從性別視角看UN

永續發展目標

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"To understand better is valuable even when we cannot understand perfectly."
by Baggini Julian (2012: 65)

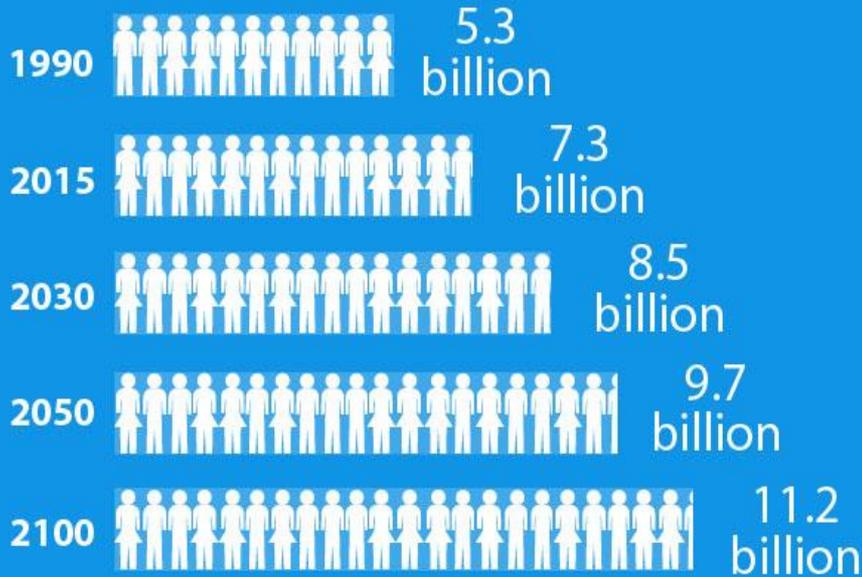# 大綱

1. 人類現今面對的是什麼樣的地球
2. 教育與生活融入永續發展勢在必行
3. 性別無所不在-17項指標各個有性別

不提供講綱，請專心聽講，參與討論。

By 2030/2050, how old are you?
What kind of earth do you want to live on?

World Population
Projected world population until 2100

1990 — 5.3 billion
2015 — 7.3 billion
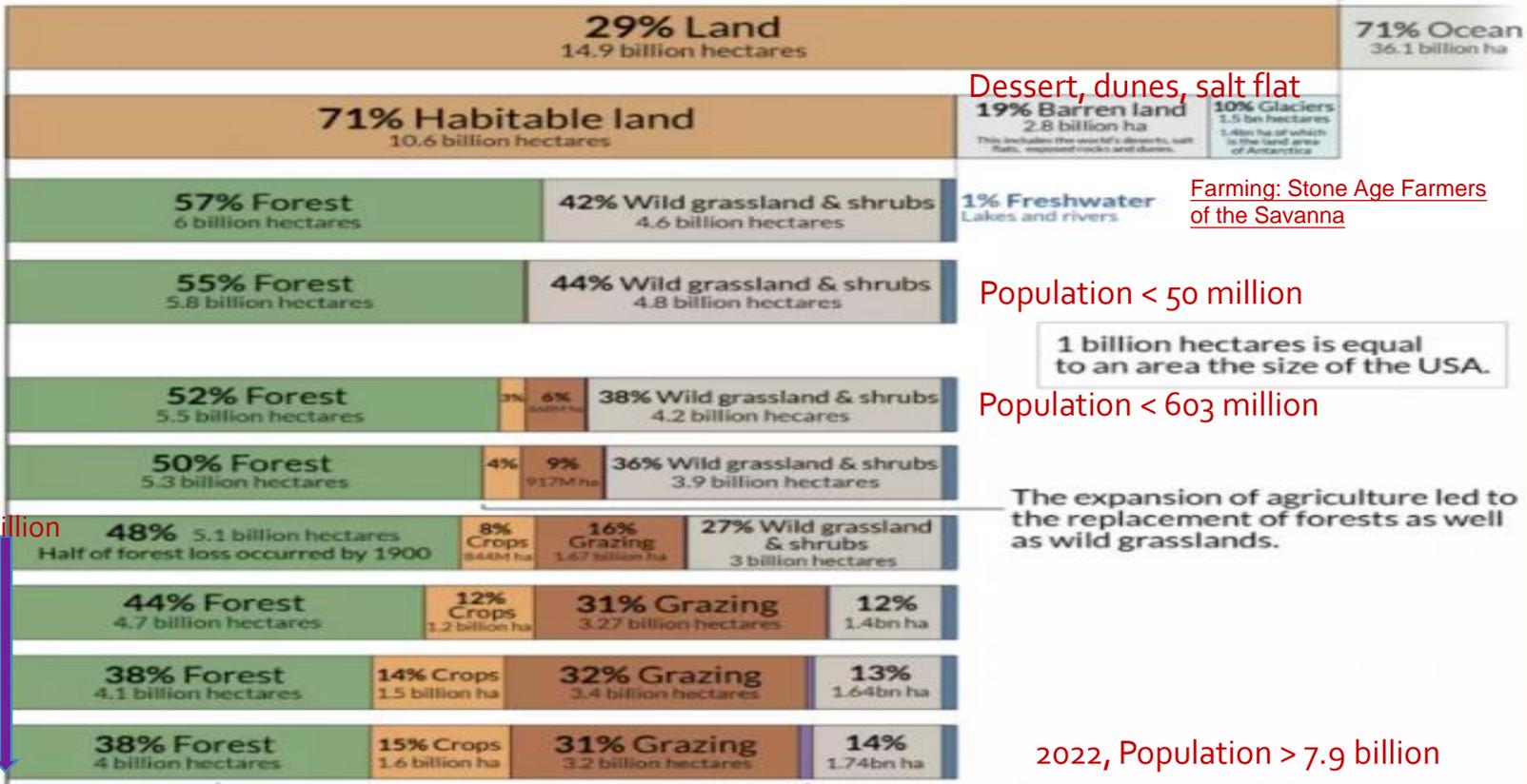2030 — 8.5 billion
2050 — 9.7 billion
2100 — 11.2 billion

Source: United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2015 Revision*
Produced by: United Nations Department of Public Information

2015 TIME FOR GLOBAL ACTION

- Mankind runs out of the earth

- 1/4 surface soil (表土)

- 1/5 arable/cultivable land

- 1/3 forest

- About 1,000 species are extinct every year

- It is estimated that one third of the species will be extinct or endangered in 2050 (the sixth mass extinction)

- Dr. Peter H. Raven (2000) in Taiwan, Sinica

The world has lost one-third of its forest since the last ice age

Our World in Data

About twice the size of the USA gone

29% Land	71% Ocean
14.9 billion hectares	36.1 billion ha

Dessert, dunes, salt flat

71% Habitable land	19% Barren land	10% Glaciers
10.6 billion hectares	2.8 billion ha	1.5 bn hectares
	This includes the world's deserts, salt flats, exposed rocks and dunes.	1.4bn ha of which is the land area of Antarctica

Farming: Stone Age Farmers of the Savanna

Habitable land 10,000 years before present

57% Forest	42% Wild grassland & shrubs	1% Freshwater
6 billion hectares	4.6 billion hectares	Lakes and rivers

5,000 years before present

55% Forest	44% Wild grassland & shrubs
5.8 billion hectares	4.8 billion hectares

Population < 50 million

1 billion hectares is equal to an area the size of the USA.

Population < 603 million

1700

52% Forest	3%	6%	38% Wild grassland & shrubs
5.5 billion hectares		848M ha	4.2 billion hecares

1800

50% Forest	4%	9%	36% Wild grassland & shrubs
5.3 billion hectares		917M ha	3.9 billion hectares

Population > 1.65 billion

1900

48% 5.1 billion hectares	8% Crops	16% Grazing	27% Wild grassland & shrubs
Half of forest loss occurred by 1900	844M ha	1.67 billion ha	3 billion hectares

The expansion of agriculture led to the replacement of forests as well as wild grasslands.

1950

44% Forest	12% Crops	31% Grazing	12%
4.7 billion hectares	1.2 billion ha	3.27 billion hectares	1.4bn ha

2000

38% Forest	14% Crops	32% Grazing	13%
4.1 billion hectares	1.5 billion ha	3.4 billion hectares	1.64bn ha

2018

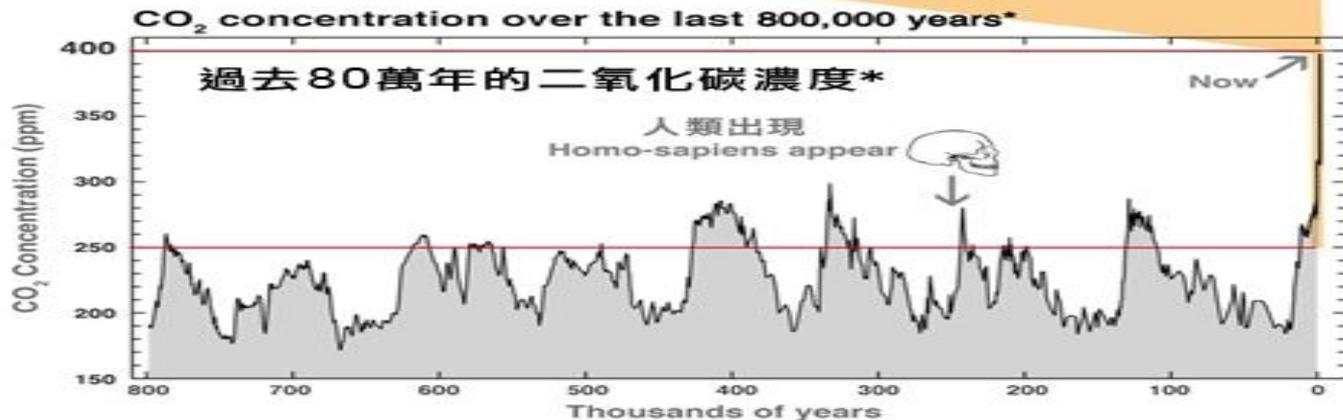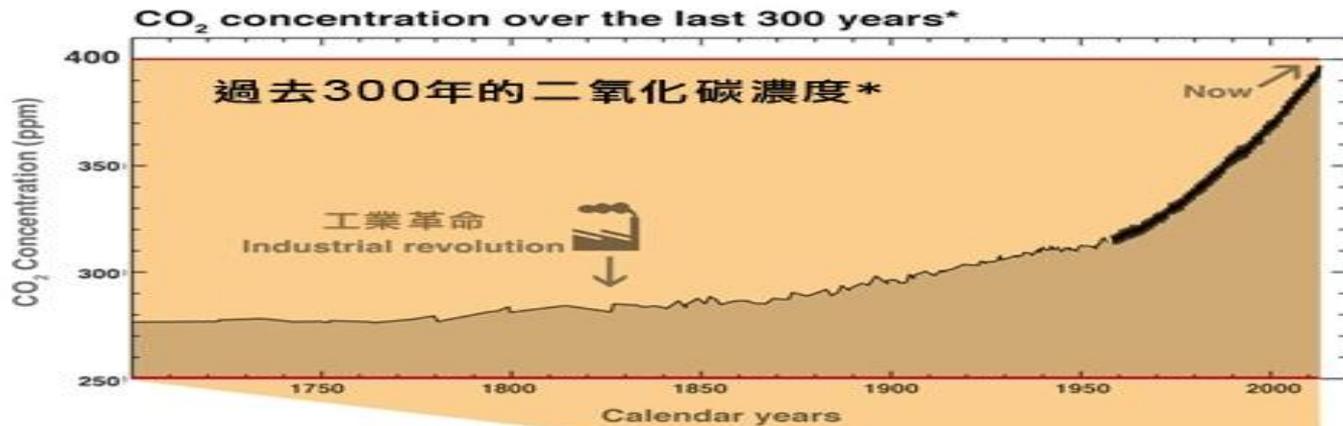| 38% Forest	15% Crops	31% Grazing	14%
4 billion hectares	1.6 billion ha	3.2 billion hectares	1.74bn ha

2022, Population > 7.9 billion

One-third of the world's forests have been lost – half of this occurred in the last century

Almost half of the world's habitable land is used for agriculture.
– 77% for livestock (grazing + crops for animal feed)
– 23% for crops for human food.

1% Urban and built-up land
This includes settlements and infrastructure
150m hectares

2050, population around 9.7 billion

Data sources: Forests data from UN Food and Agriculture Organization (FAO); and Williams, M. (2003). Deforesting the earth: from prehistory to global crisis.
Agriculture data post-1950 from UN FAO; pre-1950 data from The History Database of the Global Environment (HYDE

OurWorldinData.org – Research and data to make progress against the world's largest problems.

Licensed under CC-BY by the author Hannah Ritchie

2013 年5月9日人類歷史上第一次！二氧化碳濃度突破 400 ppm

CO₂ concentration over the last 300 years*

過去300年的二氧化碳濃度*

工業革命
Industrial revolution

Now

CO₂ concentration over the last 800,000 years*

過去80萬年的二氧化碳濃度*

人類出現
Homo-sapiens appear

Now

*Data from ice-cores until 1958 when records started at the Mauna Loa observatory in Hawaii
Source: Scripps Institution of Oceanography - keelingcurve.ucsd.edu

2019年5月11日 封城無助減碳 5月大氣二氧化碳濃度再創新高
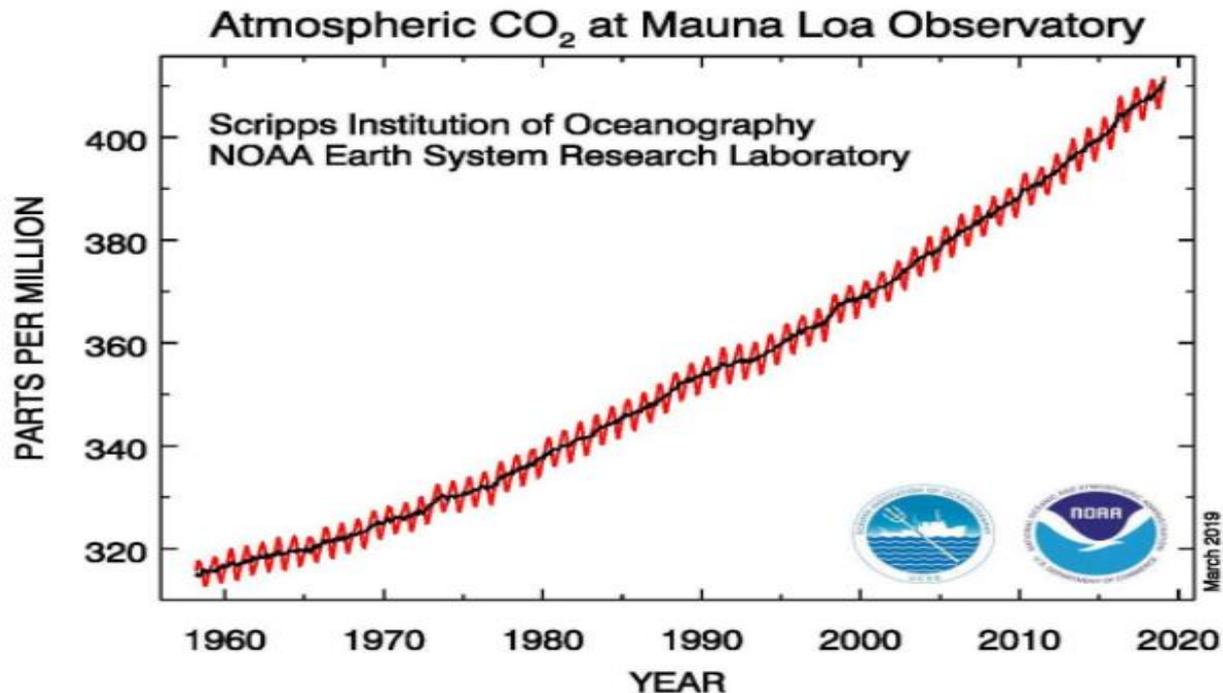
夏威夷毛納羅亞天文台(Mauna Loa Observatory)11日觀測到大氣層二氧化碳(CO2)濃度首度突破415ppm。(圖：夏威夷毛納羅亞天文台官網)

Air pollution kills thousands in megacities despite COVID lockdowns

Smog killed tens of thousands of people last year.   Image: REUTERS/Adnan Abidi

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24 Feb 2021

Michael Taylor
Asia correspondent and sub-editor, Thomson Reuters Foundation

- Air pollution is the largest environmental risk to human health globally.

- Tens of thousands of people died from related deaths last year, despite an economic slow down caused by coronavirus.

- In the five most-populated cities air pollution caused about 160,000 deaths and economic losses totaling about $85 billion.

Air pollution caused tens of thousands of deaths in the world's five most populous cities last year despite coronavirus lockdowns, researchers said, urging governments to ditch fossil fuels and invest in a green recovery.

希波克拉底（Hippocrates）- 人類是專性需氣生物 (氧氣)

1 minute: Brain cells begin to die, but survival is possible

3 minutes: serious brain damage likely

10 minutes: many brain cells have died; the patient is unlikely to recover

15 minutes: recovery is virtually impossible
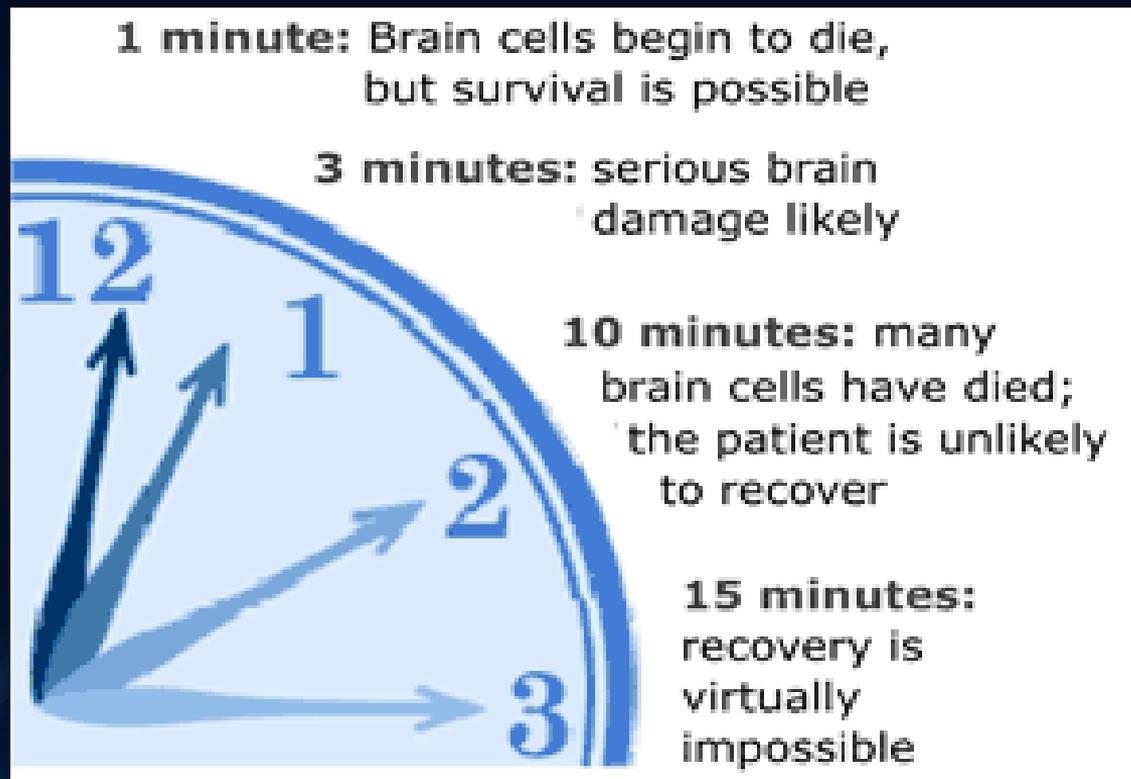
AIR POLLUTION – THE SILENT KILLER
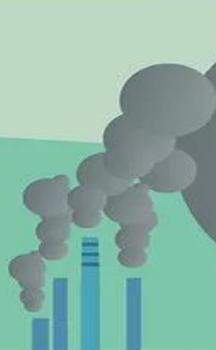
Every year, around **7 MILLION DEATHS** are due to exposure from both outdoor and household air pollution.

Air pollution is a major environmental risk to health. By reducing air pollution levels, countries can reduce:

Stroke

Heart disease
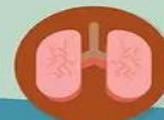
Lung cancer, and both chronic and acute respiratory diseases, including asthma

REGIONAL ESTIMATES ACCORDING TO WHO REGIONAL GROUPINGS:

Over 2 million in South-East Asia Region

Over 2 million in Western Pacific Region

Nearly 1 million in Africa Region

About 500 000 deaths in Eastern Mediterranean Region

About 500 000 deaths in European Region

More than 300 000 in the Region of the Americas

CLEAN AIR FOR HEALTH   #AirPollution   **World Health Organization**

QA: The 6 major points of IPCC report 2021/08/09

IPCC report: UN Secretary-General describes climate crisis as 'code red for humanity'

https://www.weforum.org/agenda/2021/08/u-n-sounds-clarion-call-over-irreversible-climate-impacts-by-humans/

Recent wildfires in Athens are one example of the effects of climate change.   Image: REUTERS/Giorgos Moutafis

6 major statements of IPCC(聯合國氣候專門委員會) in 2021

1. **Humans are the blame:** "It is unequivocal that human influence has warmed the atmosphere, ocean and land."
2. **Temperatures will keep rising:** "even the severest of cuts are unlikely to prevent global warming of 1.5 degrees Celsius above preindustrial temperatures."
3. **Weather is getting extreme**
4. **Artic summers could soon be free of ice by 2050**
5. **Seas will rise no matter what:** Even if global warming were halted at 1.5C, the average sea level would still rise about 2 to 3 meters (6 to 10 feet), and maybe more. "We are sinking!"
6. **Running out of time:** Only within one decade, Cooperate or parish. Stick to the carbon credit.

1. Human activities are the cause of global warming
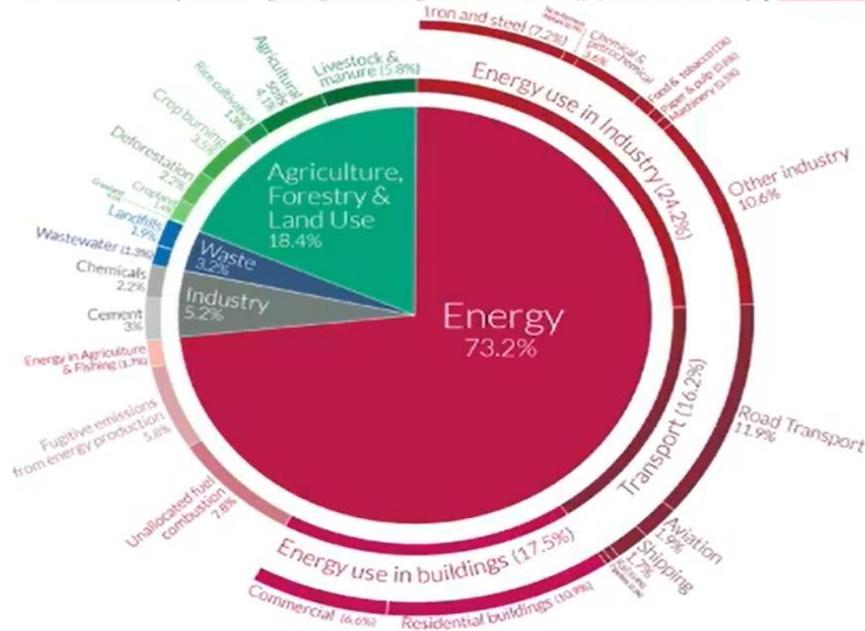
2. Temperatures will keep rising

How much hotter could it get?

Change in average global temperature relative to 1850-1900, showing observed temperatures and future simulations

Future with intensive fossil fuel use

Observed temperatures

Different possible scenarios

Future based on sustainability
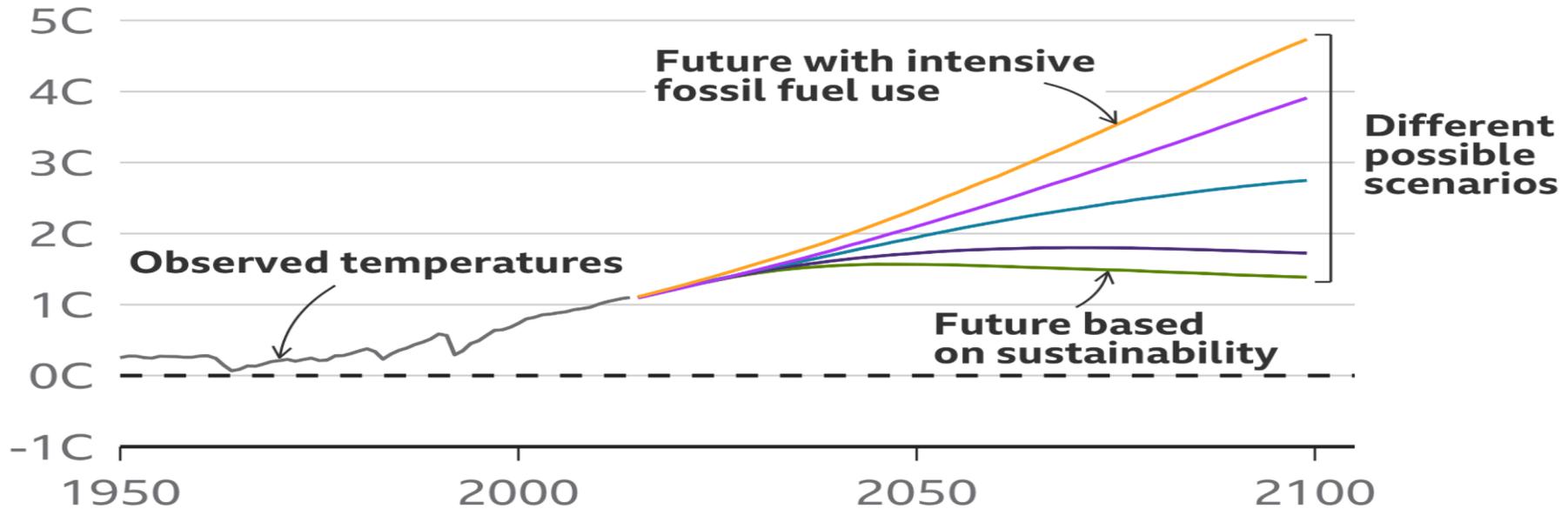
Note: Each line shows the average temperature rise for a scenario

Source: IPCC, 2021: Summary for Policymakers

BBC

Increase in extreme rainfall

Projected increase in frequency and intensity of heavy rainfall in one day which only occurred once in every 10 years on average in a climate without human influence

Frequency every 10 years

Future global warming levels

1850 to 1900	Present 1C warmer	1.5C warming	2C warming	4C warming
Once every 10 years	Now likely to occur 1.3 times	Likely to occur 1.5 times	Likely to occur 1.7 times	Likely to occur 2.7 times

Increase in intensity

Future global warming levels

1850 to 1900	Present 1C warmer	1.5C warming	2C warming	4C warming
	6.7% wetter	10.5% wetter	14% wetter	30.2% wetter

BBC
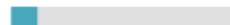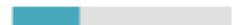
4. & 5. Artic summers could soon be free of ice
Seas will rise no matter what

Average rise in sea level relative to 1900

Unlikely but high-impact rise under a future with intensive fossil fuel use, including ice sheet instability

Future with intensive fossil fuel use

Different possible scenarios

Observed rise in sea level

Future based on sustainability

2.0m
1.5m
1.0m
0.5m
0.0m

1950   2000 2020   2050   2100

BBC
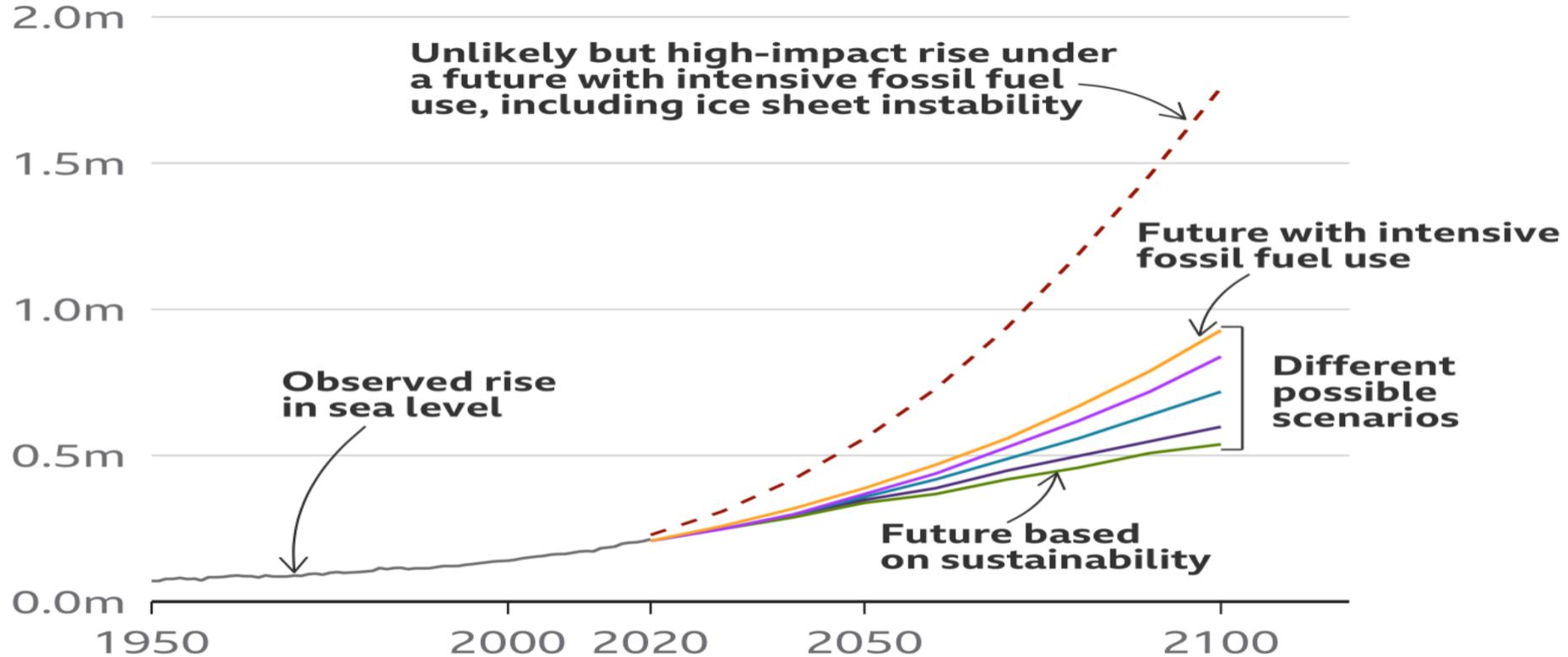
Extreme heat becomes more frequent

Projected increase in frequency and intensity of high temperatures which only occurred once in every 10 years on average in a climate without human influence

6. We are running out of time!!!

Frequency every 10 years

Future global warming levels

1850 to 1900	Present 1C warmer	1.5C warming	2C warming	4C warming
Once every 10 years	Now likely to occur 2.8 times	Likely to occur 4.1 times	Likely to occur 5.6 times	Likely to occur 9.4 times

Increase in intensity

Future global warming levels

1850 to 1900	Present 1C warmer	1.5C warming	2C warming	4C warming
	+1.2C hotter	+1.9C hotter	+2.6C hotter	+5.1C hotter

BBC

Impacts on Crops

EPA United States Environmental Protection Agency
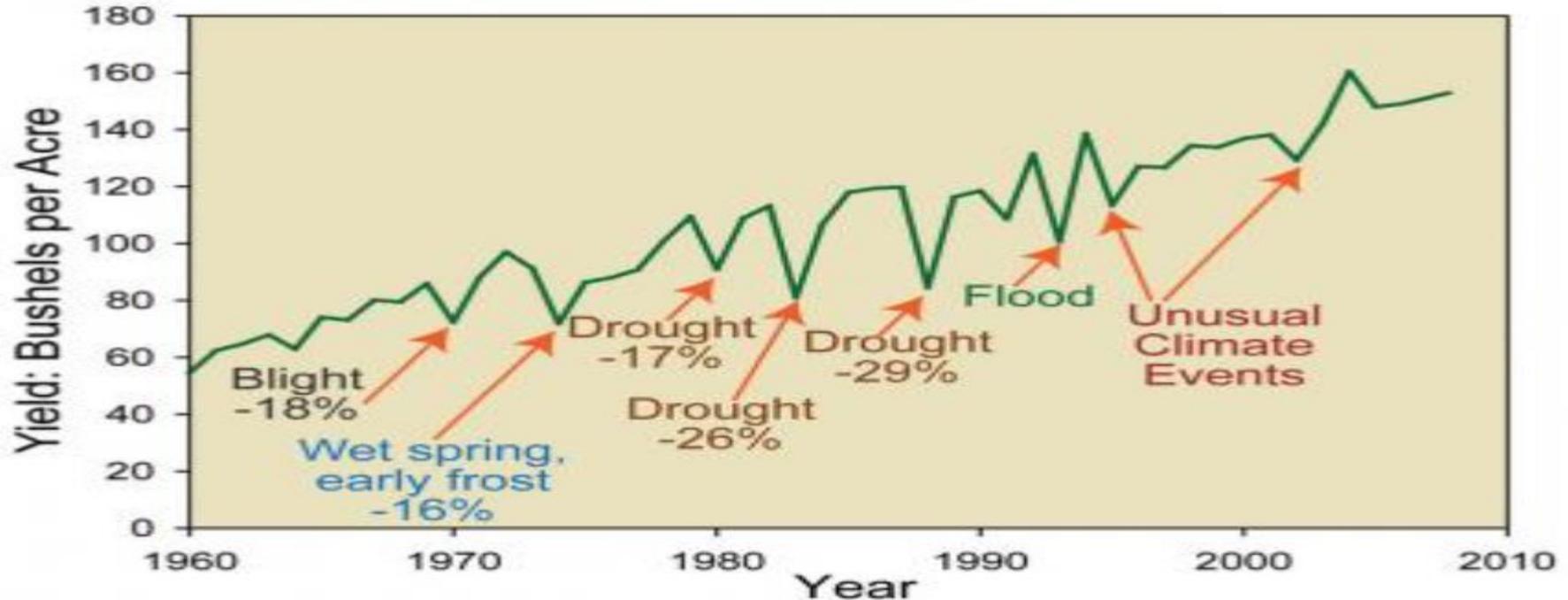
Despite technological improvements that increase corn yields, extreme weather events have caused significant yield reductions in some years. Source: USGCRP (2009)

對策：精準農業、抗旱作物開發與糧食多元化

更熱、無法預期、搶糧搶水搶土地搶資源、不宜人居的地球

台北1–2月雨天24年來最多

2022年來冬雨連日不斷,根據台北氣象站(位於中央氣象局內)數據,截至2月21日台北降雨天數已突破1999年以來的1–2月紀錄。

- 現今所謂的史無前例,未來很快就會變成日常。

- 2100年以前,同等規模如珊迪颱風的水災在紐約惠更常見17倍,卡崔娜等級的颱風則會頻繁變成2倍。

- 從全球來看,只要地球升溫一度,4級和5級颱風生成頻率便會增加25%-30%。
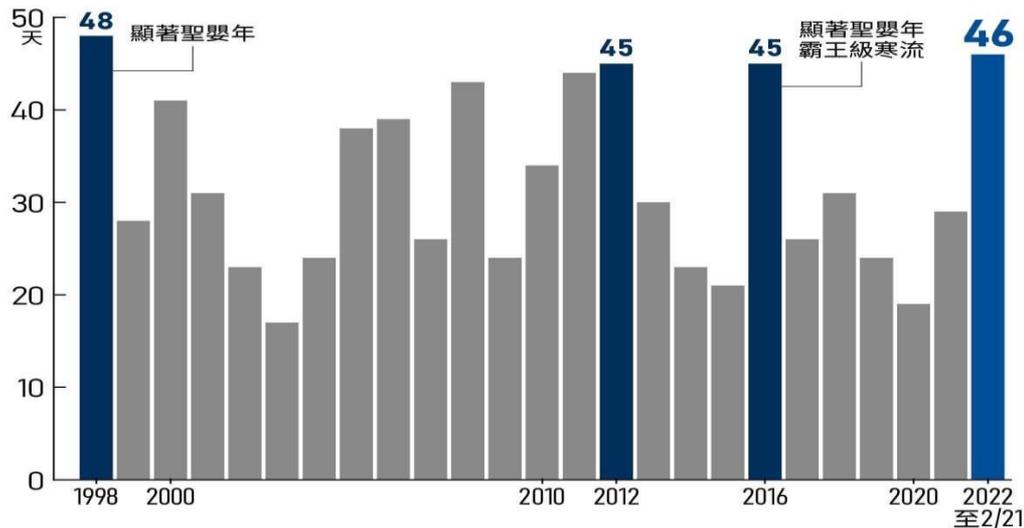
註:含微量 (小於0.1mm) 降水日
資料來源:中央氣象局

中央通訊社

From Millennium Goads to Sustainable Development Goals

	MDGs 2000-2015	SDGs 2015-2030
GENERAL FOCUS	**DEVELOPING COUNTRIES**	**GLOBAL: DOMESTIC AND INTERNATIONAL**
INDICATOR COVERAGE	**8 / 21 / 60** GOALS TARGETS INDICATORS	**17 / 169 / 230** GOALS TARGETS INDICATORS
LEVEL OF DISAGGREGATION	**NATIONAL**	**LEAVE NO ONE BEHIND**
FINANCING	**LARGELY BILATERAL FINANCING**	**DOMESTIC AND LOCAL RESOURCES, NEW FINANCIAL SOURCES AND MODELS**

#Alliance2030

The Paris Climate Conference

The conference, from Nov 29 - Dec 11, will take place amid heightened security

COP21

Barack Obama *USA*

Xi Jinping *China*

147 heads of state attending

Francois Hollande *France*

Narendra Modi *India*

Angela Merkel *Germany*

Vladimir Putin *Russia*

Aim of the conference

A universal agreement to:

✓ **cut greenhouse gas (GHG) emissions** in order to

✓ **limit global warming to +2°C** by 2100

Warming by numbers

40 to 70%

The cut in GHG emissions required by 2050 to stop global warming exceeding +2°C

+3.7 to 4.8°C

Temperature rise by 2100 if GHG emissions continue at current rates

Venue

Citizens' events

Paris CentQuatre centre
Climate Action Zone

Dec 5-6

Dec 7-11

PARIS

Montreuil town
Citizens Climate Summit

Grand Palais exhibition hall
The Climate Experience

Dec 4-10

Climate Generations areas
Open to the public
22,000 m²

- 10 conference rooms
- 105 stands
- 18 exhibitions

Conference Centre
Accredited persons
140,000 m²

32 negotiating rooms

Gallery
Open to businesses

Plenary rooms

Press centre

Source: Climate Action Tracker

AFP

Investing in the future we want

Economic growth

Partnerships

Reducing inequality

In 2016, the Paris Agreement on climate change entered into force, addressing the need to limit the rise of global temperatures. SDGs were in the center of action plans.

An outcome and solution to the imbalance of globalization

In 2015, 193 member countries adopted the 2030 Agenda for Sustainable Development and its
17 Sustainable Development Goals by the United Nations.

vision

- a universal call to action to

1. end poverty,

2. protect the planet

3. ensure all people enjoy peace and prosperity

- All 17 Goals interconnect,

meaning success in one

affects success for others.

環環相扣、彼此連動

Specific requirements

- Governments, businesses and civil society together with the United Nations have started to mobilize efforts to achieve the Sustainable Development Agenda by 2030.

- Universal, inclusive and indivisible, the Agenda calls for action by all countries to improve the lives of people everywhere.

Guideline and two main focuses

- Sustainable development is development that meets the needs of the present **without compromising the ability of future generations to meet their own needs**. Two main focuses:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given

- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

UN 2030 Sustainable Development Indicators (169 targets)

Priority objective: to safeguard citizens from environment-related pressures and risks to health and well-being

Living well, within the limits of our planet

7th Environment Action Programme

European Environment Agency

There's' no Planet B, only Plant A

二、教育與生活融入永續發展勢在必行-ESD

1. Education for Sustainable Development（永續發展教育）
2. 為了人類可以持續生存發展而進行的所有教育活動並於生活落實
3. ESD 不是也不等於 永續發展的教育
   （只教SDGs，卻不探討背後原因、核心概念、社會脈絡以及全球氣候行動以及平權策略）
4. Four major thrusts to begin work of ESD guided by UN
   1. Improvement of basic education
   2. Reorienting existing education to address sustainable development
   3. Development of public understanding and awareness
   4. Provision of training
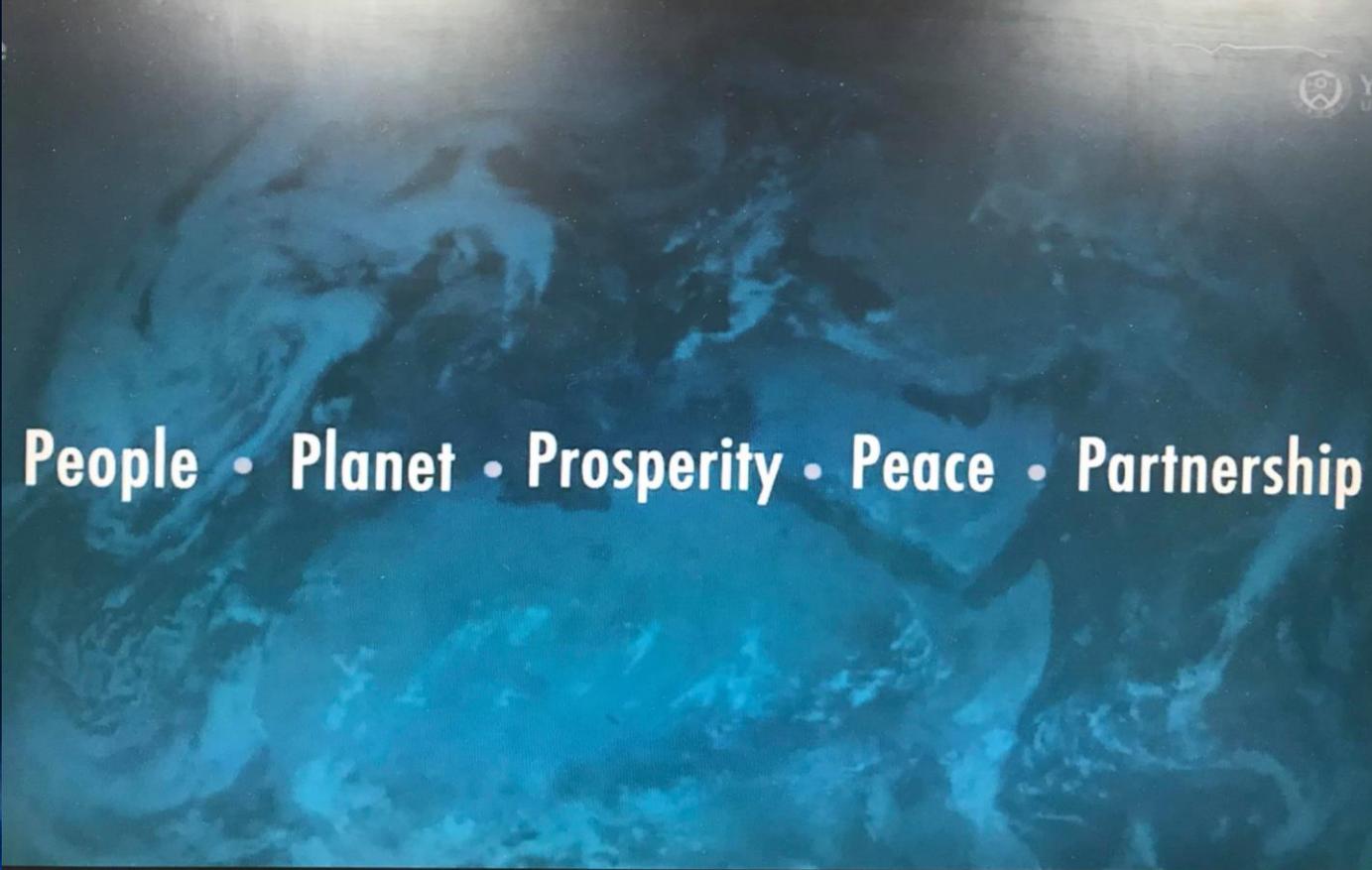
世界教育論壇《仁川宣言》2015 行動方案

1. 轉換學習(transformative learning)
   1. 教師中心→學生中心
   2. 個別學習→合作學習
   3. 學科內容導向→真實議題為導向
   4. 教導態度→引導與改變心智模式以影響決定與行動
   5. 個人行為→結構組織的改變
2. 處理永續發展議題，教育必須奠基於人文主義視角。
3. 包括：人權、尊嚴、社會正義、包容、保護、文化多樣性、交織性議題(intersectionalities)、共同承擔責任、課責性(accountability)
4. 包容與公平性：教育政策與資源必須有良好的配置與調整，leave no one behind。

Five categories of SDGs

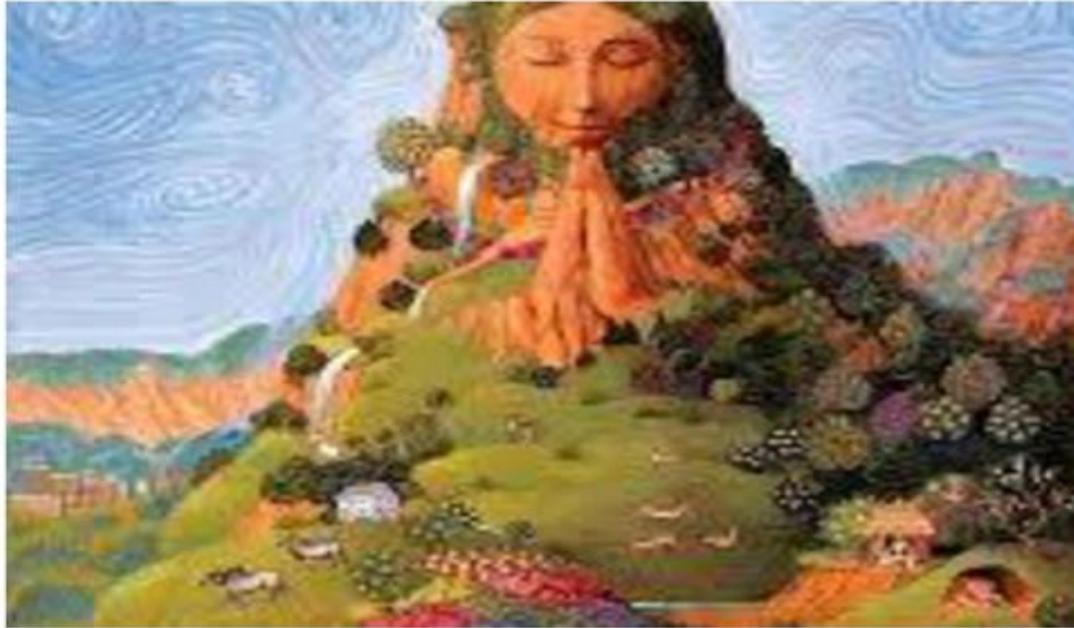People · Planet · Prosperity · Peace · Partnership

Ecofeminism-Mother Earth

ECOFEMINISM AND MOTHER EATH

MOTHER EARTH BEING A FEMNINE ENTITY
GIVES BIRTH TO ALL LIVING BEINGS AND NURTURES THEM FOR LIFE

ECOFEMINISM
WOMEN, ANIMALS, NATURE

1993

EDITED BY GRETA GAARD

ECOFEMINISM
FEMINIST INTERSECTIONS
WITH OTHER ANIMALS
& THE EARTH

2014

EDITED BY CAROL J. ADAMS & LORI GRUEN

BLOOMSBURY
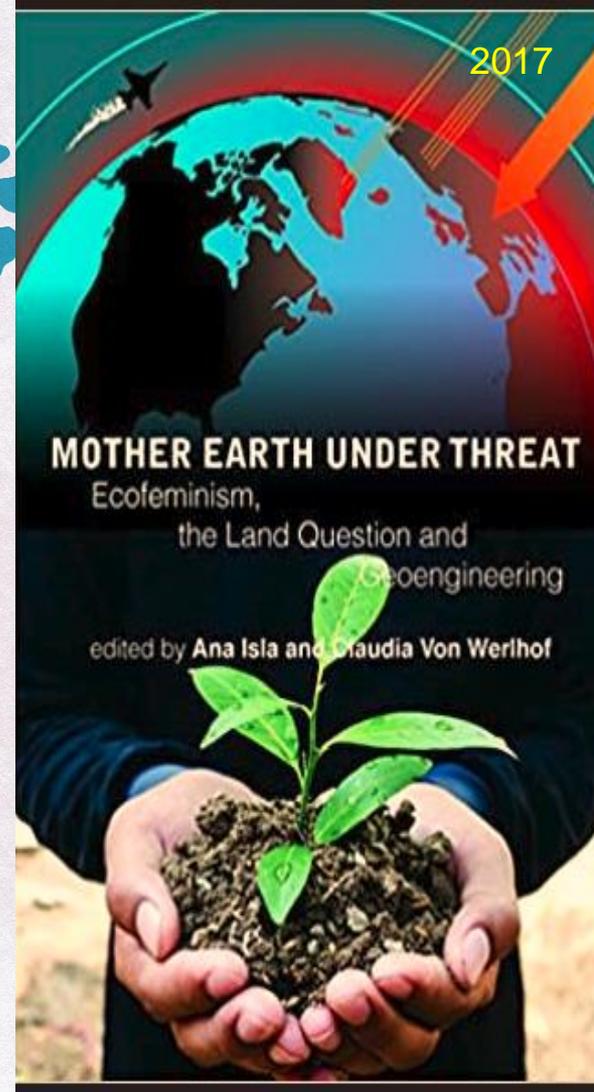
MOTHER EARTH UNDER THREAT
Ecofeminism,
the Land Question and
Geoengineering

2017

edited by Ana Isla and Claudia Von Werlhof

How Climate Anxiety Is Shaping Family Planning

The notion of forgoing children as a means of fighting global warming is entering the mainstream.

Give this article

Grace Heejung Kim

By Dani Blum
April 15, 2020

氣候變遷影響生育選擇/生育自主

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH.

- Alison Gemmill, an assistant professor, survey shows women want fewer children now than they did a decade ago, and, in fact, they are having fewer children;

- the fertility rate in the United States reached a historic low in 2018, falling to 1.73 average births per woman from a 1957 peak of 3.77 births per woman.

https://flaunt.com/content/wroq29hui3izt7tqrvh81ehlyo9158

MCGILL UNIVERSITY IN CANADA OVER 5000 STUDENTS

- pledging to not have kids until the Canadian government takes more significant action to combat climate

SEPTEMBER 20, 2019

—

NO FUTURE, NO CHILDREN: TEENS GIVING UP PARENTHOOD TO FIGHT CLIMATE CHANGE

—

BY MEGUMI MURPHY

The question 18-year-old activist Emma Lim is asking: *Do you feel comfortable bringing a baby into a world where they are not guaranteed a safe future?*

The movement #NoFutureNoChildren was started by Emma Lim, a student at McGill University in Montreal, when she realized the severity climate change has reached and the irreversible changes the world is undergoing.

Percentage of Children Engaged in **Child Labor**

Percentage of children engaged in Child Labor
- Above 50
- 40-50
- 30-40
- 20-30
- 10-20
- Below 10
- NA
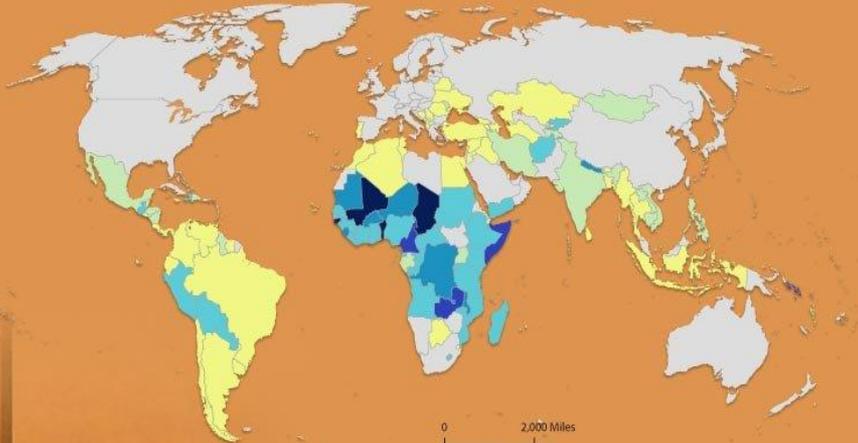
0   2,000 Miles
0   2,000   4,000 Kilometers
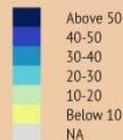
© 2018 MapsofWorld.com

https://www.paoline.org/site/child-labor-exploitation/?lang=en

Forced commercial sexual exploitation by sex[2]

Women and girls 98%

Men and boys 2%
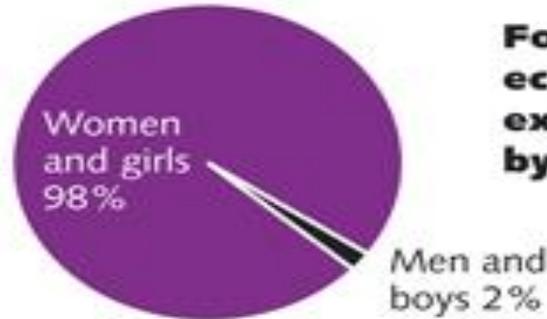
Forced economic exploitation by sex[2]

Women and girls 56%

Men and boys 44%
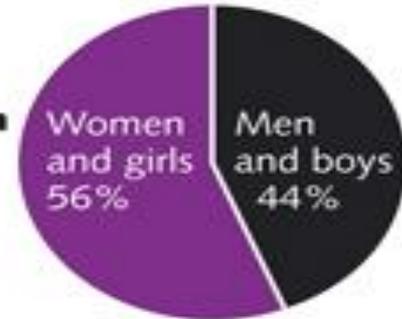
The link between trafficking and poverty[2]

European country of origin	Identified victims of trafficking (2000-2003)	Population living on under $2 day
Albania	2,241	11.8%
Moldova	1,131	63.7 %
Romania	778	20.5%
Bulgaria	352	16.2%
Ukraine	293	45.7%
Croatia	3	up to 2%
Czech Rep	2	up to 2%
Poland	1	up to 2%

electricity poor and gender

The Earth at night – NASA[1]

Students doing their homework under a streetlight in Conakry, Guinea.[2]

Electricity poor and Poverty

Access to electricity vs. GDP per capita, 2019

GDP per capita is adjusted for price differences between countries and inflation and measured in international-$.

Source: Data compiled from multiple sources by World Bank

OurWorldInData.org/energy-access • CC BY

The 'Energy Ladder'
The dominant energy source for cooking and heating, by level of income

3 GOOD HEALTH AND WELL-BEING **4 QUALITY EDUCATION** **5 GENDER EQUALITY**

7 AFFORDABLE AND CLEAN ENERGY **9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**

Clean energy
Energy sources that do not cause harmful air pollution within the household.

If produced from renewable or nuclear energy, electricity is a clean, low-carbon energy source.

Electricity

Natural gas

Gas, Liquefied petroleum gas

Ethanol, Methanol

Fossil fuels

Kerosene

Solid fuels
The energy sources that cause indoor air pollution

Coal

Charcoal

Wood
A major driver of forest degradation. Globally about *half* of all wood extracted from forests is used to produce energy.

Traditional biomass fuels

Crop waste, Dung

| Very low income | Low income | Middle income | High income |

TABLE 3

TOP TEN COUNTRIES WITH THE HIGHEST RATES OF CHILD MARRIAGE ARE ALL ELECTRICITY POOR

Niger: 76 percent

Central African Republic: 68 percent

Chad: 68 percent

Bangladesh: 65 percent

Mali: 55 percent

Guinea: 52 percent

South Sudan: 52 percent

Burkina Faso: 52 percent

Malawi: 50 percent

Mozambique: 48 percent

6 CLEAN WATER AND SANITATION

In 2020, only

26%

OF 170 COUNTRIES

were actively working on gender mainstreaming in water management.

7 AFFORDABLE AND CLEAN ENERGY

Women are underrepresented in the energy sector. Globally in 2019, women held

22%

of traditional energy jobs and

32%

of renewable energy jobs.

11 SUSTAINABLE CITIES AND COMMUNITIES

Slum residents are at an elevated risk of COVID-19 infection and fatality rates. In Rio de Janeiro, Brazil, infected women in neighbourhoods with a high concentration of slums were more than

2X as likely to die compared with those living in neighbourhoods with no slums.

4 QUALITY EDUCATION

Out-of-school girls are at increased risk of violence, child marriage, child labour, trafficking and early childbirth.

But only

42% **OF COUNTRIES**

had measures to support girls' return to school in early 2021.

3 GOOD HEALTH AND WELL-BEING

The pandemic is disrupting essential health services for women and girls.

During the first year of the crisis, an estimated

12 million

WOMEN

in 115 lower- and middle-income countries experienced disruptions in family planning services, leading to an estimated

1.4 million

UNINTENDED PREGNANCIES.

圖一：孟加拉國土因全球暖化氣候變遷所易發洪水與乾旱區。越往南因頻繁暴雨所引發的水災範圍越大。取自QUARTZ報導。

聯合國兒童基金會（UNICEF）2015的研究報告指出，孟加拉29%女孩15歲前被迫結婚、65%女孩在18歲時便已婚，全國婦女平均結婚年齡為11.2歲，竟比1980年代的統計數字還低。

被迫早婚的女孩幾乎永遠的失學，她們尚未發育成熟的性器官與身體因承受過早的性行為，發生大出血與併發症的機率極高。

孟加拉更因缺乏普及的性教育與避孕政策（容易取得且價格合理的避孕藥或保險套），其生產死亡率與嬰孩死亡率亦高。家庭暴力與婚內強暴也層出不窮，近年來年輕女性被潑酸毀容或被夫家遺棄又無娘家可回的社會案件也越來越多。

根據澳洲GLASS研究團隊（Gender, Leadership, and Social Sustainability）在孟加拉三年蹲點的田野研究報告指出，孟加拉氣候變異，加速導致童婚現象惡化，有單身男性的家庭，便利用婚姻制度中女方需支付嫁妝的社會習俗彌補農損災害，以養活家人。
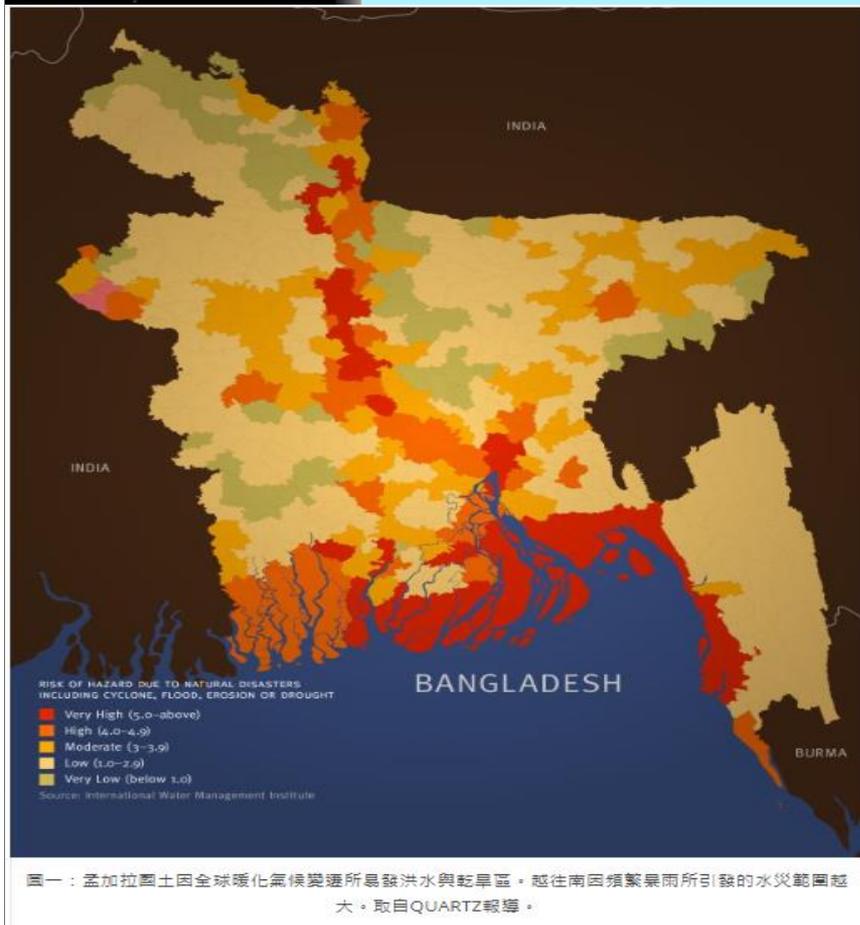
Countries with the highest number of child marriages*

Country	Count
India	15,509,000
Bangladesh	4,451,000
Nigeria	3,538,000
Brazil	3,034,000
Ethiopia	2,104,000
Pakistan	1,909,000
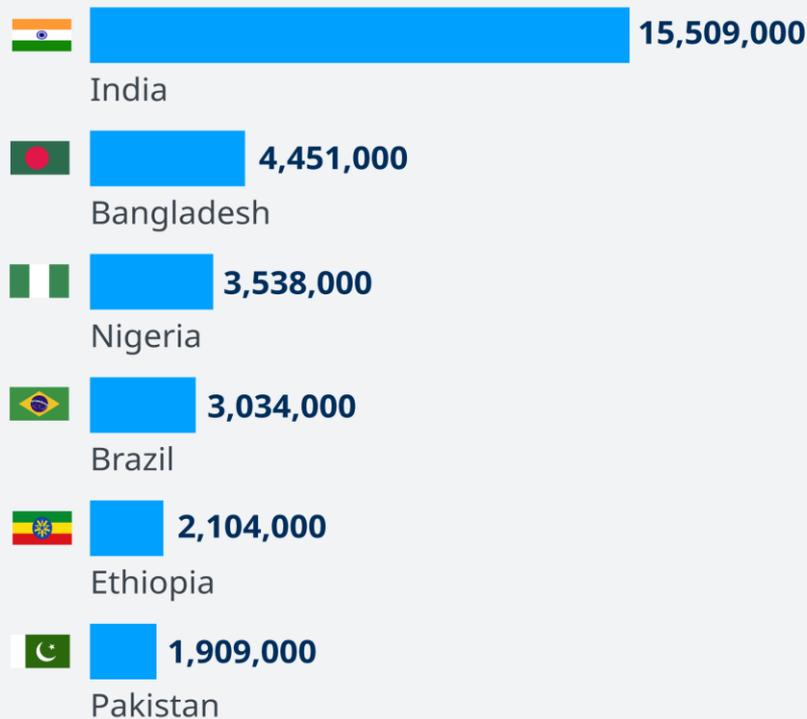
Source: Population data from United Nations | *Women who were first married or in a union before they were 18-years-old

©DW

2017

- GLASS團隊在與地方耆老訪談的過程中發現，嫁妝的風俗在1960年代前僅存在於鄉村地區，且嫁妝的意義為「感謝男方家庭未來將對女兒一生的照顧，不離不棄且忠貞一世」。
- 隨著孟加拉北方自90年代起長期乾旱，以務農為主的北方村落缺乏穩定的糧食收成與販賣收入。加上南方因全球暖化印度洋的水氣旺盛，颱風變多、雨季過長，河水氾濫，人民流離失所。在飢貧交加之下，父母急欲為家中的女孩找到可以託付的人家，男性家庭便將收取嫁妝當成彌補農損或天災的可靠經濟來源，演變至今，婚嫁成了油水豐厚的一筆生意。
- 許多貧窮家庭負擔不起女兒嫁妝，只能將女兒賣給人口販子從事性交易工作。

50

Gender Dimensions of Disaster Risk and Resilience

World Bank Gender Strategy 2016–2023 (World Bank 2015b)

Existing Evidence

2021

Authors
Alvina Erman
Sophie Anne De Vries Robbé
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GFDRR

WORLD BANK GROUP

Figure S.1 • A conceptual framework for considering gender dynamics and disaster impacts

Disaster impacts

Hazard

Impact factors shaped by gender dynamics:
Exposure
Vulnerability
Preparedness
Coping capacity

Disaster risk management

Society

Gender inequality
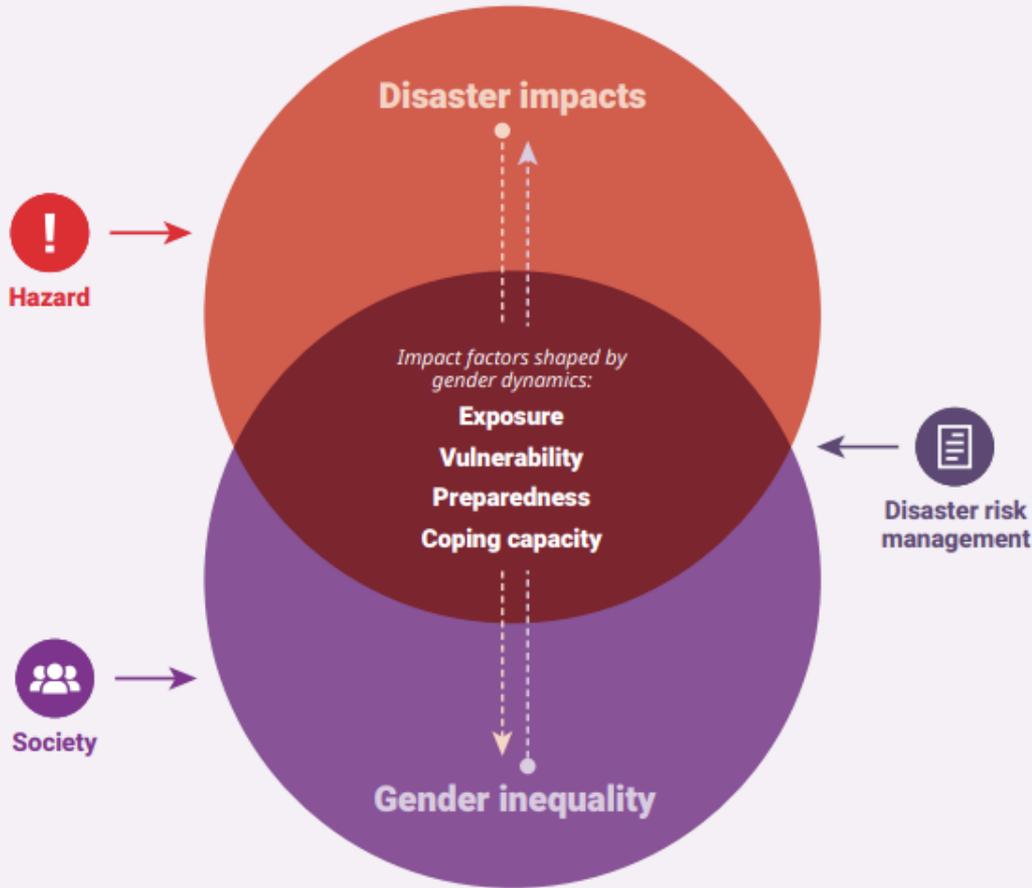
Sources: Adapted from World Bank 2012 and Hallegatte et al. 2017.

intersectional differences

Natural hazards are gender neutral; but the impacts are not. Men and women, boys and girls face different levels of exposure and vulnerability to natural hazards, driven by gender relations and discrimination in society.

» **Exposure and vulnerability**, by affecting the types of asset men and women own, how they gain income, their level of engagement in disaster risk management, and so on.

» **Preparedness**, by affecting conditions that determine risk perception levels, access to early warnings and evacuation behavior.

» **Coping and recovery**, by affecting access to formal and informal finance and stable and high-paying labor, which can support recovery.

Figure I.2 • Typology of natural hazards

Slow onset   **Natural hazards**   Rapid onset

Climatological	Biological	Meteorological	Hydrological	Geophysical
• Droughts and desertification	• Epidemics	• Storms	• Landslides	• Earthquakes
• Increased salinization	• Insect or animal plagues*	• Storm surges	• Flooding	• Tsunamis
• Rising sea levels		• Extreme temperatures		• Volcano eruptions
• Thawing of permafrost				

Source: Based on definitions provided by EM-DAT[5]
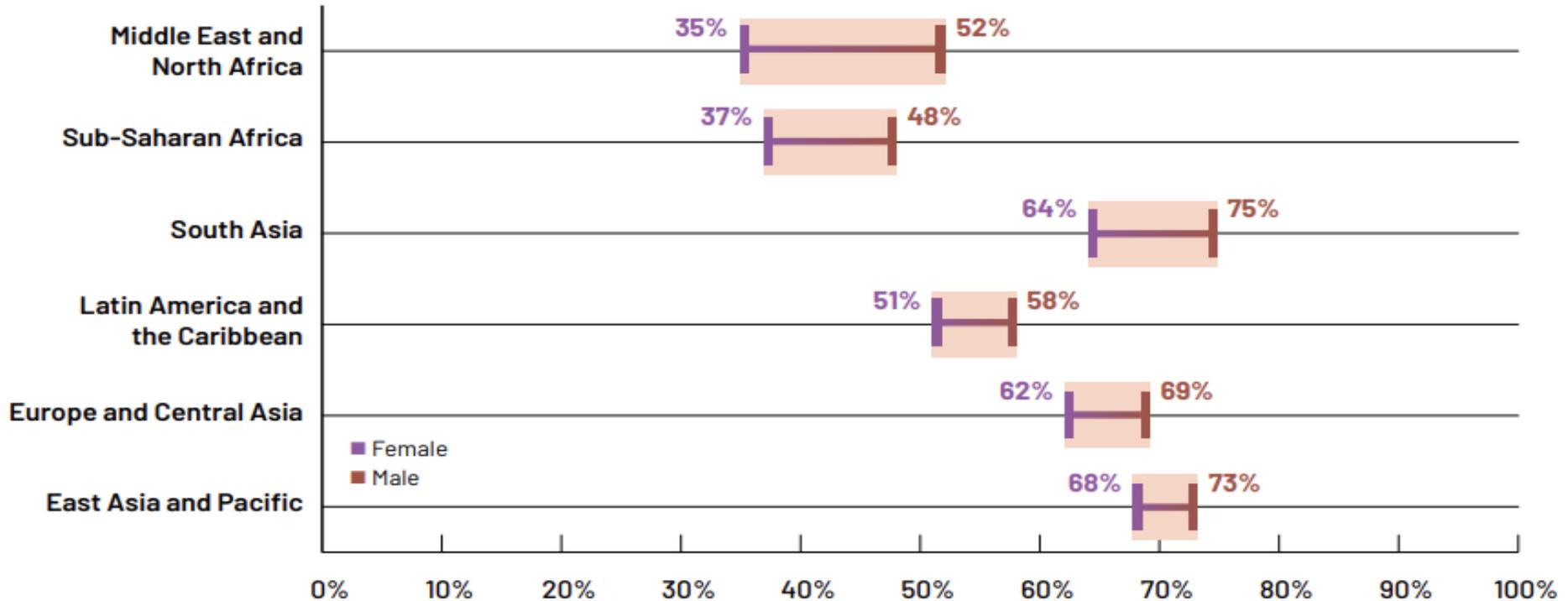*Note:* *This report does not cover biological hazards and their gender-differentiated impacts.

Table 1.2 • Summary of literature on the gender gap in health outcomes in the context of natural disasters

EM-DAT: The International Disaster Database

Country	Disaster/Year	Findings	Reference
MORTALITY AND LIFE EXPECTANCY			
Global: 141 countries	Disasters, 1981–2002	Disasters and their subsequent impact kill more women on average than men or kill women at an earlier age than men. *(Source: EM-DAT)*	Neumayer and Plümper 2007
Global: 4,093 events, no mention of country coverage	Flood events, 1980–2009; excludes flooding caused by hurricane, storm surges, and tsunamis	Men are more likely to die from flooding in developed countries, whereas in developing countries, mortality among women is higher. The primary cause of flood-related mortality is drowning. *(Sources: EM-DAT, the Dartmouth Flood Observatory Global Archive of Large Flood Events Database, and a review of historical flood events)*	Doocy et al. 2013
Global: 63 countries	Hydrometeorological disasters, 1995–2011	Across all age groups, mortality rates from hydrometeorological disasters are higher for men than for women; this difference is higher among adults compared to children or the elderly (WHO). EM-DAT underestimates the numbers, especially for high-impact events. *(Sources: WHO mortality database and EM-DAT)*	Zagheni, Muttarak, and Striessnig 2015
Bangladesh	Cyclone, 1991	Women aged over 19 were three to five times more likely to die.	Ikeda 1995

The importance of digital-financial inclusion

Figure 2.1 • In every region, men are more likely to own a formal bank account

Region	Female	Male
Middle East and North Africa	35%	52%
Sub-Saharan Africa	37%	48%
South Asia	64%	75%
Latin America and the Caribbean	51%	58%
Europe and Central Asia	62%	69%
East Asia and Pacific	68%	73%

■ Female
■ Male

Source: Demirgüç-Kunt et al. 2018.

Table 1.4 • Summary of literature on the gender gap in economic outcomes in the context of natural disasters p.28

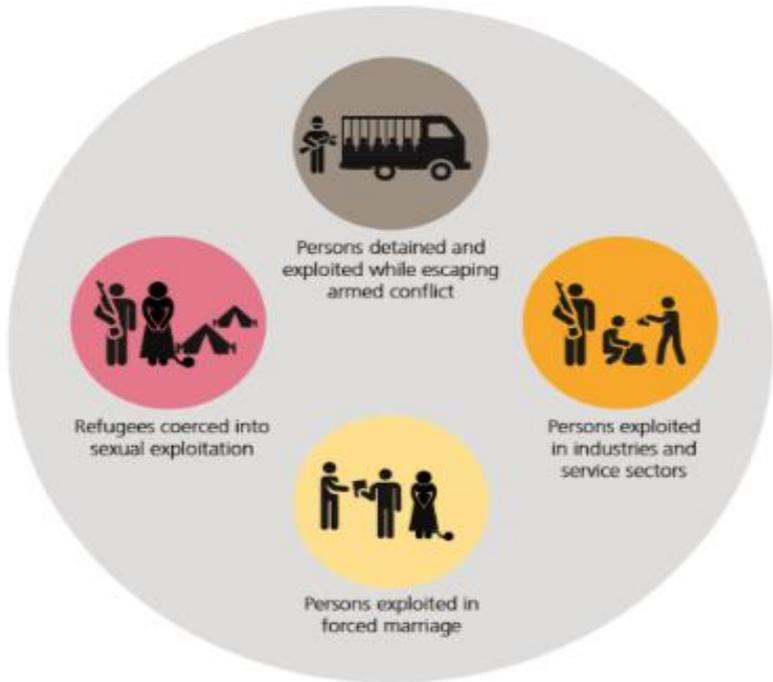| Country	Disaster/Year	Findings	Reference
LIVELIHOODS			
India	Rainfall shocks, 1993–2007	A district-level panel dataset covering 14 major states including data on individual wages and rainfall shocks shows that a single-unit increase in a rainfall shock in rainfed rice-growing areas corresponds to a 10% increase of female-to-male wage ratio. This is driven by a greater increase in demand for female labor.	Mahajan 2017
Colombia, Caribbean coast	Rainfall shocks, 2001–2010	Individual labor supply data of 800,000 adults and children shows that women in a municipality that experienced at least one flood are 3 percentage points more likely to be unemployed than men. Participation of children aged 12–17 in the labor force increased 1.4 percentage points for boys and 4.7 percentage points for girls in response to floods.	Acevedo 2014
United States	Hurricane Katrina, 2005	A two-round survey with 1,369 respondents (in 2005 and 2006) found that, among those affected by the hurricane, women were substantially less likely than men to maintain their pre-hurricane employment.	Zottarelli 2008
Tanzania, Dar es Salaam	Flood, 2018	Data from a representative sample shows that women were more likely than men to miss work after the floods: 60% of those who reported missing work were women. They also tended to stay home for slightly longer than men (17 days compared to 15.5).	Erman et al. 2019
El Salvador	Earthquake, 2001	Three waves of panel data between 1988 and 2002 show that women spent more time on domestic duties after the earthquake. A 1% increase in earthquake damage is associated with 1.54 hours' increase in domestic labor, decreasing the time women spent on income-generating work in livestock or out-migration. For men, adverse agricultural outcomes increased migration and hours spent in the field.	Halliday 2012

Victims exploited in conflict areas

- Persons coerced into sexual slavery
- Persons exploited as porters by armed groups
- Extracting minerals, diamonds and gold
- Recruitment of children into armed groups
- Persons exploited in forced marriage
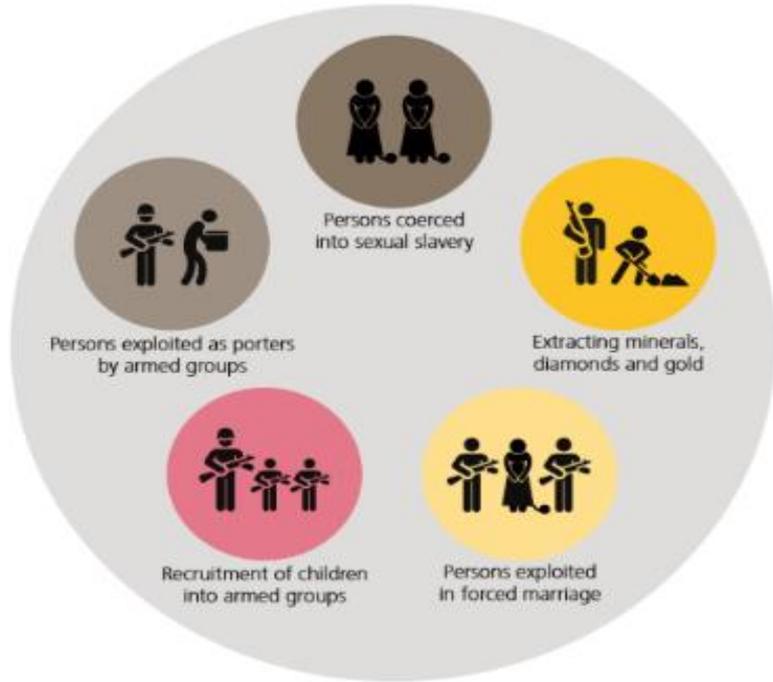
Victims exploited while fleeing conflict areas

- Persons detained and exploited while escaping armed conflict
- Refugees coerced into sexual exploitation
- Persons exploited in industries and service sectors
- Persons exploited in forced marriage

Source: Global Report on Trafficking in Persons (2018) , UNODC, p.12 and Booklet 2, p. 5.

德國首都柏林市警告烏克蘭難民不要在抵達柏林中央車站後，接受來路不明人士的金錢或住宿提議，擔心難民可能因此遭到強迫賣淫或是其他形式的人口販運。(UNIAN)

當體制無法及時順應突發危機或時代變遷，
女性更易於陷入貧窮循環（UN gender snapshot 2021）

2 ZERO HUNGER

The gender gap in food insecurity has increased due to the COVID-19 pandemic.

Women's food insecurity levels were

10% HIGHER

than men's in 2020, compared with 6% higher in 2019.

8 DECENT WORK AND ECONOMIC GROWTH

Women suffered steeper job losses than men during the pandemic.

The number of employed women declined by

54 million

and

45 million

left the labour force altogether.

- 美國：截至2021年1月，近千萬個工作機會因疫情消失，其中受影響的女性超過一半，而過去一年來有250萬名女性因此離開勞動力市場，多數失業或轉入所得更不穩定的勞動，而男性則只有180萬人。

- 歐盟：從2020年3月至2021年2月之間，失業人數增加了約240萬人，其中婦女超過130萬人，女性的失業率增長了20.4％，而男性則為16.3％。幾乎所有歐盟國家都實行了短期工作計劃，在2019年最後一個季至2020年第二季之間，女性工作時間減少了約18.1％，高於男性的14.3％，總時數下降相當明顯。

110年我國兩性薪資差距

表1 109年~110年我國兩性薪資差距

項目別	109 年	110 年(r)
每人每月總薪資(元)		
男性	58,917	61,150
女性	48,807	49,809
每人每月總工時(小時)		
男性	170.7	169.3
女性	165.9	163.8
平均時薪(元/小時)		
男性	345	361
女性	294	304
女/男(男性=100)(%)	85.2	84.2
兩性差距(男－女)(%)	14.8	15.8
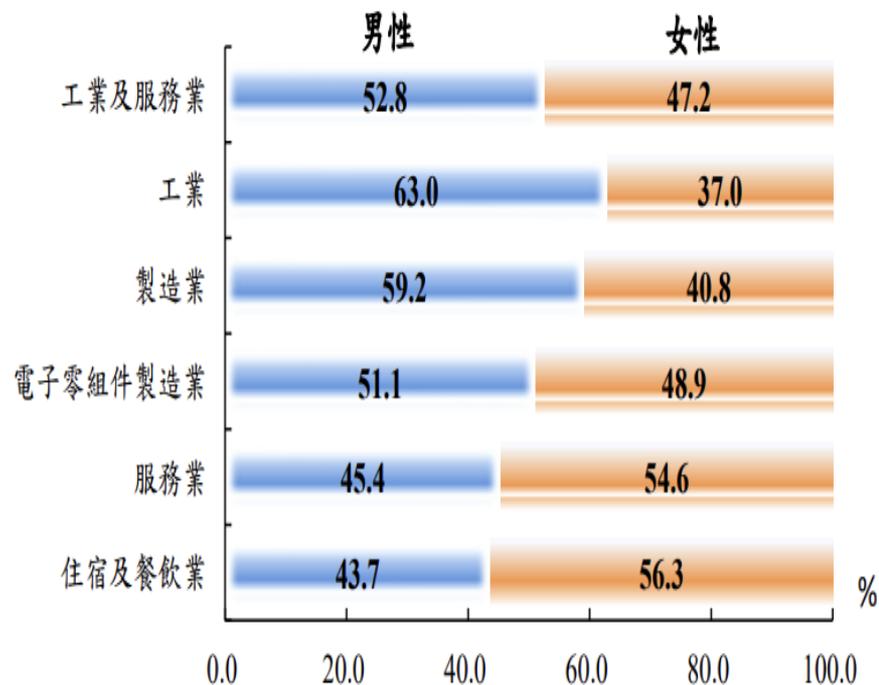
資料來源：行政院主計總處「受僱員工薪資調查」。

說　明：1.兩性平均薪資差距由平均時薪計算；平均時薪=(經常性薪資+非經常性薪資(含加班費))/總工時。

2.調查涵蓋範圍自108年起新增「研究發展服務業」、「學前教育」及「社會工作服務業」。

3.(r)表修正後統計結果。

圖1 110年我國受僱員工人數性別占比

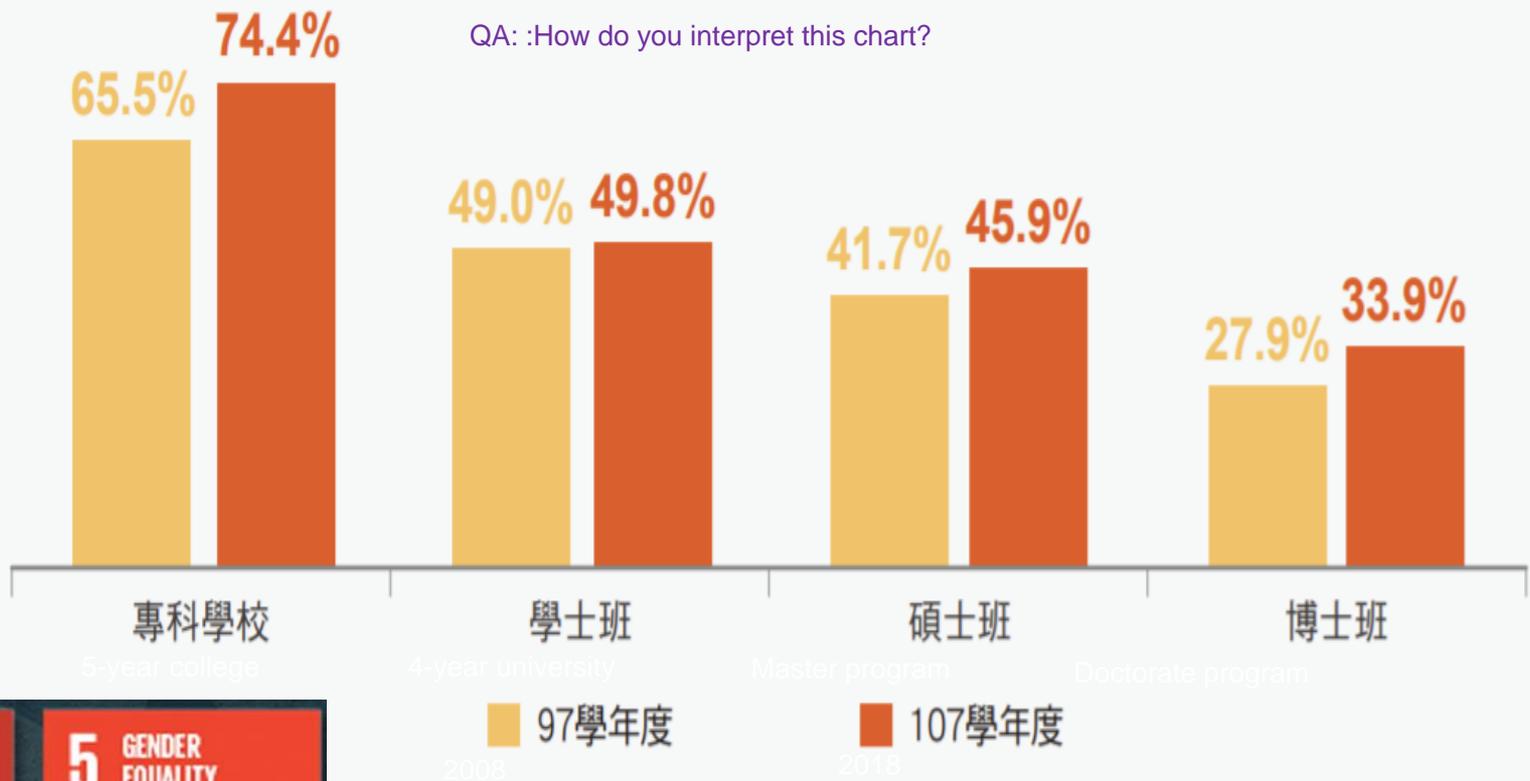|	男性	女性
工業及服務業	52.8	47.2
工業	63.0	37.0
製造業	59.2	40.8
電子零組件製造業	51.1	48.9
服務業	45.4	54.6
住宿及餐飲業	43.7	56.3

資料來源：行政院主計總處「受僱員工薪資調查」。

性別職業隔離（垂直與水平）

　　110 年兩性平均時薪均較 109 年增加，其中女性增 3.4%，惟較男性 4.6%為低，致使兩性平均時薪差距較 109 年擴大，此與 110 年產業間景氣狀況及加薪幅度出現較大落差有關。如女性受僱員工占比較高之住宿及餐飲業(圖 1)因受年中疫情三級警戒影響，時薪增長有限(增 1.1%)，而男性占比較高之製造業則因外貿暢旺，帶動時薪擴增(增 5.6%)；另製造業中兩性薪資差距亦有擴大現象，如電子零組件之女性平均時薪增 6.7%，男性則增 13.2%，除性別外，亦可能與工作性質及職類等因素有關。

QA: :How do you interpret this chart?

65.5% 74.4%
49.0% 49.8%
41.7% 45.9%
27.9% 33.9%

專科學校
5-year college

學士班
4-year university
2008

碩士班
Master program
2018

博士班
Doctorate program

97學年度　　107學年度

4 QUALITY EDUCATION
5 GENDER EQUALITY
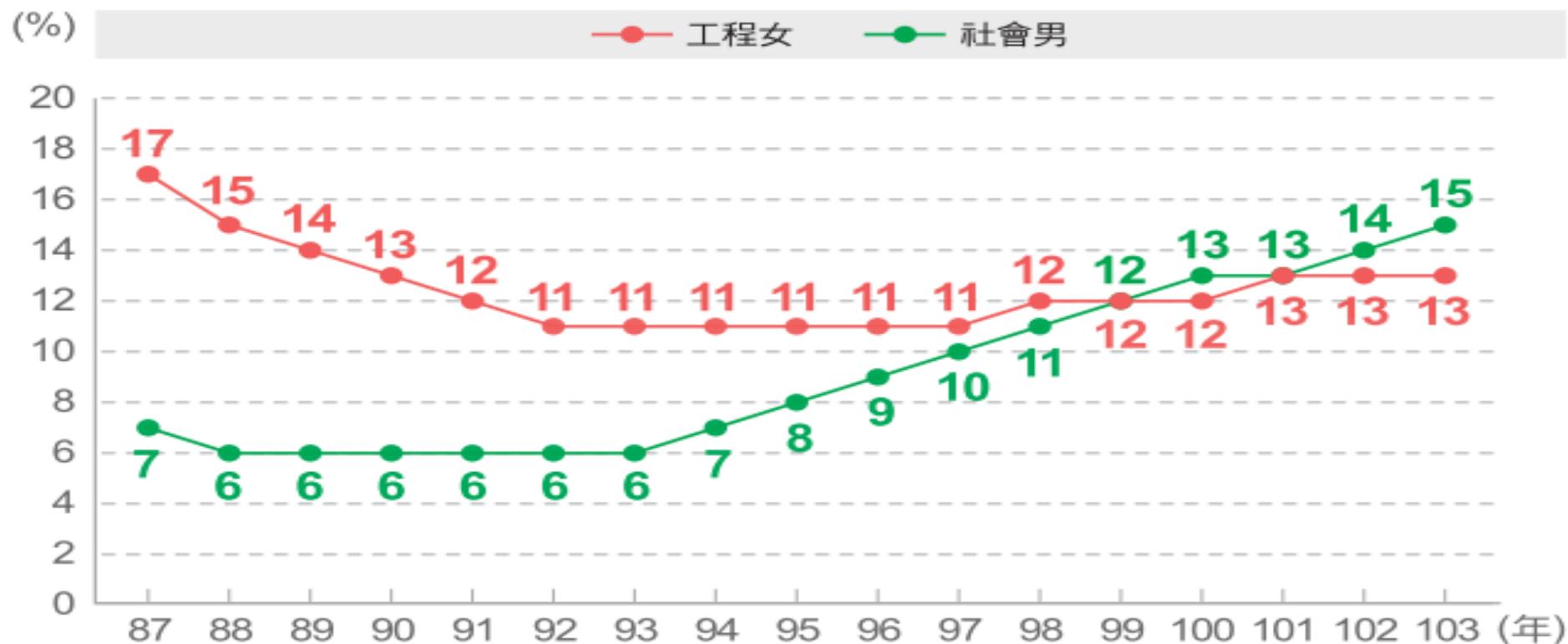
圖 2-7 高等教育女學生比率（%）

（資料來源：教育部）

圖 1-2　工程女與社會男：87–103 年度大專校院學生性別比歷時統計

資料來源：教育部統計處（2015a）

Percentage of students in colleges and universities - by majors in Taiwan ,Year 2018

Unit：%

| School System		Total	Science	Engineer and technology	Medical Sicenece	Agricutural Sicence	Social Sience	Humanaties	Others
doctorate	計	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	M	66.07	74.13	84.25	54.36	60.54	56.68	48.69	59.38
	F	33.93	25.87	15.75	45.64	39.46	43.32	51.31	40.62
master	計	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	M	54.08	68.49	79.44	30.76	50.15	43.16	35.63	39.05
	F	45.92	31.51	20.56	69.24	49.85	56.84	64.37	60.95
bachelor	計	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	M	50.18	69.30	82.37	32.84	50.27	39.94	34.66	38.76
	F	49.82	30.70	17.63	67.16	49.73	60.06	65.34	61.24

專業領域的性別管漏現象-特別是在STEAM領域
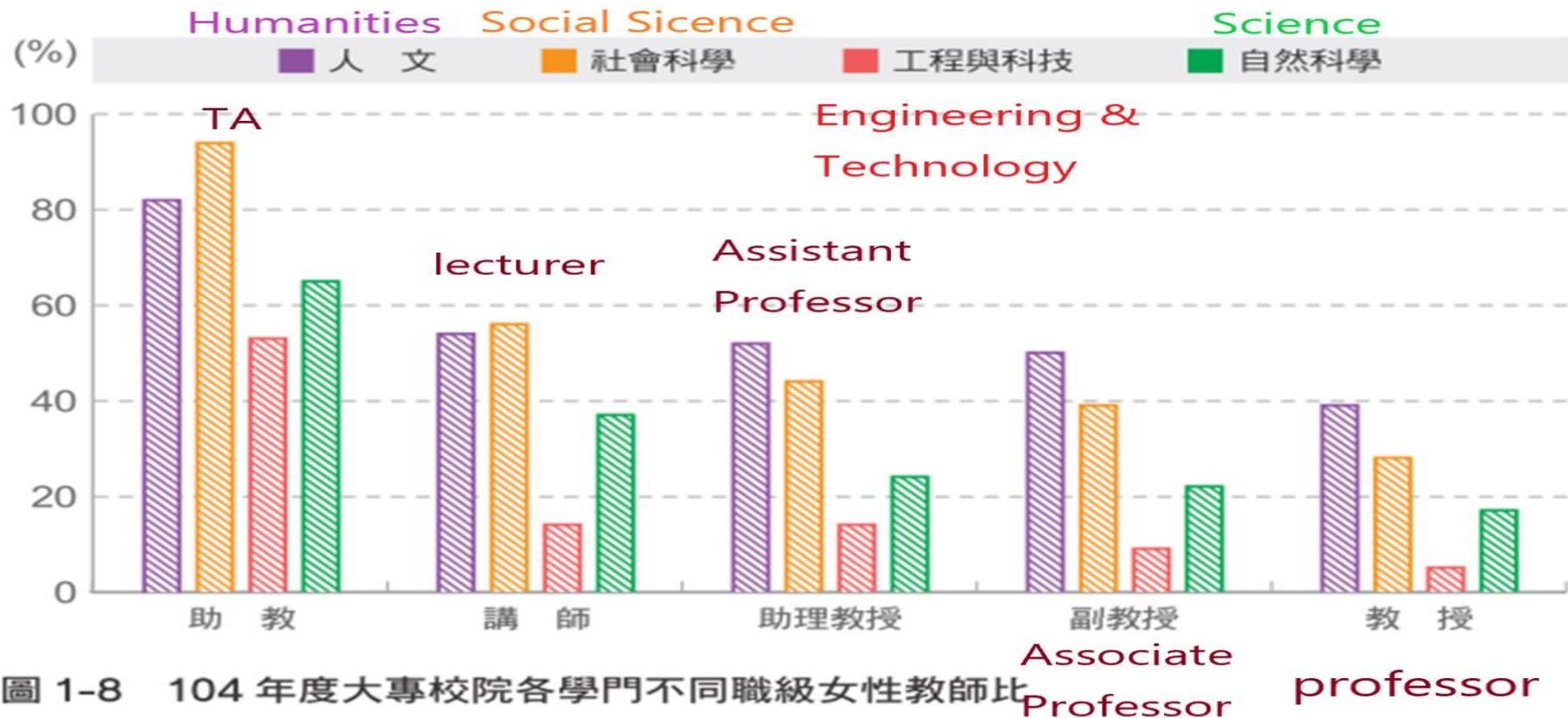
圖 1-8　104 年度大專校院各學門不同職級女性教師比
資料來源：教育部統計處（2016）

Figure 3: Despite higher enrollment in tertiary, women are less likely to major in STEM fields

Student enrollment by career program (%)
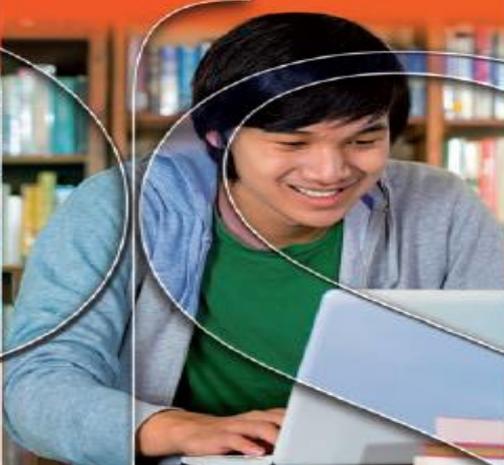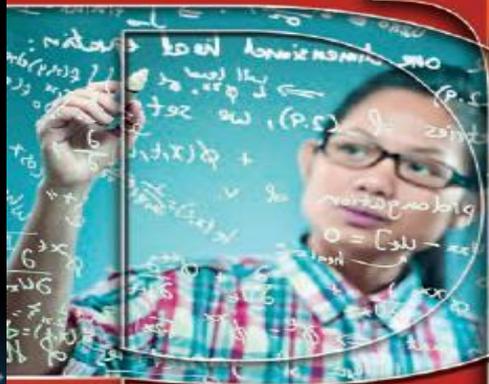
■ Male ■ Female
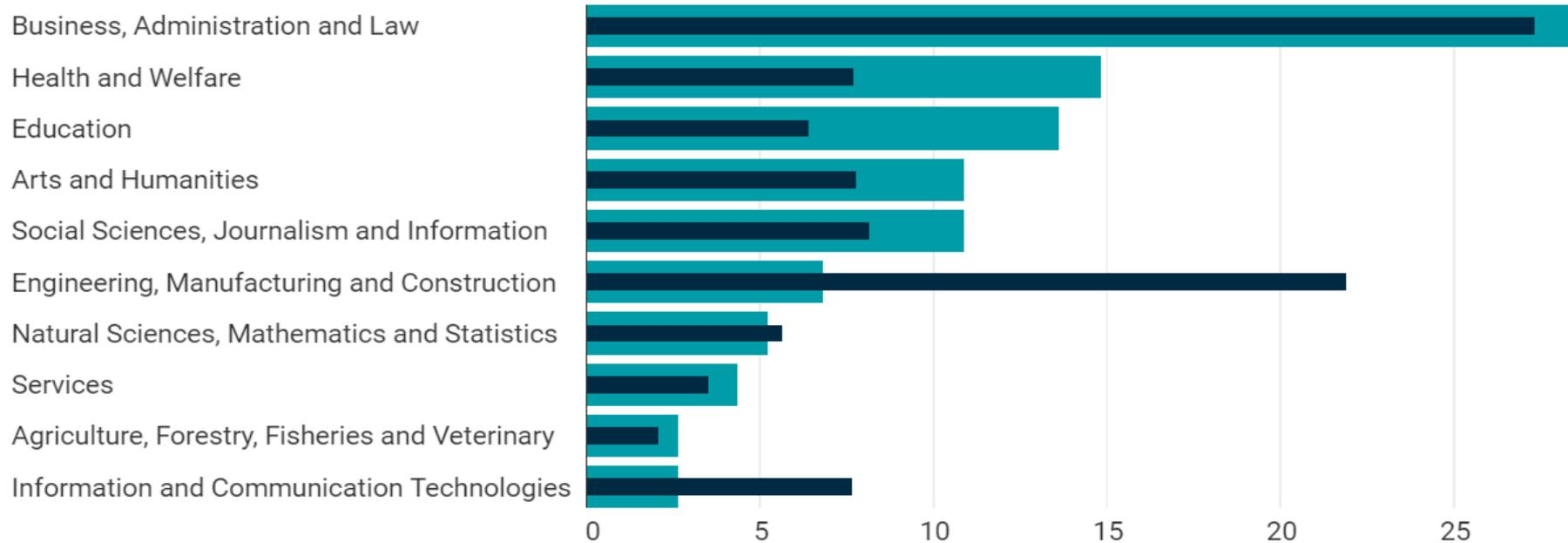
Are girls really so bad in STEM?

- OECD. (2015b). *The ABC of gender equality in education: Aptitude, behaviour, confidence.* PISA, OECD Publishing. Retrieved from http://dx.doi.org/10.1787/9789264229945-en
- P. 65 National Statistics Report
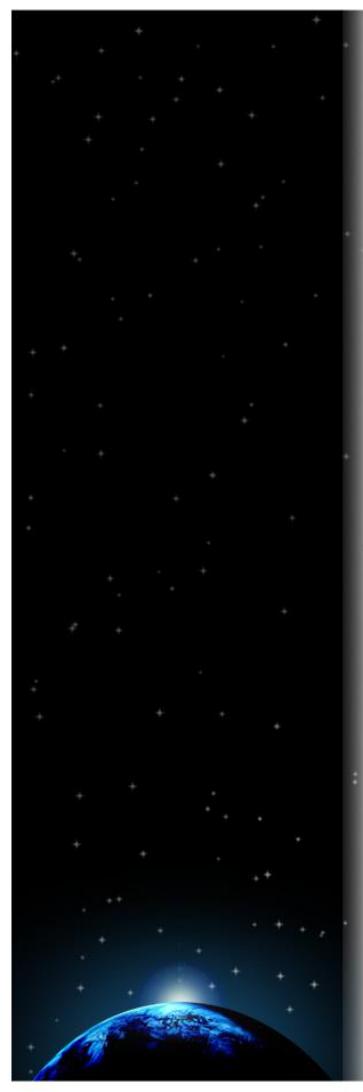
The ABC of Gender Equality in Education

APTITUDE, BEHAVIOUR, CONFIDENCE

Background information for PISA

- The Program for International Student Assessment (PISA) is an international assessment that measures 15-year-old students' reading, mathematics, and science literacy every three years. First conducted in 2000, the major domain of study rotates between reading, mathematics, and science in each cycle.
- PISA also includes measures of general or cross-curricular competencies, such as collaborative problem solving. By design, PISA emphasizes functional skills that students have acquired as they near the end of compulsory schooling. PISA is coordinated by the Organization for Economic Cooperation and Development (OECD), an intergovernmental organization of industrialized countries, and is conducted in the United States by NCES. Data collection for the most recent assessment was completed in Fall 2015.
- Taiwan has joined the PISA since 2006.

■ Figure 3.1 ■

Girls' and boys' average performance in mathematics in the ten countries with the highest average performance among girls

☐ Boys   ◆ Girls

Shanghai-China
Singapore
Hong Kong-China
Chinese Taipei
Korea
Liechtenstein
Japan
Macao-China
Switzerland
Netherlands
Estonia
Canada
Germany
Belgium
Poland
Finland
Austria
Viet Nam
Australia
Ireland
New Zealand
Denmark
Czech Republic
Slovenia
Luxembourg
United Kingdom
OECD average
France
Italy
Portugal
Spain
Norway
Iceland
Latvia
Slovak Republic
United States

Gender gap among top performers in science

Boys ■   Girls ▶

Country	
Japan	
Liechtenstein	
Hong Kong-China	
Shanghai-China	
Luxembourg	
Austria	
Israel	
Korea	
Slovak Republic	
Belgium	
New Zealand	
Switzerland	
United Kingdom	
Viet Nam	
Denmark	
Australia	
Canada	
Spain	
Italy	
Hungary	
Singapore	
Ireland	
OECD average	
France	
Netherlands	
Macao-China	
Germany	
Chinese Taipei	
Croatia	
Portugal	
United States	
Iceland	
Poland	
Sweden	
Estonia	
Czech Republic	
Romania	
Norway	
Uruguay	
Chile	
Lithuania	
Costa Rica	
Turkey	
Slovenia	
Serbia	
Greece	
Russian Federation	
Colombia	
Mexico	
Albania	
Jordan	
Malaysia	
Brazil	
Argentina	
United Arab Emirates	
Kazakhstan	
Tunisia	
Indonesia	
Peru	
Montenegro	
Latvia	
Qatar	
Thailand	
Bulgaria	
Finland	

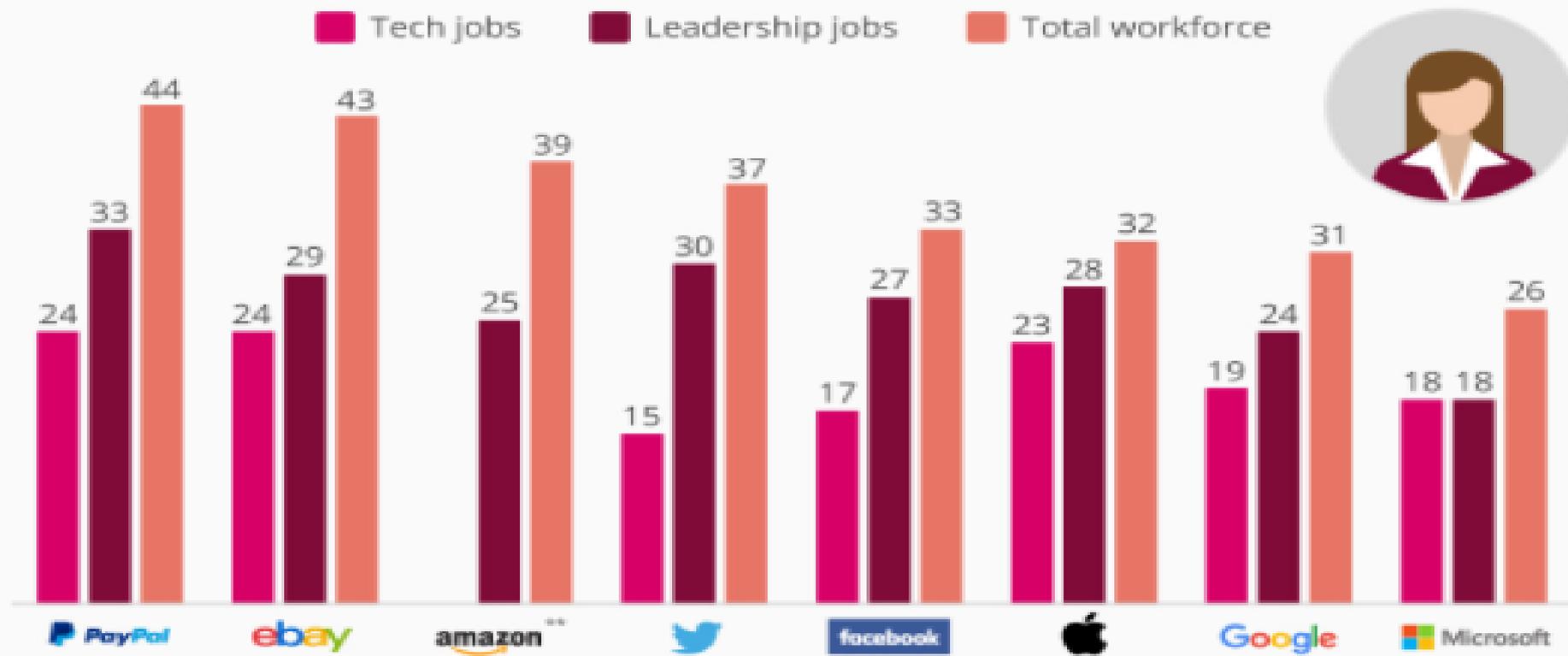Percentage of students

The Tech World Is Still a Man's World

Percentage of female employees in the workforce of major tech companies*

Tech jobs   Leadership jobs   Total workforce

PayPal: Tech jobs 24, Leadership jobs 33, Total workforce 44
ebay: Tech jobs 24, Leadership jobs 29, Total workforce 43
amazon**: Leadership jobs 25, Total workforce 39
twitter: Tech jobs 15, Leadership jobs 30, Total workforce 37
facebook: Tech jobs 17, Leadership jobs 27, Total workforce 33
Apple: Tech jobs 23, Leadership jobs 28, Total workforce 32
Google: Tech jobs 19, Leadership jobs 24, Total workforce 31
Microsoft: Tech jobs 18, Leadership jobs 18, Total workforce 26
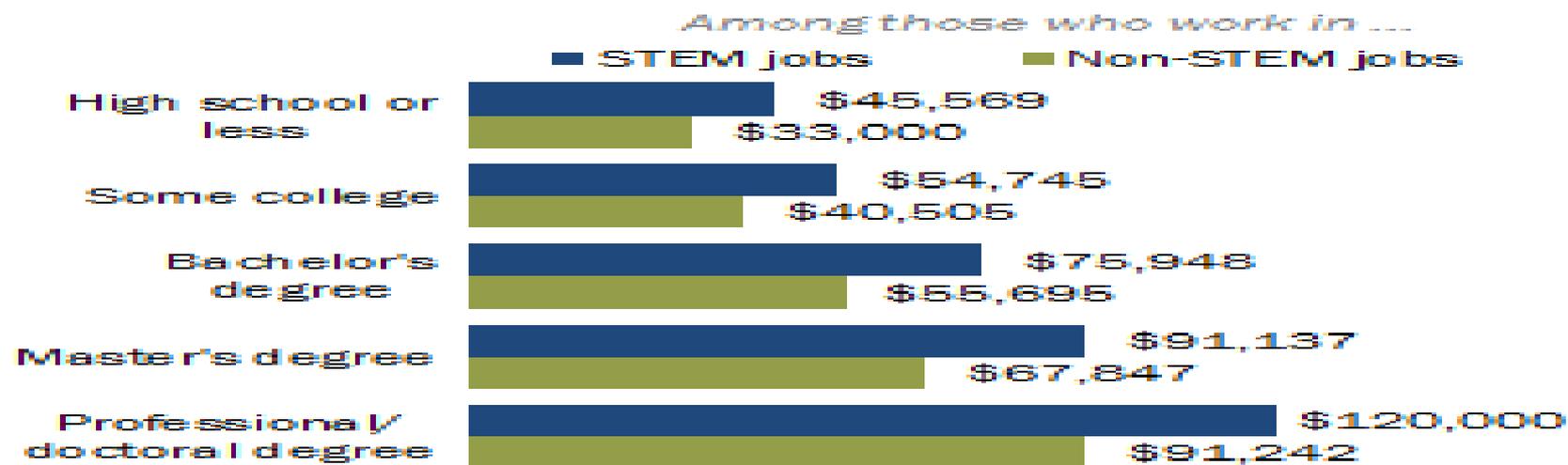
*   latest information available as of February 2017
** Amazon does not break out tech jobs

Source: Company reports

@StatistaCharts

statista

STEM workers tend to earn more than similarly educated non-STEM workers

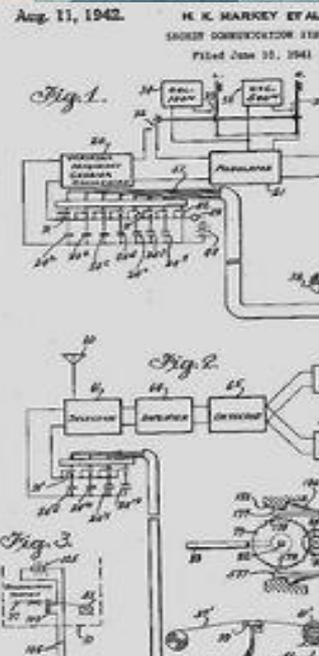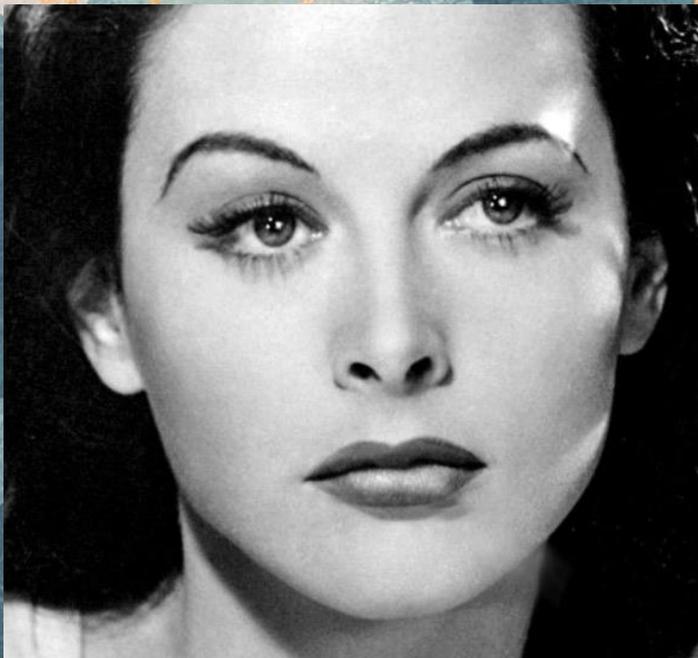*Median annual earnings of full-time, year-round workers ages 25 and older with positive earnings*

Among those who work in ...

■ STEM jobs ■ Non-STEM jobs

Education	STEM jobs	Non-STEM jobs
High school or less	$45,569	$33,000
Some college	$54,745	$40,505
Bachelor's degree	$75,948	$55,695
Master's degree	$91,137	$67,847
Professional/doctoral degree	$120,000	$91,242

Note: Figures based on 2016 dollars. Some college includes those with an associate degree and those who attended college but did not obtain a degree. Professional degree includes those with an M.D., DDS, DVM, LL.B. or J.D. Doctoral degree includes those with a Ph.D. or Ed.D. STEM stands for science, technology, engineering and math.
Source: Pew Research Center analysis of 2014-2016 American Community Survey (IPUMS).
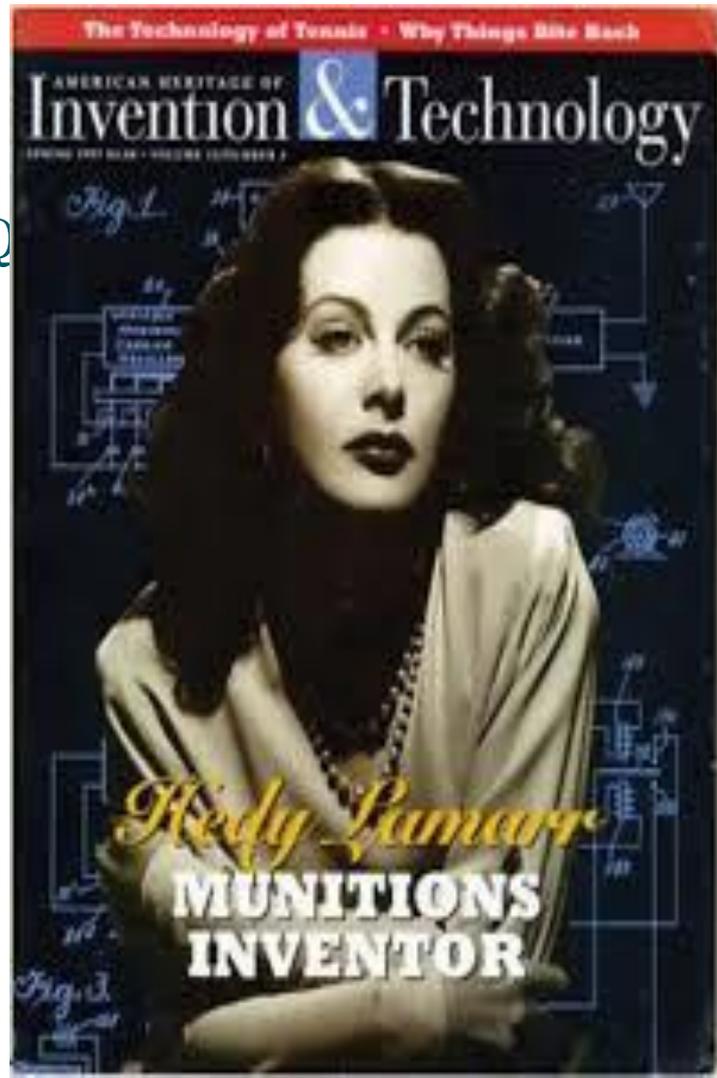"Women and Men in STEM Often at Odds Over Workplace Equity"

PEW RESEARCH CENTER

An innovation comes from compassion

Hedy Lamarr (1914-2000)

- https://www.youtube.com/watch?v=Z0gu2Q V1dc
- https://youtu.be/NI8nOa9BvjY

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Hedy Lamarr – *Frequency Hopping* 1942

The Technology of Tennis • Why Things Bite Back

AMERICAN HERITAGE OF
Invention & Technology

Hedy Lamarr
MUNITIONS
INVENTOR

Oxford Astra Zeneca vaccine-
the scientists who concerned the intersections of the world

AstraZeneca's vaccine offers hope to low-income countries

Covid-19 shots under contract (bn doses)
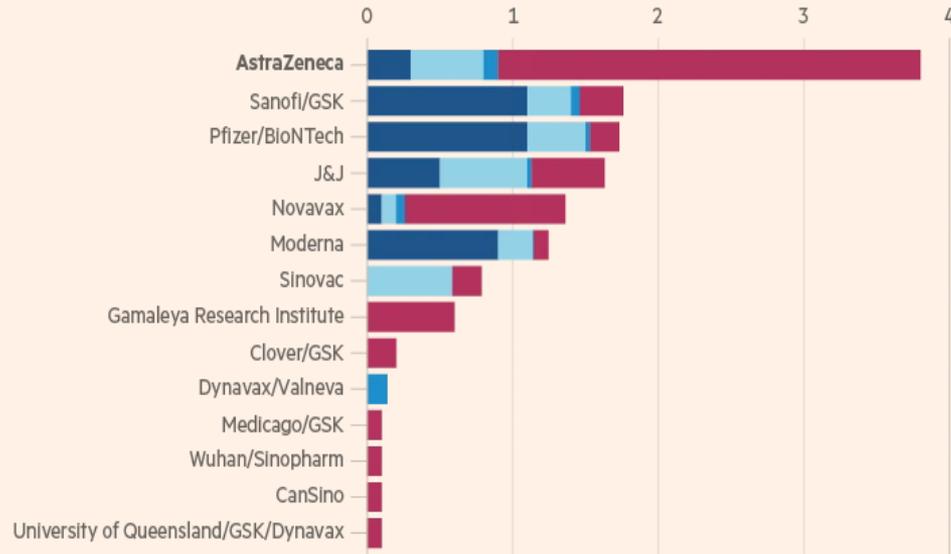
- Who is the hero behind the innovation of Oxford AZ vaccine?

- Why AZ is so important to people in the low-income countries?

- Barbie doll made of Oxford Vaccine creator

- https://youtu.be/a9SqlyEfyoI

Financial Times(2020 Nov. 04):
How the Oxford-AstraZeneca vaccine works and why it matters?

- Price: cheaper

How some of the Covid-19 vaccines compare

Company	Type	Doses	How effective*	Storage	Cost per dose
Oxford Uni-AstraZeneca	Viral vector (genetically modified virus)	x2	62-90%	Regular fridge temperature	£3 ($4)
Moderna	RNA (part of virus genetic code)	x2	95%	-20C up to 6 months	£25 ($33)
Pfizer-BioNTech	RNA	x2	95%	-70C	£15 ($20)
Gamaleya (Sputnik V)	Viral vector	x2	92%	Regular fridge temperature (in dry form)	£7.50 ($10)

*preliminary phase three results, not yet peer-reviewed

Source: Respective companies, WHO

BBC

- Transportation: easier to store

- Vaccines require "cold chains" to keep their active ingredients intact and stable while they reach patients.

- The Oxford/AstraZeneca vaccine can be kept long term at 2C to 8C, the temperature of a conventional fridge. For comparison, the mRNA vaccines developed by Pfizer/BioNTech and Moderna require much lower temperatures of minus 70C and minus 20C respectively.

https://www.ft.com/content/49d4a7ff-a20c-4ac2-84f7-d9dbab1d431f

After today's lecture, please remember one more great female scientists who made our lives better

Prof Sarah Gilbert: The woman who designed the Oxford vaccine

23 November 2020

"None of us had any idea... how urgent the vaccine was going to be," - Prof Sarah Gilbert

JOHN CAIRNS/UNIVERSITY OF OXFORD

In Conversation with Professor Sarah Gilbert
https://www.youtube.com/watch?v=dQTfHyUTLHA

https://www.bbc.com/news/uk-55043551

The woman who dare to travel- the great legendary car engine
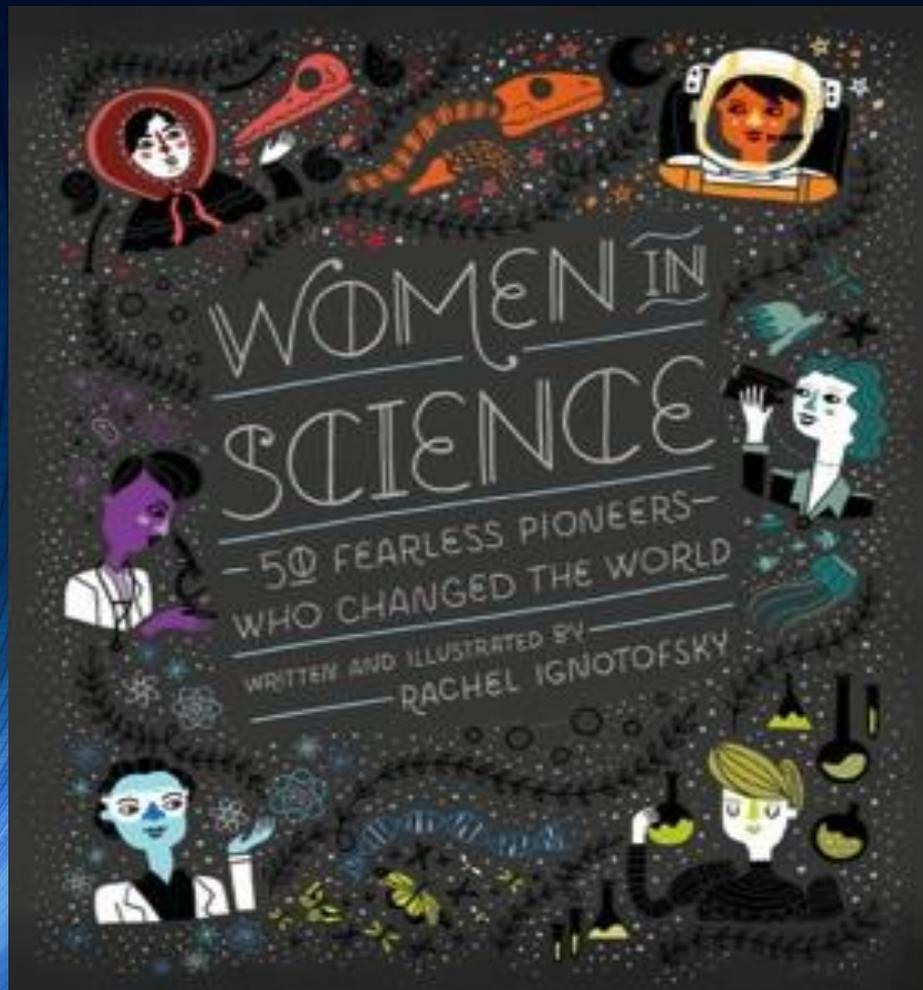
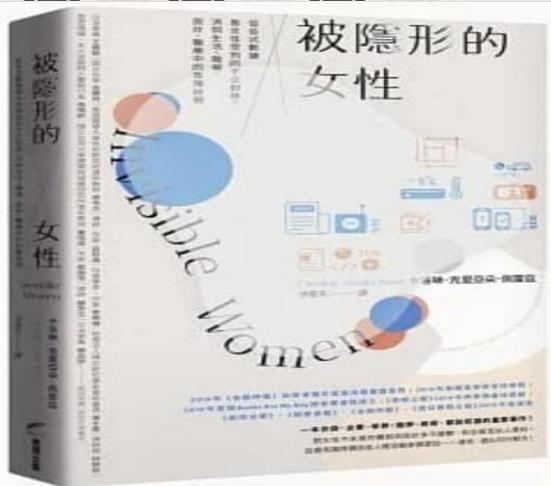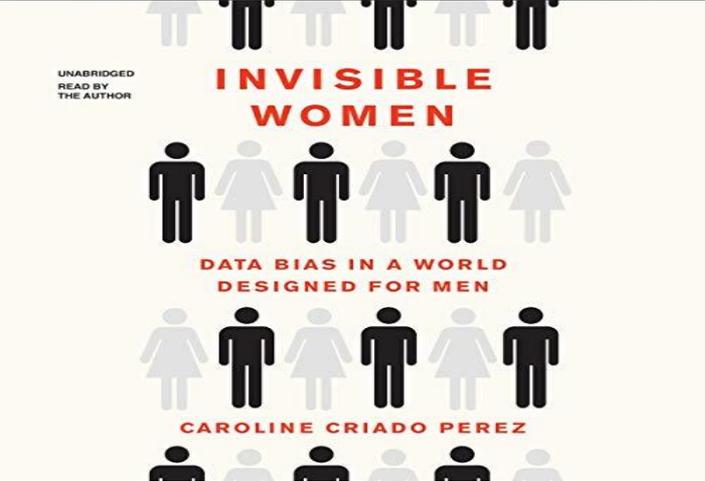- 放影片

The woman moves the world

The human development, economic and business gains from empowering women are substantial.

LAURA TYSON AND JENI KLUGMAN

Co-authors, Leave No One Behind report

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

UNABRIDGED READ BY THE AUTHOR

INVISIBLE WOMEN

DATA BIAS IN A WORLD DESIGNED FOR MEN

CAROLINE CRIADO PEREZ

被隱形的女性

Invisible Women
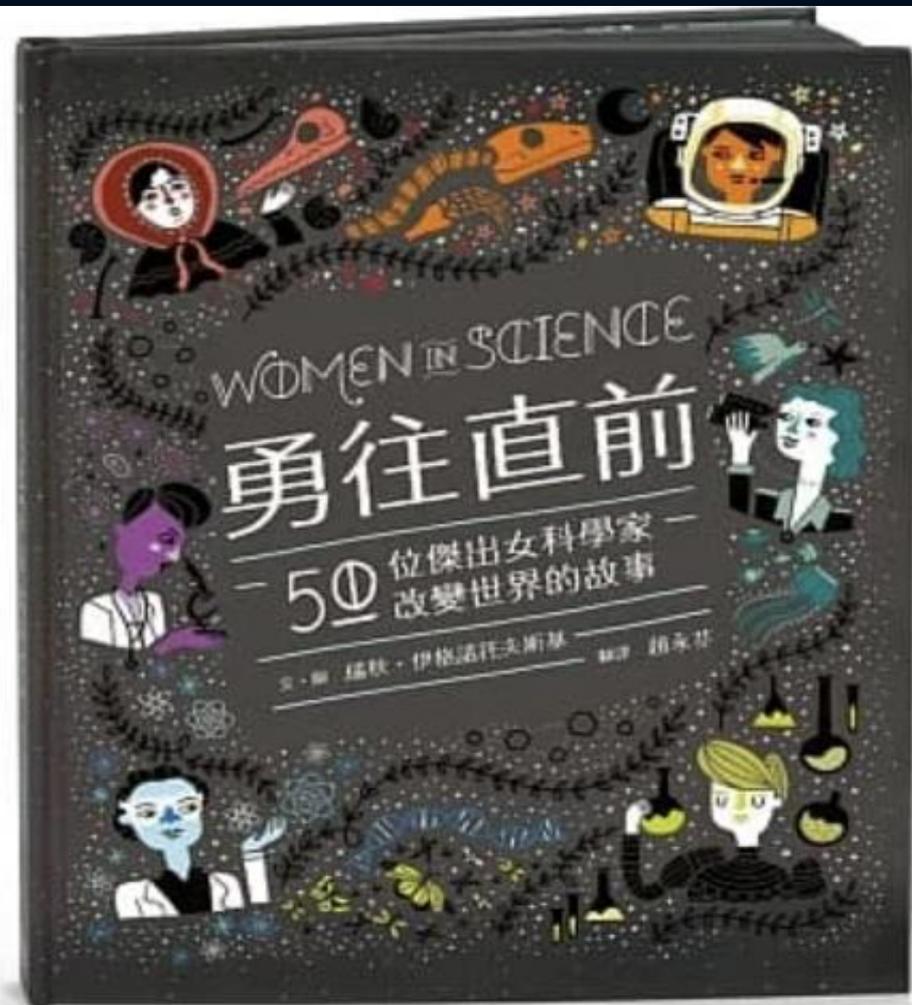
Heart Attack Warning Signs

Women

Lightheadedness or dizziness

Upper back pressure

Chest pressure

Shortness of breath

Pain in one or both arms, the back, neck, jaw or stomach

Fainting or extreme fatigue

Women might not experience the chest pain that is often noted as the most common sign of heart attack.

Some women who have had heart attacks say they thought they had the symptoms associated with the flu.

Men

Cold sweat or nausea

Chest pressure or pain

Shortness of breath

Pain in one or both arms, the back, neck, jaw or stomach

If you have any of these symptoms for more than **5 minutes** and are unsure of the cause, call 9-1-1.

Treatments work best if given within **1 hour** of when heart attack symptoms begin.

Marshfield Clinic

感謝您的專心和耐心
歡迎來信討論

黃淑怡
國立臺灣科技大學通識教育中心
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