some regions is water pollution arising from wet processing. To address this issue, the Organization assists coffee farmers in producing countries to use environmentally-friendly technologies for the washing process through pilot projects in Africa and Latin America.

It is vital that coffee production and processing should take into account environmental needs to ensure sustainability. It is also necessary that the economic environment should encourage stability and reasonable living standards for the populations involved with coffee, and ensure the maintenance of quality. In practical terms, the ICO encourages coffee quality improvement through projects dedicated to improving cultivation, processing, storage, transportation and marketing practices. It also encourages efforts to strengthen regional capacity in the field of coffee certification and verification such as through a multi-country project in Eastern Africa to create a regional centre for certification and an outreach programme for producers.

Coffee also makes a positive contribution on the social side to maintaining substantial rural employment and stable communities. Improving the living standards of coffee producers, especially smallholders, is a priority for Governments, as highlighted at the last World Coffee Conference. Relevant ICO activities include building the capacity of institutions, improving access to credit and risk management mechanisms, reducing vulnerability to income volatility and promoting gender equality. Source http://www.ico.org/sustaindev_e.asp

Climate change

Extract

Several adaptation and mitigation strategies for coffee producers have been put forward in response to the challenges facing the sector. Short-term adaptation strategies include improved farming practices and better post-harvest processing. Longer-term strategies include capacity-building, improved monitoring of climate data, enhancing soil fertility, introducing or preserving different production models, and developing drought and disease-resistant varieties. In more extreme cases, the solution may be to diversify out of coffee or shift production to more suitable areas. Mitigation strategies include calculating and reducing greenhouse gas emissions on the farm, and facilitating the creation of carbon sinks.

Source: http://www.climateinstitute.org.au/coffee.html

Source http://www.ico.org/sustaindev_e.asp

Source: http://www.climateinstitute.org.au/coffee.html

Factors explaining the nature, spatial patterns and future directions of the selected economic activity such as:

- economic: competitive advantage, consumer demand, mobility of labour and capital
- socio-cultural: tradition, changing lifestyles, labour participation rates

Economic / Socio-cultural factors

An analysis of the social factors linked to coffee including social and economic influences as well as customs and methods of production can be found at http://www.cafedecolombia.com/particulares/en/ sobre_el_cafe/mucho_mas_que_una_bebida/impacto_ social/

A brief extract

'Coffee unifies various characteristics that make it a crop with an enormous social and economical significance. On one side, this product was for many years the second most traded commodity in international commerce, after petroleum, making it one of the principal sources of income for nearly 50 countries. The main exporters of the commodity still are in Africa, Asia, as well as in the developing and less developed countries of the American continent. The income generated by this product has traditionally been considered as a source of social and economical stability for more than 25 million farming families in tropical and subtropical regions around the world

Additionally, and given that a good portion of those coffee producers are owners of farms with limited dimensions, the export of coffee is an important source of income distribution. In fact, in the absence of market distortions the income from coffee operations is circulated amongst a broad population base, in contrast with other products such as petroleum, whose income produces profits mostly for the governments and companies in charge of its exploration, refinement and distribution'

Factors explaining the nature, spatial patterns and future directions of the selected economic activity such as – organisational:ownership, decision making and control

Organisational factors

Relevant to this section is the role and influence of the International Coffee organisation and international coffee agreements.

Detailed information can be found on the website http://www.ico.org/mission07_e. asp?section=Meetings_and_Documents

A brief extract

'The International Coffee Organization (ICO) is the main intergovernmental organization for coffee, bringing together exporting and importing Governments to tackle the challenges facing the world coffee sector through international cooperation. Its Member Governments represent 98% of world coffee production and 83% of world consumption. The ICO's mission is to strengthen the global coffee sector and promote its sustainable expansion in a market-based environment for the betterment of all participants in the coffee sector.

- developing coffee consumption and markets for coffee through innovative market development activities
- encouraging the development of strategies to enhance the capacity of local communities and small-scale farmers
- promoting training and information programmes to assist the transfer of technology relevant to coffee
- facilitating information on financial tools and services to assist producers
- providing objective and comprehensive economic, technical and scientific information on the world coffee sector.'

Source: Good.Is https://www.good.is/articles/infographic-the-money-insideyour-daily-fix Factors explaining the nature, spatial patterns and future directions of the selected economic activity such as – technological: transportation, information transmission and flows, biotechnology

Technological Factors

Technology is involved in many stages of the coffee production process. This can be studied through the 'Steps in coffee production' and an investigation of coffee 'supply chains'

Coffee Industry supply chain https://saylordotorg.github.io/text_the-sustainablebusiness-case-book/s13-02-the-coffee-industry-ssupply-c.html

The Amazing Supply Chain of Your Morning Coffee https://www.allthingssupplychain.com/the-amazingsupply-chain-of-your-morning-coffee/

Commodity chain and commodity prices http://www.kencaf.com/commodity-chain-and-coffeeprices/

Economics of coffee https://en.wikipedia.org/wiki/Economics_of_coffee

Extract

'The coffee industry currently has a commodity chain that involves producers, middlemen exporters, importers, roasters, and retailers before reaching the consumer. Middlemen exporters, often referred to as coffee "coyotes," purchase coffee directly from small farmers. Large coffee estates and plantations often export their own harvests or have direct arrangements with a transnational coffee processing or distributing company. Under either arrangement, large producers can sell at prices set by the New York Coffee Exchange'

Green coffee is then purchased by importers from exporters or large plantation owners. Importers hold inventory of large container loads, which they sell gradually through numerous small orders. They have capital resources to obtain quality coffee from around the world, capital normal roasters do not have. Roasters' heavy reliance on importers gives the importers great influence over the types of coffee that are sold to consumers.

Coffee reaches the consumers through cafes and specialty stores selling coffee, of which, approximately, 30% are chains, and through supermarkets and traditional retail chains. Supermarkets and traditional retail chains hold about 60% of market share and are the primary channel for both specialty coffee and non-specialty coffee. Twelve billion pounds of coffee is consumed around the globe annually, and the United States alone has over 130 million coffee drinkers.

Coffee is also bought and sold by investors and price speculators as a tradable commodity'

Source: https://en.wikipedia.org/wiki/Economics_of_coffee

Steps in coffee production: Bean to cup

- 1. Planting
- 2. Harvesting cherries
- 3. Processing cherries
- 4. Drying beans
- 5. Milling beans
- 6. Exporting beans
- 7. Tasting the coffee
- 8. Roasting the coffee
- 9. Grinding the coffee
- 10. Brewing the coffee

Newest Trends in Coffee Extract

'Below are the top five just now emerging. Some will undoubtedly continue to grow and significantly impact the industry this year while others will simply fade away. It will be interesting to see how each of them fare.

1. Adding Nitrogen to Cold Brew

Both the National Coffee Association and research company Mintel agree that cold brew will be very strong in 2017 while iced coffee begins to decline. But Mintel goes one step further by predicting the introduction of nitrogen to cold brew. A few national coffee chains are already using the trick to create a creamy cold coffee beverage that is rather unique. If they can make it work, we expect more companies to be experimenting with nitrogen cold brew.

2. Marketing Will Focus on the Experience

Millennials are now the single largest demographic group in America despite the aging population of

baby boomers. As such, the coffee industry will be targeting millennials quite a bit more this year. That means focusing the message on the social experience of coffee rather than brewing that morning cup of joe before heading off to work. Focusing on the experience will be seen in everything from packaging to advertising. There will also be less emphasis on price, given that millennials are more likely to freely spend for an experience they appreciate.

3. A New Emphasis on Coffee Processing

With the industry now focusing more on millennials, they are also looking at new ways to present coffee. We expect to see a greater emphasis on coffee processing to create new flavors and styles. Processing occurs between harvest and grinding; it includes everything from roasting to aging.

4. Greater Demand for Bottled Coffee

Though iced coffee ought to decline while cold brew grows, both trends could be overshadowed by higher demand for bottled coffee. Known in the industry as ready-to-drink (RTD), this coffee product generated revenues in excess of \$2 billion in 2015. Late last year, Coca-Cola and Dunkin Brands even entered into a partnership to bring new bottled coffee products to market in 2017.

5. The Convergence of Coffee and Alcohol

Lastly, younger coffee drinkers have been looking for the local coffeehouse and the bar next door to merge for a long time. It looks like 2017 could be the year for such an enterprise. Industry watchers expect more coffeehouses to start serving alcohol in 2017. Some of them will undoubtedly find ways to infuse their coffee with alcohol to create unique, new beverages'

http://galaxiecoffeeblog.com/top-5-coffee-industry-trends-for-2017/

Images source: http://www.ncausa.org/About-Coffee/10-Steps-from-Seed-to-Cup

There are many different diagrams (such as the one below) that can be used to show coffee supply chains

Source: http://gengenz.net/coffee-grounds-vs-espresso-grounds/

Factors explaining the nature, spatial patterns and future directions of the selected economic activity such as – political: quotas, tariffs, compacts, agreements

Political factors

Political factors gave impacted on development, trade and international agreements

Often political and economic factors are related

Sources of information include:

Café de Columbia website http://www.cafedecolombia. com/particulares/en/sobre_el_cafe/mucho_mas_que_ una_bebida/un_producto_norte_sur/th

The Role and Impact of Coffee in Global Development http://globalwa.org/issues/coffee/

The Seattle Times article: Ensuring Coffee-Growing Communities Get a Fair Shot

https://www.seattletimes.com/seattle-news/ensuring-coffee-growing-communities-get-a-fair-shot/

North / South production and consumption

Source: http://www.cafedecolombia.com/particulares/en/sobre_el_cafe/ mucho_mas_que_una_bebida/un_producto_norte_sur/th

A brief extract

'Coffee is produced in more than 60 developing countries. Approximately 25% of worldwide exports come from Brazil, followed by Vietnam with a 15% and Colombia with around 11%. The remaining half of worldwide exports is shipped from countries of Central and South America, Asia and Africa. On the other hand, the main importers are the United States (25%), Germany (18%), Japan (8%) and Italy (8%). The enclosed map illustrates, by the size of the red circles, the relative size of the biggest markets. It underlines the fact that the biggest importing countries are in the "North". The blue circles identify coffee growing areas by their relative size of coffee production, and exports.

During the 19th century and a good part of the 20th century, coffee was the second commodity more transacted in the worldwide economy, after oil. To the extent that more than twenty five million peasants produce and depend on coffee, and that a great proportion of the demand is concentrated in developed countries, the coffee industry acquired in the post war world a great geopolitical relevance. The western developed countries, conscious of the high social impact of coffee and the dependence in the external income for dozens of producer countries felt that this product could constitute an effective way of cooperation during the Cold War. Thus, the international coffee prices became the focus to implement cooperation schemes to assure that a predictable level of coffee income to producing countries, and in that way to be able to contribute to their political and social stability'

Source: http://www.cafedecolombia.com/particulares/en/sobre_el_cafe/ mucho_mas_que_una_bebida/un_producto_norte_sur/th

The Role and Impact of Coffee in Global Development

Extract

'The coffee industry faces a litany of challenges. The most pressing issues are disease, climate change, urbanization and the loss of farmland, fluctuating prices, an aging workforce and urban migration. The coffee industry has looked at how to address these issues in ways that support the triple bottom line of profits, people and planet.

What is Sustainable Coffee?

The World Commission on Environment and Development defines sustainable development as that which "meets the needs of the present without compromising the ability of future generations to meet their own needs." Sustainable coffee comprises economic, social and environmental components that relate to the challenges facing today's coffee industry.

Economic Sustainability

The coffee industry employs roughly 100 million people worldwide, most whom live in developing countries. Many small-holder farmers lack the business skills necessary to consistently produce quality coffee for the international market. Certifiers and roasters have invested in education programs since improved farming husbandry usually yields better coffee harvests and higher prices from companies looking for a stable and long-term supply of coffee. Farmers then use this money to access education, health care and food supply, thus raising their overall standard of living. Training programs also help farmers diversify their crops in order to weather price fluctuations that have historically hurt communities heavily dependent on one commodity.

Social Sustainability

Once coffee production becomes more stable and economically sustainable, it can have positive spillover effects on other areas of society as cooperatives and communities invest in improved facilities, risk management tools and education. Many organizations and cooperatives focus on institutional capacity building, gender-based programs that bring women into the formal economy or microfinance projects that support the local economy as it grows around coffee. These programs provide economic and social opportunities to young people who previously had to migrate to larger cities in search of work.

Environmental Sustainability

The coffee industry has been active in the environmental sustainability debate, as changes in climate inevitably affect the quality and taste of your latte. NGOs and companies are creating programs to improve farming practices and post-harvest processing, develop disease and drought-resistant varieties, enhance soil fertility and explore new production models. Whether in regards to deforestation, ocean acidification or drought, the coffee industry is exceptionally aware of the importance of a healthy environment in bringing coffee from bean to cup.'

The environmental, social and economic impacts of the economic activity such as pollution, resource depletion, labour exploitation, cultural integration, provision of infrastructure, job creation, transfer pricing.

IMPACTS OF COFFEE PRODUCTION

Environmental impacts

Café de Columbia

http://www.cafedecolombia.com/particulares/en/ sobre_el_cafe/mucho_mas_que_una_bebida/cafe_y_ medio_ambiente/

What's your coffee costing the planet? Environmental impact of the coffee trade https://www.sustainablebusinesstoolkit.com/ environmental-impact-coffee-trade/

Given that most coffee growing regions are also home to some of the most delicate ecosystems on earth, the potential for serious damage is great.

This article examines

- Traditional and sustainable forms of growing coffee (agroforestry)

- Sun Cultivation Coffee where forest is cleared to grow coffee in rows as a monoculture with no canopy which with the addition of fertilizer, creates high yields destroys biodiversity
- Deforestation to make way for coffee farming
- Water pollution and contamination from the processing of coffee beans that triggers eutrophication of waterways and loss of aquatic biodiversity
- Agrochemical Usage causing increased contamination of waterways and aquifers.
- Waste impacts on soil and water sources because of coffee pulp being dumped into streams
- Soil quality reduction due to canopy removal and increased erosion

Source: Conservation International – https://www.conservation.org/ SiteCollectionImages/infographic-shadegrowncoffee.jpg

Is the coffee pod craze brewing an environmental disaster?

Source: http://www.eco-business.com/news/is-the-coffee-pod-crazebrewing-an-environmental-disaster/

Source: Café direct https://www.cafedirect.co.uk/discover-our-difference/environment/

Human impacts

Farmworkers Left Behind: The Human Cost of Coffee Production

https://dailycoffeenews.com/2013/07/17/farmworkersleft-behind-the-human-cost-of-coffee-production/

Extract

'In general, coffee pickers, migrant workers and farmworkers are the most vulnerable groups involved in coffee production. Moreover, they have traditionally not been included in the coffee industry's sustainability efforts'

Following are some of the most common challenges dealt with in this article:

- Housing Conditions
- Working Conditions
- Lack of Contracts/Low Wages
- Children in the Fields

Fair Trade International https://www.fairtrade.net/products/coffee.html

The evolution of fair trade coffee http://www.independent.co.uk/news/business/ comment/fairtrade-movement-ethics-chocolatecoffee-a7623046.html

Extract

'Fairtrade has done great things for raising public awareness that free markets need to be invigilated, but does its model consistently improve the lives of producers?'

Fair for who? The crisis of fair trade for coffee farmers https://theconversation.com/fair-for-who-the-crisis-of-fairtrade-for-coffee-farmers-24254

Does fair trade actually help farmers https://www.sbs.com.au/food/article/2017/01/24/ does-buying-fairtrade-actually-help-farmers

Fair Trade coffee http://fairtrade.ca/en-CA/Buying-Fairtrade/Coffee

Media Reports

Former Nespresso boss warns coffee pods are killing environment

http://www.abc.net.au/news/2016-08-24/formernespresso-boss-warns-coffee-pods-are-killingenvironment/7781810

The potential impacts of climate change. A coffee expert says the entire industry is in a 'very tricky spot' http://www.businessinsider.com/sam-lewontin-future-coffee-global-warming-climate-change-2016-6/?r=AU&IR=T

Recycled coffee grounds give rise to Fremantle mushroom farm http://www.abc.net.au/news/2016-05-10/perths-first-urban-mushroom-farmers/7401050

Home grown: The revival of Australian coffee farms http://www.beanscenemag.com.au/articles/view/homegrown-the-revival-of-australian-coffee-farms

Landline: Full of beans

http://www.abc.net.au/tv/programs/landline/old-site/ content/2012/s3590828.htm

Sustainable shopping: here's how to find coffee that doesn't cost the Earth addresses the need to produce more sustainable coffee.

https://theconversation.com/sustainable-shoppingheres-how-to-find-coffee-that-doesnt-cost-theearth-75284

Dukale's Dream with Hugh Jackman https://blog.dukalesdream.com/about/comment-page-1/

Farmers and Labourers in the Global Coffee Supply Chain

http://humantraffickingcenter.org/farmers-laborersglobal-coffee-supply-chain/

The Coffee Trail with Simon Reeve Investigates coffee production in Vietnam and the cost to both the local people and the environment. http://www.bbc.co.uk/programmes/n3csk764

Coffee and climate: What's brewing with climate change? http://www.ucsusa.org/global_warming/science_and_ impacts/impacts/of-climate-on-coffee.html#. WiAFLLaB3UY

A brewing storm: the climate change risks to coffee (PDF) http://fairtrade.com.au/~/media/fairtrade%20 australasia/files/resources%20for%20pages%20-%20 reports%20standards%20and%20policies/tci_a_ brewing_storm_final_24082016_web.pdf

Coffee and climate change; what you need to know https://www.theguardian.com/sustainablebusiness/2016/sep/27/coffee-climate-change-supplychain-risk-smallholders-fairtrade-tech

PEOPLE & ECONOMIC ACTIVITY

PART 1: BIG DATA – Products & services

Dr Susan Bliss Educational consultant Author, Macmillan Australia

Image source: https://media.licdn.com/mpr/mpr/p/4/005/09e/055/267fd22.png

'History has taught us that nothing is constant but change'

Geography Syllabus Links

Part 1

• HSC Geography: People and Economic Activity and Economic Enterprises.

Part 2

• HSC Geography: People and Economic Activity and Economic Enterprises.

Over the past 20 years, Exxon Mobile, General Electric and Walmart shared the top-five ranking places as the world's largest global companies. However by 2017, the five most valuable listed companies were technology giants – Alphabet (Google's parent company), Amazon, Apple, Facebook and Microsoft. In the first quarter of 2017 these five giants collectively generated over \$25 billion in net profit. Few people can survive without Google's search engine, Facebook's newsfeed and Amazon's one-day delivery.

The dominance of technology companies in the global market, has prompted requests for these large companies to be broken up, as experienced by Standard Oil in the early 20th century.

Tech titans race for supremacy

Today, the fastest growing resource is data, provided by the Information and Communications Technology (ICT) industry not oil. Globally, money spent on ICT is estimated at US\$3.5 trillion and is growing at 5% per year. The escalating growth rate is linked to over 3 billion people possessing access to the internet and 80% of internet users owning a smartphone with access to data. Technology companies are anticipated to impact on future innovations, employment, wealth and lifestyles.

Changes to largest global companies

A new world is emerging. Today's superstar companies differ in what is considered 'big'. In the early 21st century companies with large revenues and global footprints, such as oil companies (Exxon, Shell), had substantial assets. However today, large technology companies (Apple, Alphabet), boast enormous market valuations and market shares, but possess few assets.

Largest global companies by market capitalisation (cap) 2006 –2016

Source: http://www. visualcapitalist.com/wpcontent/uploads/2016/08/ largest-companies-bymarket-cap-share.jpg

PEOPLE & ECONOMIC ACTIVITY: BIG DATA

Largest ICT companies by revenue

In 2016, 51 ICT companies were ranked on the top Fortune 500 list, with Apple ranked at number three. Apple was also ranked as the number one tech company in the world, with largest revenue, profits, assets and market cap. Other top ICT companies include Samsung, HP, Microsoft, IBM and Alphabet.

The largest ICT companies by revenue are associated with computer hardware and software, electronics, internet, e-commerce and computer services.

Apple Headquarters, Cupertino, California

https://commons.wikimedia.org/wiki/File:Apple_Headquarters_in_ Cupertino.jpg

Rank	Country	Company	Industries
1		Apple Inc.	Mobile Devices, Personal Computing, Software
2	:•:	Samsung	Mobile Devices, Semiconductor, Electronic Devices
3		Foxconn	OEM Component Manufacturing
4		Amazon.com	Internet Retailer, Cloud Computing
5		HP Inc.	PC, Printers, Enterprise solutions
6		Alphabet Inc.	Internet, Software
7		Microsoft	Software, Hardware, Cloud Computing
8		IBM	Cloud Computing, Software, Consulting, Hardware
9		Dell	Personal Computers, Enterprise solutions
10	•	Sony	Electronic Devices, Personal Computing, Mobile

Largest ICT companies by revenue

Rise of tech unicorns

A unicorn is a startup company valued by investors at over \$1 billion. Startups take advantage of the social media combined with technological innovations such as mobile smartphones and cloud computing.

Unicorn companies are no longer rare. In 2017 there were 223 unicorns, the largest included Uber, Xiaomi and Airbnb. In the same year, 22 companies became unicorns-of which the majority (7) were involved in internet software and services. Most of the world's unicorns are based in North America-US (54%), China (23%), India (4%), UK (4%), Germany (2%) and South Korea (2%). However, the Asian number of unicorns are increasing at incredible speed. About 25% of unicorns are in the E-Commerce/Marketplace industry, 20% in Internet Software and Services and 10% is Financial Technology (FinTech). At present the fastest growing sectors are Cybersecurity at 50%, Real Estate 36% and Big Data 27%.

As a consequence of technological unicorns, such as e-commerce and the online marketplace (e.g. eBay), the physical locations of store brands has caused a decline of shopping malls.

https://commons.wikimedia.org/wiki/File:LakeTerraceCenterSept2008.jpg

PEOPLE & ECONOMIC ACTIVITY: BIG DATA

Global unicorn club over \$1 billion dominated by tech companies

E-commerce, internet software and services, Big Data, cybersecurity and others.

Table:https://cbi-blog.s3.amazonaws.com/blog/wp-content/uploads/2017/05/Unicorn-Market-Map-Update-25.17.png

Unicorn 2017 top companies and rise of super unicorns

PEOPLE & ECONOMIC ACTIVITY: BIG DATA

Rise of Asian unicorns, E-commerce, Internet software/services, FinTech and Big Data

Graphs: http://economictimes.indiatimes.com/small-biz/startups/ us-leads-the-chart-for-unicorns-india-behind-china-at-third- position/ articleshow/53936720.cms

Network orchestrators

Successful tech unicorns maintain 'network orchestrators' where peers create value through interaction and sharing. They provide products or services, build relationships, collaborate and share advice. Examples of network orchestrators include:

- sharing economy-economic and social activity involves online transactions (e.g. Uber)
- sharing information-enables the attainment of comparisons (e.g. TripAdvisor)
- transactions-peer-to-peer (e.g. AirBnB) and businessto-person (e.g. Amazon, Alibaba). The network orchestrator business model many advantages such as larger growth rates, and has profits and valuations 2–3 times higher than companies with other business models.

China's tech unicorn boom

The global tech's centre of gravity appears to be shifting from USA to China. Chinese companies, once scoffed as copycats, are now viewed as potential global conquerors. In May 2017 China boasted 10 unicorn companies valued at US\$435 billion-about the size of the gross domestic product (GDP) of Belgium. China's unicorns account for 53% of the global total and 66% in terms of valuation.

China's gigantic decacorns include, Baidu, Alibaba and Tencent, commonly referred to as BAT:

- Baidu-called the Google of China
- Alibaba Ant Financial-worlds' largest E-commerce company
- Tencent-referred to as the Facebook of China

FinTech, mobile Internet, E-commerce and artificial intelligence are giving birth to most unicorns in China.

Tech giants concentrated in Beijing, Shenzhen and Shanghai-Hangzhou

Source: https://www.dealstreetasia.com/wp-content/uploads/2016/12/dbs2.png

Financial technology (FinTech) revolution

Financial technology (FinTech) uses new technology to compete with traditional financial institutions to deliver financial services. Today, the \$US1.7 trillion financial services industry, referred to as a tsunami of technology, disrupts the way we save, invest, spend and borrow. Globally \$18.9 billion poured into FinTech startups during the first 9 months of 2016.

China is leading the world in FinTech with currently 27 FinTech unicorns worth over \$US1 billion

Data

Reliable data is essential if people, industries and governments aspire to progress from exploiting fossil fuels to employing renewable energy, reducing impacts of natural disasters such as the tsunami in Japan, improving poor peoples' access to clean water in West Asia, and eradicating diseases such as Ebola in Africa.

Data is collected by a range of organisations such as businesses (revenue), governments (literacy rates) and non-governmental organisations (number of people living below the poverty line). Data once collected, measured and analysed, can be visualised using graphs, tables and images such as Meteorological satellite images and Census data.

Traditionally data consisted of information, with rows and columns of numbers in spreadsheets, or structured tables. This model is becoming outdated as data is moving towards systems that use artificial intelligence to extract answers. By teaching computers to think, information can be analysed in an abstract way. This task requires vast, limitless collections of data from a variety of sources

More data than grains of sand on Earth

Governments, companies, researchers and community groups are adapting to the new world in which data is bigger, faster and more detailed. This is referred to as the Big Data Revolution that will transform how we live, work and think

Imagine all the grains of sand around the world-include deserts and beaches. According to Google it is seven quintillion, five hundred quadrillion!

By 2020:

- amount of data will be four times larger than grains of sand on Earth
- 15% of data will be stored in the cloud
- 33% of data will contain information that might be valuable if analysed. Referred to as MapReduce technology – extraction of value from large untapped pools of data

Big Data

Big Data involves data sets that contain large or complex data that is inadequate for traditional data processing software. Instead, Big Data can be analysed to reveal patterns, trends and associations relating to human and environmental behaviour and their interactions. It employs predictive analytics to find new correlations that prevent diseases and combat crime. Big data includes the ability to identify the relationship between crime and socio-economic variables such as education, income and unemployment. It identifies concentrations of crime in small geographical areas (crime hotspots) that allows the application of appropriate welfare projects.

Commercial, industrial, governmental and welfare organisations benefit from the use of Big Data.

Big Data Companies and their influences

EXAMPLES	INFLUENCES	
SMS Marketing Services	Company works with top brands, brokers, agencies and Fortune 500 firms to provide data	
Tableau	Company offers visualisation of data from a variety of sources and works on everything from an iPhone to a PC	
Kognitio	Analytical applications of the company on large and complex data for organisations such as Data Science	
Company monitors mobile and web applications in real-time that run on premises, in the cloud, or as a mix. D the company makes sense of 250 bi data points from millions of applicat		

The Five Vs of Big Data

Velocity, Variety, Veracity, Volume and Value required to understand Big Data



Image: https://cdn.datafloq.com/blog_images/where-does-the-internet-of-things-come-from.jpg

Internet of Things (IoT)

a. Internet

Over the past few decades, the Internet has democratised the creation, access, and analysis of Big Data. The Internet of Things (IoT) and the Big Data Revolution (IoT/Big Data revolution) connects billions of internet-connected 'things' to generate massive amounts of data. The huge growth is due to available and affordable (largely cloud-based) storage and compute power, low-cost internet use, lowpower sensor technology and widespread wireless connectivity. In the future the Internet appears likely to maintain its dominance, when every thermostat, doorknob, and household white good is linked to the Internet.

60 Seconds Online



Diagram: https://media.licdn.com/mpr/mpr/shrinknp_800_800/AAEAA QAAAAAAAAQGAAAAJDNhN2Y4M2RmLTc3ODUtNDlhNC1iN2VhLTdkZ GFhOWEyNjgwYg.jpg

b. Things

'Things,' refers to a wide variety of devices such as cars with built-in sensors, heart monitoring implants, biochips on animals, DNA devices for food monitoring, field devices that assist firefighters and home automation that control of air conditioning, and refrigerators. However, in 2017, more than 99% of 'things' in the physical world are still not connected to the Internet.

The Internet of Things (IoT) refers to the interconnections of computing devices embedded in everyday objects or things (e.g. smart phones) that enables data to be received and transmitted via the internet. It has propagated smart watches (Apple Watch), smart wristbands (Nike), smart TVs (Google), and the development of smart homes, cities and energy systems. By 2020, IoT will consist of about 50 billion devices enabling humans to become increasingly connected, interactive and capable of communicating with each other independently of humans.

IoT is driven by connectivity, Big Data, analytics and the cloud, and is said to be powering the fourth industrial revolution. In the smart connected world, these networked connections aim to create unprecedented economic opportunities for countries, businesses and individuals and 'disconnected' devices are anticipated to no longer exist.



http://arduinoarts. com/wp-content/ uploads/2011/09/ iot2.jpg



http://blog.orbitahealth.com/bebaio/8-iot-cartoons-that-will-add-somehumor-to-your-day

Network Intelligence



Diagram: https://blogs.cisco.com/digital/how-the-internet-of-everything-willchange-the-worldfor-the-better-infographic

Internet of Everything (IoE)

Internet of Everything (IoE) developed by Cisco is the intelligent connection of people, process, data and things. IoE builds onto IoT by adding network intelligence that allows convergence and visibility across systems.

Compare IoT with IoE focussing on the rail system



Image source: https://iot-convention.eu/_library/_files/iot_pub_trans_2015-8-27_version2-2_large.png



Internet of Things and Everything



Image source: http://zdnet2.cbsistatic.com/hub/i/r/2016/07/20/82ce1fd8-6817-4a64-b065-ae245ad00e8e/resize/770xauto/7b385d49ef7c1e11677fa a947a03638a/istock-internet-of-things.jpg



Enablers of IoT and IoE



Image source: http://zdnet2.cbsistatic.com/hub/i/r/2016/07/20/82ce1fd8-6817-4a64-b065-ae245ad00e8e/resize/770xauto/7b385d49ef7c1e11677faa947 a03638a/istock-internet-of-things.jpg

Use of Big Data and the Internet of Things







Diagram: https://datafloq.com/read/internet-of-things-more-than-smart-things/1060

Smartphones and wearable computing

Smartphones can be used to do everything beside phone calls, such as sending text messages, reading emails and visiting websites. They can also be converted into a medical device. For example, the microphone can pick up heartbeats, camera can look at the back of throats and accelerometers are able to track a person's exercises. All of these activities are linked to a cloud of doctors who pass the information onto someone who specialises in your affliction.

By adding extra sensors and smarter use of the microphone, camera and accelerometer, all lives are anticipated to change in the future

Reinventing the interface – power in your hand

Turn your hand and fingers into a touchscreen display, 3D mouse and controller







Source: http://eyehand.com/

From head to toe wearable IoT

By 2017, there is anticipated to be 70 million wearable computing gadgets. For example:

- shirt and trousers: conductive thread takes the energy generated by body movements and uses it to power other gadgets
- wristband: measures steps walked during the day
- shoes: with embedded GPS chips left shoe indicates direction and right shoe shows distance
- hand: with embedded chip contains medical records, passport data and credit records
- wristwatch: vibrates when message arrives
- eyes: glass overlays navigate direction and provide information about points of interest

Augmented reality (AR)

Augmented reality (AR) or wearable technology, is combining with IoT to create a new

reality that will change the way we experience the world. Technology will overlay daily activities to create a personalised, digitally enhanced experience. Visit a shop and have your body scanned, and soon a customised wardrobe will be presented to you.

The integration of virtual and augmented reality will require larger sets of data to be analysed.

Example of Augmented reality



https://boygeniusreport.files.wordpress.com/2017/02/augmented-realityiphone.jpg?quality=98&strip=all&w=782

Augmented Reality in Medical World

Augmented Reality (AR) technology plays an important role in the future of medicine such as

Telemedicine, Real-Time Imagenology, and Telesurgery (robotic surgery and AR from afar). Google Glass has been successfully used for surgical purposes. For example in 2013 shoulder replacement surgery was performed using Google Glass and virtual AR technology VIPAAR. Apps are also used, such as Doctor Mole-Skin Cancer app that enables users to assess moles with real time computer vision technology. It scans a mole and the patient receives real time feedback.

Google Glass in the medical world



Source: http://bloggie-360.blogspot.com.au/2014/11/the-specs-on-specsof-google-glass.html

Apps for Healthcare Professionals



Source: https://www.imedicalapps.com/wp-content/uploads/2013/02/ Screen-Shot-2013-02-14-at-12.46.19.png



Image Source: http://www.agilone.com/wp-content/uploads/2015/06/retailtech.jpg

Big Data a game changer for retail

Eventually, every aspect of our lives will be affected by Big Data. Interestingly, the retail sector is where big data has made a huge impact. Large retails stores understand consumers' behaviour by collecting data from every store and every item.

Responsive retail has peaked, and 'predictive analytics' is used to exploit customer data. Predictive analytics uses past data for predicting future events. Its focus is on the micro rather than the macro, looking at individual interactions with customers, suppliers and employees rather than at average behaviour.

Retailers are gathering demographic data and economic indicators to build a picture of the spending habits across targeted markets. They also follow trend forecasting algorithms, and comb social media sites and peoples' web browsing habits, to determine what is triggering the latest retail buzz, and then analyse data to forecast future retail trends

Changing retail

It can be spooky to contemplate living in a world where Google and Facebook and even Target knows more about you than your parents do! Today, there has been

vast progress since Target's Big Data retail experiment attempted to work out who was pregnant.

Article source: http:// seanlahman.com/blog/wpcontent/uploads/2013/08/ target.jpg; http://www.slate. com/blogs/how_not_to_ be_wrong/2014/06/09/ big_data_what_s_even_ creepier_than_target_ guessing_that_you_re_ pregnant. html



Predictive retail



Cartoon: https://s-media-cache-ak0.pinimg.com/736x/d2/ff/8b/d2ff8bab820 4bcb85d134b94f431ff35.jpg; http://timoelliott.com/blog/wp-



Cartoon: content/uploads/2014/01/predictive-maintenance-health.jpg



Walmart-predictive shopping



Source: https://image.slidesharecdn.com/eventtechfinal-notes-131110220819-phpapp02/95/big-data-and-predictive-analyticsmarketings-holy-grail-9-638.jpg?cb=1384247776

Imagine you're about to leave the house to pick up your kids. As you grab your keys, you hear a voice from the device on your coffee table: "It looks like you'll use the last of your milk tomorrow, and yogurt is on sale for \$1.19. Would you like to pick up an order from Trader Joe's, for a total of \$5.35?" You say yes, and Alexa confirms. The order will be ready for curb side pickup, on the way home from your kids' school, in 15 minutes. This future scenario isn't so far off. Amazon, Facebook, Google, and Apple are accelerating consumer expectations and what's technologically possible, from same-day delivery to machine-powered image recognition. You can call an Uber with Siri and book a flight entirely through a Facebook Messenger bot.

It's time for retailers to help people find products in their precise moment of need – and perhaps before they even perceive that need – whether or not they're logged in or ready to click a "buy" button on a screen. This shift willrequire designing experiences that merge an understanding of human behaviour with large-scale automation and data integration.

> Source: https://hbr.org/2016/11/how-predictive-ai-will-changeshopping

Big Data a winning formula in sports

Big Data spans the entire sports cycle from pre-match analysis, training, player profile, team performance to fan engagement. It triggers broadcast content, advertising, ticket sales, a sports person's performance, and predict the outcome of a game. However, it is easier to analysis real time data for an individual such as a tennis player than a team sports such as football.



'Teams and the analytics providers have sophisticated ways of monitoring and capturing growing volumes of data. Cameras, sensors and wearables record every aspect of player performance. Managers, coaches and athletes use data to dictate calorie intake, training levels and even fan interaction in the chase for better performance on the field.'

'In American football or rugby for example, injury levels have been reduced in the professional game due to wearable sensors that monitor the intensity of activity and impact of collisions, and compare this to historical data to determine when a player might be in danger of overexerting or injuring themselves.

https://www.forbes.com/sites/bernardmarr/2015/03/25/big-data-thewinning-formula-in-sports/#66875ed34dea

Baseball – A snapshot of metadata and graphics illustrating Sportvision's Field f/x

The Field f/x program captures over one million points of data for every baseball game. That is 2.4 billion data points per baseball season. This task is measured by a computer and not constrained by human limits-errors and labour intensive job to view videos make billions of measurements.

Baseball game



Screen grab:http://seanlahman.com/blog/wp-content/uploads/2013/08/ field-fx1.jpg

PEOPLE & ECONOMIC ACTIVITY



'Open Data' in a Big Data world

Open Data refers to everyone, everywhere, everyday possessing access to 'all' data. This aims to prevent discrimination and promote transparency and accountability. Of the 4.3 billion people without access to the internet, 90% live in developing countries, mostly in rural remote locations. Access and use of ICT is required to penetrate remote areas in all countries to enable sustainable development.

Spider graph: inequalities in access to and use of ICT services



Source: http://www.undatarevolution.org/wp-content/uploads/2014/10/Screen-Shot-2014-10-24-at-10.38.01-AM.png

However not 'all data' is available to 'all' people because:

- firewalls are built to monitor and control network traffic and block computer hackers
- black holes exist when internet traffic is silently discarded e.g. China and North Korea
- unequal access to data and technologies across regions-advanced/developed economies tend to be ahead of the rest of the world on almost every ICT indicator:
 - access affordability, infrastructure, content, skills
 - use government, business, individual
 - Impacts social, economic, environmental

Governments are opening their data, as Open Data aims to stimulate innovation, tackle economic problems and improve human wellbeing. The Australian Government developed a Big Data strategy to make data held by national and regional authorities publicly available

Firewall concept



http://s3.amazonaws.com/rv-wp/centurylinkdealscominternetres/ uploads/2013/11/firewall.jpg



'Better Data Better Lives': 2030 Sustainable Development Goals

Big-Open Data is important for the success of the United Nations(UN) 2030 Sustainable Development Goals (SDG). Huge data sets, supported by technical and analytical services, are required to address SDGs-17 goals, 169 target and 230 indicators.

The UN Global Partnership for Sustainable Development Data (GPSDD) is an open, multistakeholder network committed to harnessing Big-Open data for sustainable development.

- Open Data: The SDGs pledge to 'leave no one behind', requires data to cover populations, areas and themes, not previously counted or studied.
- Big Data: Countries are required to improve statistical systems and use quality data to improve development policies and monitor development processes.

Big-Open Data underpins the success of UN development policies by focussing on key questions such as:

- Where will scarce funds and resources be allocated? (countries/regions)
- What areas of development require highest assistance? (health/education/water)
- What changes have occurred since the UN intervention? (increase/stagnation/decrease) Aimed to improve human wellbeing (people, societies) and protect the environment, development data will need to be accessible and useable, and to be used more effectively and efficiently.

Big-Open data for people, society and the environment



Harnessing Big Data for Sustainable Development

Big Data from sources such as satellites, crowdsourcing, social media, sensors, GPS and mapping, aims to accelerate sustainable development and humanitarian actions.

Big Data applied to SDG

Sustainable Development Goals

NO POVERTY
Spending patterns on
mobile phone services can
provide proxy indicators
of income levels

2 ZERO HUNGER Crowdsourcing or tracking

of food prices listed online can help monitor food security in near real-time

GOOD HEALTH AND WELL-BEING

Mapping the movement of mobile phone users can help predict the spread of infectious diseases

QUALITY EDUCATION

Citizen reporting can reveal reasons for student drop-out rates

GENDER EQUALITY

Analysis of financial transactions can reveal the spending patterns and different impacts of economic shocks on men and women

CLEAN WATER AND SANITATION Sensors connected to water pumps can track

water pumps can track access to clean water

AFFORDABLE AND CLEAN ENERGY

Smart metering allows utility companies to increase or restrict the flow of electricity, gas or water to reduce waste and ensure adequate supply at peak periods

DECENT WORK AND ECONOMIC GROWTH

Patterns in global postal traffic can provide indicators such as economic growth, remittances, trade and GDP

INDUSTRY, INNOVATION AND

INFRASTRUCTURE Data from GPS devices can be used for traffic control and to improve public transport

REDUCED INEQUALITY Speech-to-text analytics on local radio content can reveal discrimination concerns and support policy response

SUSTAINABLE CITIES AND COMMUNITIES

Satellite remote sensing can track encroachment on public land or spaces such as parks and forests

B RESPONSIBLE CONSUMPTION AND PRODUCTION

Online search patterns or e-commerce transactions can reveal the pace of transition to energy efficient products

CLIMATE

ACTION Combining satellite imagery, crowd-sourced witness accounts and open data can help track deforestation

LIFE BELOW WATER

Maritime vessel tracking data can reveal illegal, unregulated and unreported fishing activities

D LIFE ON LAND

Social media monitoring can support disaster management with real-time information on victim location, effects and strength of forest fires or haze

PEACE, JUSTICE AND STRONG INSTITUTIONS

Sentiment analysis of social media can reveal public opinion on effective governance, public service delivery or human rights

PARTNERSHIPS FOR THE GOALS Partnerships to enable the combining of statistics, mobile and internet data can provide a better and realtime understanding of today's hyper-connected world

Source: http://unglobalpulse.org/sites/default/files/big%20data%20and%20sdgs.jpg

United Nations Data Ecosystem

As the data world is changing at a bewildering pace the United Nations (UN) works to

strengthen data ecosystems, develop global data principles, and integrate new technology with new partnerships. The UN Data Ecosystems aims to:

- link people, communities, businesses and governments
- integrate local, national and global data systems
- provide better data from a wider range of reliable sources e.g. multilateral institutions, civil society organisations, research institutions, academia, private sector and citizens
- design a framework for collecting, processing and analysing data
- use quality data from geospatial technology and satellite imagery (Earth Observations)
- deliver an accurate snapshot of progress towards the SDGs goals and targets
- contribute to an improved understanding of

global, national and local social, economic and environmental problems, and how they can be sustainably managed

Taking the Global Pulse

Global Pulse is an initiative of the UN that attempts to bring real time monitoring and prediction to development projects. Mobile phones provide a powerful platform to reach remote people and obtain real-time feedback from communities. Global Pulse incorporates a diversity of data sources such as:

- interactive data visualisation tools used during a typhoid outbreak in Uganda
- extraction and analyses of tweets relating to vaccines and immunisation used in Indonesia
- exploration of online news data used for conflict analysis

Global Pulse has developed a partnership with Quid. Quid is an information mapping platform that enables visual mapping and analysis on most development topics.



Using Earth Observations-Big Data

Over 1,300 satellites are pivotal to our networked lives as they connect the world to broadband services, and its global positioning data (GPS), helps prevent and mitigate natural and human disasters.

'The Group on Earth Observations (GEO) is championing the cause of Open Data. "Whether it is from space, from the atmosphere, from the marine environment or from the land, if public resources and taxpayers' money went into building the satellites and/or the instrumentation, then the data needs to be released broadly and openly. Governments should not be charging their citizens for data that they have already paid for.'

Source: https://www.geospatialworld.net/article/geospatial-data-sustainable-development-goals/

'Earth observation data and information, collected from both space and ground platforms are the basis for addressing a multitude of environmental issues. A globally co-ordinated strategy for the collection, integration and sharing of these data and information plays an essential role in the post-2015 Sustainable Development Goals (SDG)'

Source: https://room.eu.com/article/Understanding_Earth_GEO_and_the_ SDG_environmental_agenda

Earth observations provides critical data that assists SDGs, for example:

- SDG-2 (Zero Hunger) via crop monitoring
- SDG-6 (Clean Water & Sanitation) via population density, wastewater leakage data
- SDG-11 (Sustainable Cities & Communities) via air quality data
- SDG 14 (Life Below Water) via remote sensing for water quality
- SDG-15 (Life on Land) via forest cover data from satellites



Diagram: http://gefieo.org/sites/default/files/ieo/ieo-documents/SDG-Bigdata.pd



SDGs and Earth Observations

Geospatial Data monitors SDG

'Geospatial data, is the basis for evidence-based decision-making, monitoring and accountability. The geospatial community recognises that location and geography are significantly linked to many, if not all, elements of SDGs'
Source: https://www.geospatialworld.net/article/geospatial-data-sustainable-development-goals/

Geospatial Data links to SDGs



Diagram: https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-02/Statements/IAEG-SDGs-GGIM.pdf

Geospatial data aims to increase the availability of high-quality, timely and reliable data, disaggregated by geographic location to demonstrate differences in social, environmental and economic conditions, around the world. This data is critical to answering questions such as:

- Where is Ebola occurring? How do we contain the disease?
- Where are people at risk from rising sea levels? How do we protect these people?
- How many hectares of forests have been cleared in Indonesia for palm oil? Are these forest managed sustainably (economic, environmental, social)?

SDG Goals and use of Geospatial Data

SDG GOALS	11 CITIES	12 SUSTAINABLE CONSUMPTION	13 COMBATING CLIMATE CHANGE	14 MARINE AND COASTAL ECOSYSTEMS	15 TERRESTRIAL ECOSYSTEMS	16 PEACEFUL INCLUSIVE SOCIETIES
MAPS, GRAPHS AND DATA	 Public green spaces Housing density Substandard housing Traffic congestion 	 Energy use Pollution – air, water Landfills 	 CO2 and methan emissions Changes in sea levels, weather patterns (more frequent droughts, cyclones) 	 Algal blooms Eutrophication Marine protected areas Coastal erosion (natural and manmade) Clearing wetlands 	 Land degradation Salinisation Biodiversity Protected areas Desertification National parks Wilderness areas 	 Political violence Fragile states Crime hotspots Refugee movements Gross Domestic Product

Fighting climate change using Big Data and predictive analytics

The abundance of climate data from model simulations, satellites, geospatial data, and field observations is closing the knowledge gap on how the complex dynamic Earth system functions. As a result, climate science is one of the most data-rich domains in terms of data volume, velocity and variety. The cloud, the growing number of IoT and the rise of social media, resulted in additional data, photos and videos on anthropogenic changes to Earth. Continuous improvements to Big Data aims to lead to more accurate modelling of the global climate. Additionally, Data for Climate Action harnesses Big-Open Data from science and private and government sectors, and predictive analytics addresses the interconnected causes, impacts and mitigation of climate change.

Could the five Big Data projects stop climate change?

Projects and predictive modelling

Many climate change projects are built around the principle of predictive modelling, with the most advanced climate models called General Circulation Models. However, sceptics question: How reliable are predictive climate change models? Is climate too complex to model or predict?

Innovative projects such as the International Centre for Tropical Agriculture (CIAT) project demonstrates how Big Data aids the mitigation of climate risks and strengthens resilience to climate disasters. In the past climate data provided weather forecasts, but when combined with crop data is able to deliver real time advice to farmers during droughts. Additionally the Weathersafe project designed to help humans deal with climate change, provides valuable data that assists coffee growers adapt to changing weather patterns and soil conditions.

6				
GOOGLE EARTH ENGINE	MICROSOFT'S MADINGLEY MODEL	DATA.GOV'S CLIMATE	GLOBAL FOREST WATCH	OPOWER
Tracks deforestation in the Amazon	Illustrates environmental impacts on animal mortality	Provides 400 government data sets from agencies and researchers	Tracks forest changes. Over 500,000 people use the service e.g. Nestle and Indonesian government	Analyses people's power usage
	1 15 6		11922 - 1982	- STRE

Race for technical superiority

Wining the digital race to achieve technical superiority over competitors involves gathering data to make sure you are not the next taxi company or hotel chain caught off guard by Uber or Airbnb.

Venture capitalist Marc Andreessen declared in:

- 2011 that 'software is eating the world' such as Uber is eating taxis and AirBnB eating hotels. 'Thanks to software, we no longer have to bring maps with us, we don't have to wait for the newspaper to be delivered at our doorstep, as all of our previously physical and bulky tools are now in our phones.'https://futurism.com/software-is-eating-theworld-and-you-need-to-see-it/
- 2017 that 'software is programming the world.' He predicted that in the near future 'chips will be free and be embedded in everything.'



Coding crystal ball

In the future detailed information from databases will be overwhelming! Apps such as Waze will track the flow of users, such as road workers blocking a lane. Autonomous cars will know the position of lampposts and cities will resurface roads when required. Streetlights will be replaced when they go out, and police will have more data on people walking along streets.

RealSense 3D Scanning

While the Intel RealSense 3D depth-sensing camera technology has applications for laptops, PCs and drones, it can also assist everyday tasks. By determining depth and scanning objects in 3D, the camera can verify whether the Ikea table will fit into a car's trunk. Travelers could use the RealSense camera's depth perception technology to scan carry-on luggage. This takes the guesswork out of determining if a bag meets the airline size requirements.

> Source: http://www.cadalyst.com/%5Blevel-1-with-primary-path%5D/5technologies-made-summer-splash-germany-25870



Talking Scooters

By saying 'hello, smart bike' into the helmet, people could sit on a BMW motorbike and inquire about the vehicle's route and tyre pressure. Using Intel Edison technology, the rider is able to access data from the bike's key computer system. Questions are interpreted by Intel voice-recognition software, and the answers are piped into the helmet's built-in audio system. This means that riders don't need to fiddle with a separate device or take their eyes off the road.

The back of the Intel Connected Helmet incorporates LED lights, showing all light signals from the scooter. The hope is that bikers will be more visible to drivers, which will reduce the number of road accidents

Source: http://www.cadalyst.com/%5Blevel-1-with-primary-path%5D/5technologies-made-summer-splash-germany-25870

Big Data on wheels

Modern cars are equipped with more than 100 sensors that create a constant stream of data.

Several times per second, sensors on cars measure location, performance and driving behaviour. According to a McKinsey report connected cars create up to 25 gigabytes of data per hour that is the equivalent of more than a month of 24-hour music streaming. However, cars equipped with surround cameras and radar are able to generate raw data of 100 gigabytes per second.

The data automatically generated by cars provides a huge source of Big Data and analytics. By 2018 one in five cars on the road will be self-aware and the global connected market will be worth \$39 billion.



Big Data hits the road



Statistics: http://static2.businessinsider.com/image/560052d069bedd9b0cfb6a2b-1200-600/connectedcars-1.png

Drive assist technology



Diagram: http://im.ft-static.com/content/images/196878ca-5249-11e4-b55e-00144feab7de.img?width=2711&height=1770&title=&desc=

Merging Big Data with Artificial Intelligence (AI)

Data analysts are unable to keep pace with the huge quantities of Big Data created daily. This dilemma requires the use of Artificial Intelligence (AI), known as machine learning. Al adds an intelligence layer to Big Data, by assisting complex analytical tasks to be completed faster than humans.

Al is already revolutionising lives-Apple's Siri, Google's OK Google, and Amazon's Echo. For example, Siri is a computer program that operates as a personal assistant and knowledge navigator. It uses human languages to answer questions and perform actions by delegating requests to Web services such as looking for a restaurant or providing driving directions. Al also intends to deliver quicker drug discoveries, safer self-driving cars and alternative energy sources.

Al in Healthcare

Al applications will depend on data to develop predictive models. For example the larger the electronic medical data records reflect dangerous infections in hospitals, the better the system can predict these events before they occur. Referred to as actionable insights, Al used in healthcare aims to provide physicians with information to make better decisions for all patients

Healthcare using AI:

- Data management collecting, storing, tracing lineage
- Design treatment plans for oncologists
- Assist radiologists detect health problems faster and more reliably
- Online consultations-report symptoms with checks against database and patient's history
- Health assistance and medication management
- Drug creation speed process and make more cost effective



Internet of Things (IoT), Big Data and AI is crucial for smarter future decisions. A plethora of on-line free data platforms makes organising, synthesising and analysing data easier, however information in a database must be checked for errors, bias and duplications

Security threats to Internet of Things (IoT)

The Internet of Things (IoT), is an open system with many components, making it vulnerable and susceptible to security threats at the component level (e.g. mobile phone, PC) and the systems level (e.g. electricity supplies, banking).

As the number of connected devices is escalating, individuals, organisations and governments connected to the internet are increasingly susceptible to cyberattacks. This has led to the escalation of viruses, malware attacks, spear phishing and ransomware attacks. In May 2017, ransomware cyberattack or WannaCry, hit 200,000 victims in 150 countries. The ransomware locked computers and demanded payments between \$A406 and \$U812 to restore access.

Types of cyber attacks



Background image: http://www.technewsworld.com/article_images/story_ graphics_xlarge/xl-2015-cyberwarfare-1.jpg

Motivation of cyber attackers

The cost of malicious cyber activity is mainly related to the theft of intellectual property and the loss of financial assets.



Hacker's tools

The hackers use a variety of tools such as sending personal e-mails, infiltrating baby monitors or smart TVs, eaves dropping on free public WiFi networks, impersonating trustworthy companies, sending bogus software updates, and using skimmers to steal ATM card information.

Stealing money via ATM



Cartoon: http://i.dailymail.co.uk/i/pix/2013/01/11/article-2260221-16E238A1000005DC-318_634x395.jpg

Security challenges

THREATS –

To privacy, mobile security and middleware security (computer software that 'glues together' separate and complex programs)

DANGERS – Of shared data or data stored in the cloud, runs risk of data and identity theft

10 0000 0001 0010 0011 0100	
10 0011 0100 0101 0110 011 00 10101 10110 0000 0001	
	10101101/ 1/1011 1100 1101 D 0100 0101 0110 011
	10110 0000 0001 00
1001 1010 1011 1100 11	101111100014 10110 0000 0001 100111010000 10001 100

ALTERNATIVE CHOICES

Convenience versus cost of security – Pre-programmed cars with auto unlock doors increases the possibility of manipulation for theft

Access to data versus security, privacy and transparency – Transparency reveals information organisations possess about a person

Cybercrime

Cybercrime activities are globally diffused as it is open to everybody driven by profit and personal gain. Cybercrime has no boundaries although it is influenced by national laws and by efficiency of law enforcement. To counter the increase in cybercrime globally requires the adoption of defence mechanisms aimed to build a security culture.

Cybercrime activities affects IT. Cybercriminals leverage of Big Data has increased the effectiveness of attacks and disruption of businesses and governments. Web attacks and 'insiders' account for more than 55% of cybercrime costs per organisation. The highest Image source: http://www.rodin.com.au/wp-content/uploads/2015/06/attack.jpg

cybercrime costs were in organisations such as defence, financial services, energy and utilities. Of greatest concern are the cybercrime acts represented by computer content, including child pornography, terrorism and piracy.

The number of crimes based on mobile devices and social media is exploding. In the majority of cases, the systems are exposed to cyber threats due to bad habits and risky behaviour. Bogus social network 'likes' and Instagram followers are sold to cybercriminals. The black market supports the growth of cyber threats within the cybercrime ecosystem

Cybercriminal ecosystem



Diagram source: https://securityintelligence.com/wp-content/uploads/2015/06/Cybercrime-Ecosystem-Infographic-Final.jpg

Reducing cyber attacks – the growing menace

Cyber attacks and hacking are threats to individuals, governments, businesses and international organisations. These attacks are generally for social, economic, political and defence purposes. In 2016, the largest attacks focused on financial services, governments and tourism, with cyberattacks on Dropbox, Linkedin and Yahoo.

Security controls and processes have been established to protect organisations and individuals from cyber attacks, such as:

• installing current antivirus software

- using malware protection to block malicious emails
- developing a password policy that prevents users from selecting easily guessed passwords
- monitoring and analysing abnormal network activity and data leakage
- ensuring data is regularly backed up and stored offline

Common cyber attacks - reducing the impact



Cartoons on cyber attacks

Source: http://www.dhakatribune.com/assets/uploads/2016/10/10-10.jpg



Source: http://www.dezynetek.com/humour/cyberattack.jpg



Source: https://cdn1.lockerdome.com/uploads/edebf2c30150a767144ba2bc ff8dc0b88d417683b7d84ecd0ffb3135a48b1314_large



Activities

- List the global interactions in this article.
- Describe the changes to the top ranking global companies over the past 10 years.
- Explain why the Information and Communications Technology (ICT) industry is growing.
- Debate whether data is more important than oil.
- What is Big Data?
- List the Five Vs of Big Data.
- How many times a day are you and your family handing out information to data collecting agencies? List the data collecting agencies.
- Explain why analytical skills and predicted models are important for future decisions.
- Describe how Big Data is essential for the future of the retail and sports sectors.
- Define 'things'.
- Distinguish between IoT and IoE.
- Describe a smart house and a smart city.
- Big and Open Data is important for the success of the United Nations 2030 Sustainable Development Goals (SDG). What is meant by open? Why is Big Data



essential for the achievement of the SDG? How can Big Data from satellite imagery aid the progress of the SDG?

- Explain what is meant by geospatial data and why it is important to future management of the environment.
- Describe the United Nations Data Ecosystem and its aims.
- Big Data is not available to everyone. Discuss inequalities in access to, and use of ICT services across the world. Suggest strategies to reduce inequalities.
- Explain how the following is helping close the climate change knowledge gap:
 - big and open data
 - predictive modelling
 - analytics
 - technology
- Discuss IoT security problems and the implemented strategies aimed to reduce cyberattacks.
- Describe the digital race. Why do you think this race is occurring? Divide your answer into economic, social and environmental factors
- In groups explain 5 of the 50 sensor applications for a smarter world. Present as a photo story – http:// www.libelium.com/resources/top_50_iot_sensor_ applications_ranking/; https://www.dreamstime. com/stock-illustration-smart-city-concept-internetthings-different- icon-elements-modern-designfuture-technology-living-image66500537
- In groups select one topic from the following diagram e.g. disasters. What is GEO? How can Big Data from GEO aid the management of the selected topic? Present as a verbal report.

Understanding Earth: GEO and the SDG environmental agenda



Diagram:http://www.earthobservations.org/images/geo_wheel_small.png

 Couch Surfing – a startup company CouchSurfing is a community of over 14 million members. It allows travellers and locals to connect with each other online, so that they can share hospitality, cultures and adventures. Investigate the technology required for a couch surfing company to prosper.



Photograph: http://www.greatbigscaryworld.com/wp-content/ uploads/2012/12/couch-surfing-770x567.jpg

- People and Economic Activity Investigate one technology company and include:
 - the nature of the economic enterprise
 - locational factors
 - internal and external linkages
 - flows of people, goods, services and ideas
 - effects of global changes on the enterprise

Geofacts

- Since the 1980s the world's technological per capita capacity to store information doubled every 40 months.
- Decoding the human genome originally took 10 years, now it can be achieved in less than a day.
- The Large Hadron Collider data flow is equivalent to 500 quintillion (5×1020) bytes per day, almost 200 times more than all other data sources combined in the world.
- IoT devices surpassed mobile phones as the largest category of connected devices.
- In 2016, three main industries in terms of IoT spending were, manufacturing, transportation and utilities. Consumer IoT spending ranked fourth.
- As a result of volatile global markets and technology, there are a number of 'dead unicorns'.

Resources

- UN data revolution http://www.undatarevolution.
 org/report/
- The Internet of Things https://www.i-scoop.eu/ internet-of-things-guide/
- How many times a day do you hand out your data?
 http://privacyguidance.com/blog/wp- content/ uploads/2013/10/Herold-Tracked-Throughout-Day-Infographic.jpg
- Internet of Things: complete guide benefits, risks, examples, trends – https://www.i-scoop.eu/internetof- things-guide/
- The fastest startups to hit \$1 Billion valuations http:// www.visualcapitalist.com/fastest-startups-hit-1billion-valuations/
- Billion dollar startup club http://graphics.wsj.com/ billion-dollar-club/
- Unicorn companies-trends and startups http://try.alexa.com/resources/running-with-unicorncompanies
- Tracking venture-backed private companies valued at \$1 billion or more – http://graphics.wsj.com/billiondollar- club/?co=Palantir
- Using Big Data for the Sustainable Development Goals

 https://unstats.un.org/unsd/trade/events/2015/ abudhabi/presentations/day3/02/2b%20A-Using%20 Big%20Data%20for%20the%20Sustainable%20 Development%20Goals%2010222015.pdf

- Video: Big Data for Sustainable Development http:// www.unglobalpulse.org/about-new
- Earth Observations support 2030 Agenda for Sustainable Development – http://ceos.org/ document_management/Ad_Hoc_Teams/UNSDGs/ SDG_General%20doc/EO-for-2030- Agenda-for-SD_21Mar2017.pdf
- UN vital role of geospatial data to achieve sustainable development goals – http://www. un.org/apps/news/story.asp?NewsID=51608#. WTJo2cYIGUk
- Data ecosystem http://www.networkimpact.org/ wp-content/uploads/2015/10/DataEcosystem.png

Cartoon



Source: https://bigdatabigbrotherbigboon.files.wordpress.com/2016/10/5310 c94b49b2e946c88ff4c6ca51cc0f.jpg?w=648

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ADVICE TO CONTRIBUTORS

Editorial policy attempts to:

- promote material which will assist the study and teaching of geography
- encourage teachers to share their ideas on teaching geography
- provide a means by which teachers can publish articles
- inform readers of developments in geographical education

Articles are sought reflecting research and innovations in teaching practices in schools. From time to time issues of the Bulletin address specific themes.

Refereeing

All suitable manuscripts submitted to the Geography Bulletin are subject to the process of review. The authors and contributors alone are responsible for the opinions expressed in their articles and while reasonable checks are made to ensure the accuracy of all statements, neither the editor nor the Geography Teachers' Association of New South Wales Inc accepts responsibility for statements or opinions expressed herein.

Books for review should be sent to:

The GTA NSW Council PO Box 699 Lidcombe NSW 1825

Editions

There are four bulletins each year – two published each semester.

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'Geography Bulletin' welcomes advertisements concerning publications, resources, workshops, etc. relevant to geography education.

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- 1. *Objective:* The Geography Bulletin is the quarterly journal of the New South Wales Geography Teachers' Association, Inc. The role of the Geography Bulletin is to disseminate up-to-date geographical information and to widen access to new geographic teaching ideas and methods. Articles of interest to teachers and students of geography in both secondary and tertiary institutions are invited, and contributions of factually correct, informed analyses, and case studies suitable for use in secondary schools are particularly welcomed.
- 2. **Content:** Articles, not normally exceeding 5000 words (no minimum specification), should be submitted to the GTANSW Office gta.admin@ptc.nsw.edu.au. Submissions can also be sent directly to the editor: Lorraine Chaffer (lchaffer@tpg.com.au)

Articles are welcomed from tertiary and secondary teachers, students, business and government representatives. Articles may also be solicited from time to time. Articles submitted will be evaluated according to their ability to meet the objectives outlined above.

- 3. *Format:* Digital submission in Word format. Tables should be on separate pages, one per page, and figures should be clearly drawn, one per page, in black on opaque paper suitable for reproduction. Photographs should be in high resolution digital format. An indication should be given in the text of approximate location of tables, figures and photographs. Every illustration needs a caption. Photographs, tables and illustrations sourced from the internet must acknowledge the source and have a URL link to the original context.
- 4. *Title:* The title should be short, yet clear and descriptive. The author's name should appear in full, together with a full title of position held and location of employment.
- 5. *Covering Letter:* As email with submitted articles. If the manuscript has been submitted to another journal, this should be stated clearly.
- 6. *Photo of Contributor:* Contributors may enclose a passporttype photograph and a brief biographical statement as part of their article.
- 7. *References:* References should follow the conventional author-date format:
 - Abbott, B. K. (1980) *The Historical and Geographical Development of Muswellbrook* Newcastle: Hunter Valley Press.
 - Harrison, T. L. (1973a) *Railway to Jugiong* Adelaide: The Rosebud Press. *(2nd Ed.)*

Harrison, T. L. (1973b) The Spatial Distribution of Macadamia Plantations on the Far North Coast of New South Wales, *Journal of Rural and Agricultural Problems,* 13, 4, Oct. pp. 347–359.

- O'Donovan, M. J., *et. al.* (1980) "Animal life in the North Star District of New South Wales". In W.W. Murphy, (Ed.) *Readings in Regional Geography (Vol.* 2), Sydney: Williams and Sons.
- 8. *Spelling* should follow the Macquarie Dictionary, and Australian place names should follow the Geographical Place Names Board for the appropriate state.





