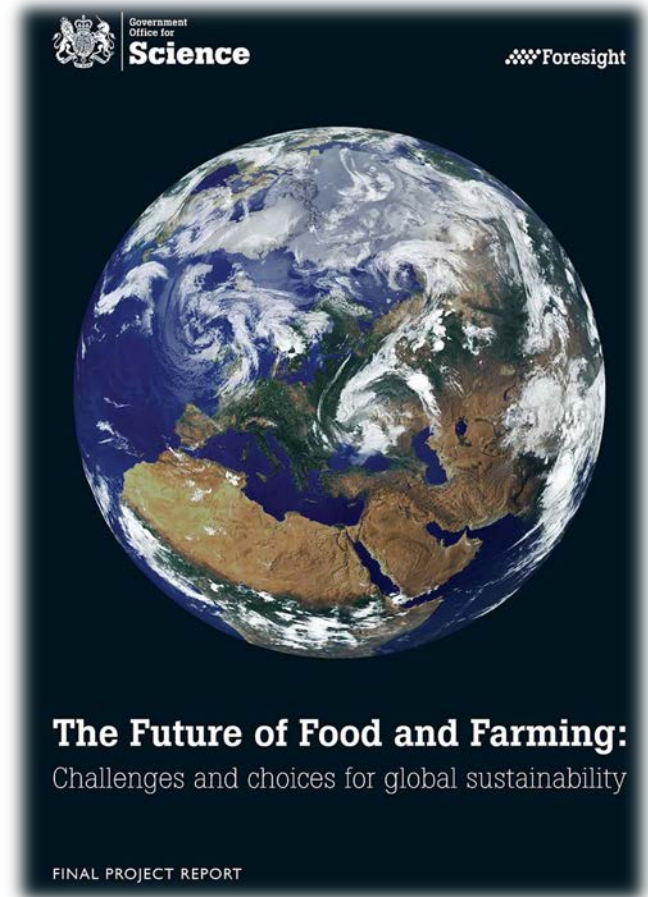




The Future of Food and Farming

Challenges and choices for global sustainability.

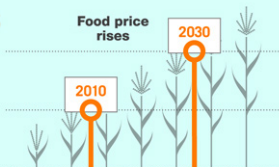


WHAT'S WRONG WITH OUR FOOD SYSTEM?

Every night **1 in 7 people go to bed hungry**—that's almost 1 billion people worldwide. People are hungry not because there isn't enough food produced but because our food system is broken. In fact, **80% of the world's hungry are directly involved in food production**. We can address this hunger if we support small-scale food producers, tackle climate change and reduce food waste.

CLIMATE CHANGE & FOOD PRICES

The average price of staple foods could more than double by 2030—with more than half of that increase due to changes in average temperatures and rainfall patterns.

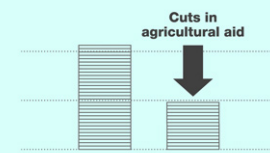


WASTE

In both industrialized and developing countries, unacceptable quantities of food are wasted but for entirely different reasons.

HUNGER

There have been cuts of more than 50% in government aid to small-scale producers, even though the majority of the world's hungry are involved in food production.



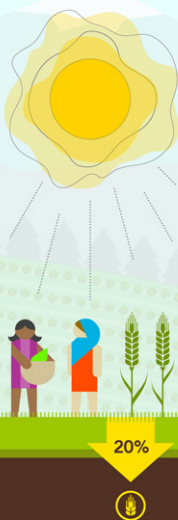
HIGH TEMPERATURES

In July 2010, temperatures exceeded 40°C (104°F) in Russia, destroying millions of acres of wheat. Wheat production plunged 30% and the price internationally increased by 85%.



DROUGHT

In 2010, a drought in Ukraine caused wheat production to plummet 20% compared to the year before.



MONSOON

Heavy rainfall and multiple typhoons hit Southeast Asia in 2011, severely affecting 6% of the region's total rice area and driving prices up by 30% in some areas.



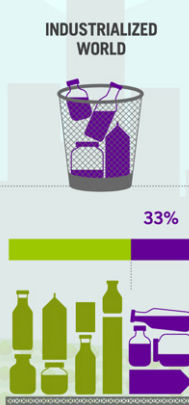
HARVEST WASTE

Currently, developing countries waste nearly one third of food supply. With better access to adequate storage, refrigeration and transportation this could be reduced.



CONSUMER WASTE

In industrialized countries we, as consumers and retailers, throw away about one third of all food that is produced.



1 IN 7 ON THE PLANET GO HUNGRY



60% OF THE HUNGRY ARE WOMEN



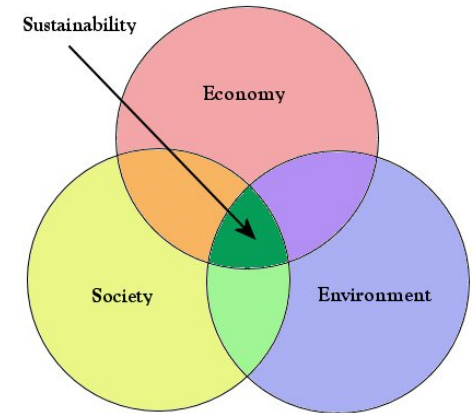
By providing women with equal access to farming resources such as tools, seeds and transport **100–150 MILLION COULD HAVE ENOUGH TO EAT**



CHANGE CAN HAPPEN

By investing in small-scale farmers, Brazil reduced the number of people living in poverty by 20 million between 2003-9. We can tackle extreme hunger by helping small-scale producers grow more food more sustainably.





Introduction

研究報告目的：

為了確保人口成長到**90億**或**更多時**，食物系統可以**平等**且可**永續**的提供食物。因此探索從現在到2050年間，全球糧食系統有哪些是**需必解決**的議題，來提供施政者現在和未來幾年的前瞻策略的擬定。(永續的原則為使用資源的速率不能超過地球更新資源的能力)

研究來源：

英國政府科學辦公室(GO Science)的計畫，從世界各地**35個**低、中、高收入國家約**400位權威專家**和其利益團體，其參與者來自各領域並提供最新科學與統計證據佐證。

面臨問題：

世界人口增加、**飲食性質與大小的改變**、**國家與國際食物系統治理**、**氣候變遷**、**有限資源運用**、**消費主價值觀與道德立場**的挑戰



Five key challenges for the future:

Challenge A:

Balancing future demand and supply sustainably

Challenge B:

Addressing the threat of future volatility in the food system

Challenge C:

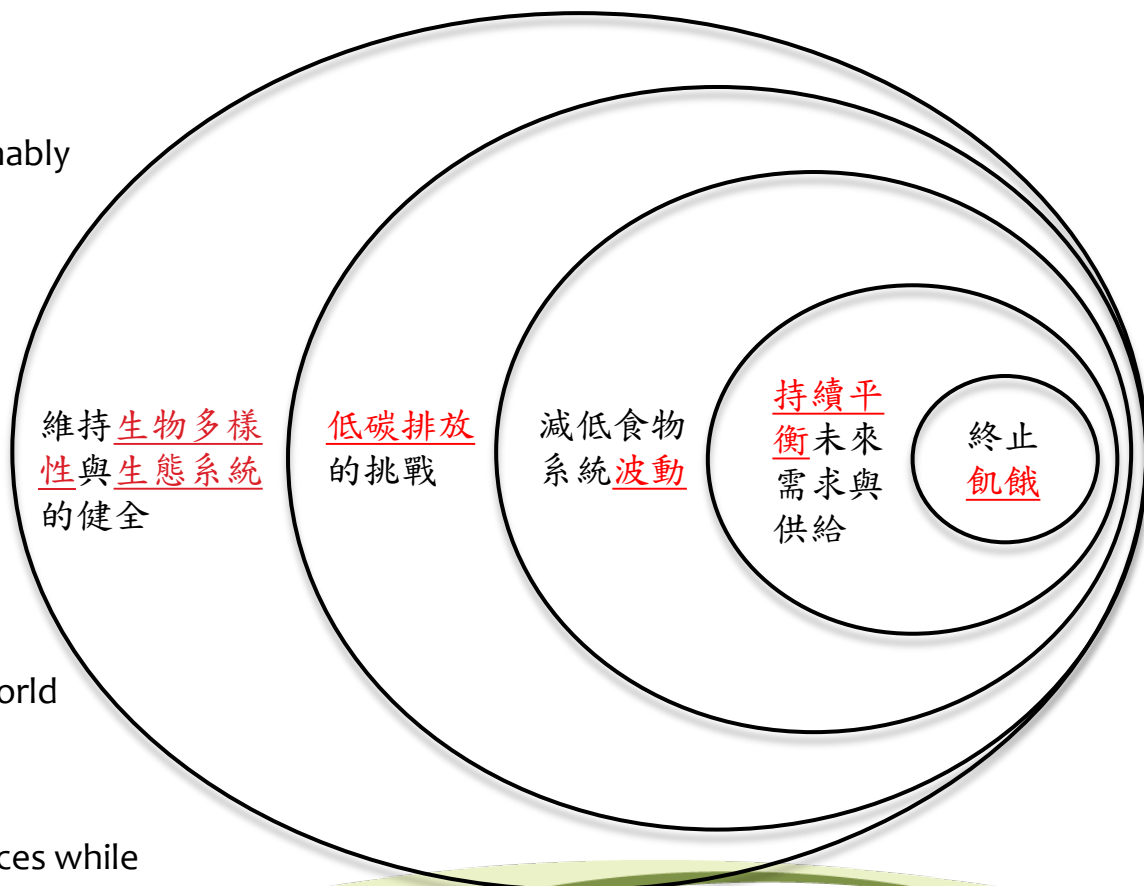
Ending hunger

Challenge D:

Meeting the challenges of a low emissions world

Challenge E:

Maintaining biodiversity and ecosystem services while feeding the world





Challenge A: Balancing future demand and supply sustainably

如何改善：

1. 增加**供給**(ex 非洲)
2. **緩和**需求(ex 改變飲食習慣)
3. 減少**浪費**(ex 價格影響,健全市場,基礎建設)
4. 提高效率和治理

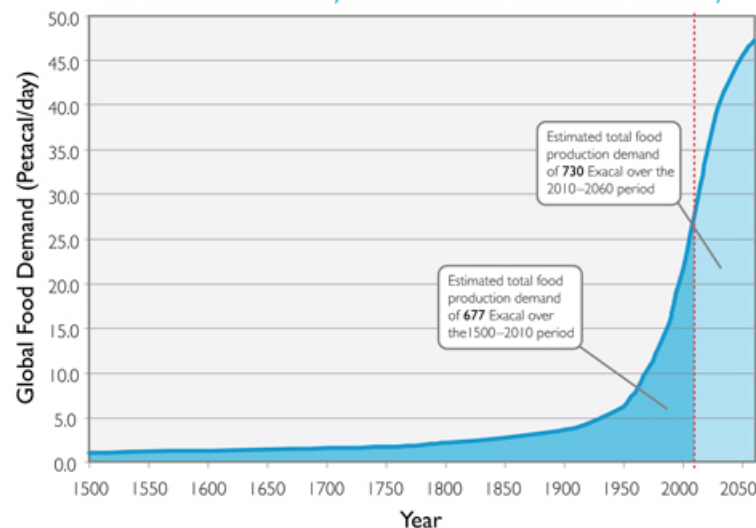
利用現有知識提高生產：

1. 透過**知識**維持或增加產量(女權,市場,基礎建設,土權)
2. 重新定位研究(ex 新品種作物)
3. 投資新科技(ex 基改,保障生態)

政策面：

1. 國際性溝通協作
2. **補貼政策**會**降低**食物生產效率
3. **扶貧與永續導向**的國際貿易**政策**
4. 改善食物系統治理(農、漁、公司)

The challenge to produce enough food will be greater over the next 50 years than in all human history



<http://www.csiro.au/Portals/Multimedia/On-the-record/Sustainable-Agriculture-Feeding-the-World.aspx>



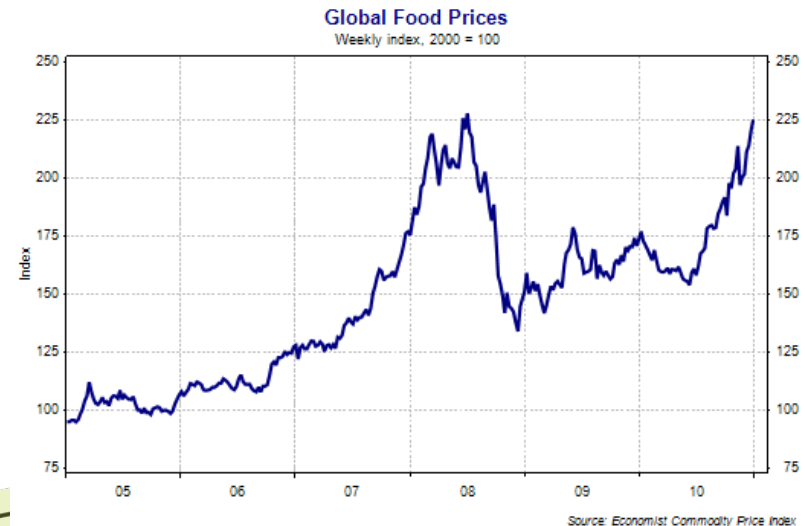
Challenge B: Addressing the threat of future **volatility** in the food system

影響因素：

1. 氣候變遷
2. 非經濟因素：武裝衝突、地區或國家統治垮台
3. 經濟因素：全球化和國際貿易、其他商品衝擊(石油)；公、私有領域所持有庫存水平；市場的監管方式；作物保護和生物技術持續進步；生物燃料(連結)的補貼與獎勵

如何改善：

1. 有可靠規則為基礎的國際貿易協定
2. 全球性的糧食儲備制度與安全網
3. 利用科技來降低氣候變遷影響





Challenge C: Ending hunger

影響因素：

1. 終止飢餓為項目中最急迫的議題；據估計約有**9億人**遭受飢餓之苦，另外可能有10億人雖有足夠營養卻忍受**隱性飢餓**，即缺乏維生素與礦物質的攝入(連結)
2. 衡量飢餓、營養不足、食物安全困難重重，可使用的**證據與數據嚴重缺乏**。
3. 受糧食價格**波動**影響嚴重

如何改善：

1. 基礎建設、監控、教育、協助**小農**生產
2. 僅靠**農業**無法解決飢餓，需增加食物可取性與收入
3. 減少性別權力差異，具配套措施推動**女性力量**
4. 建立土地產權吸引投資進入
5. 以**廣闊**的視角看待飢餓及諸多影響的性質和成因
6. 適宜的政府政策





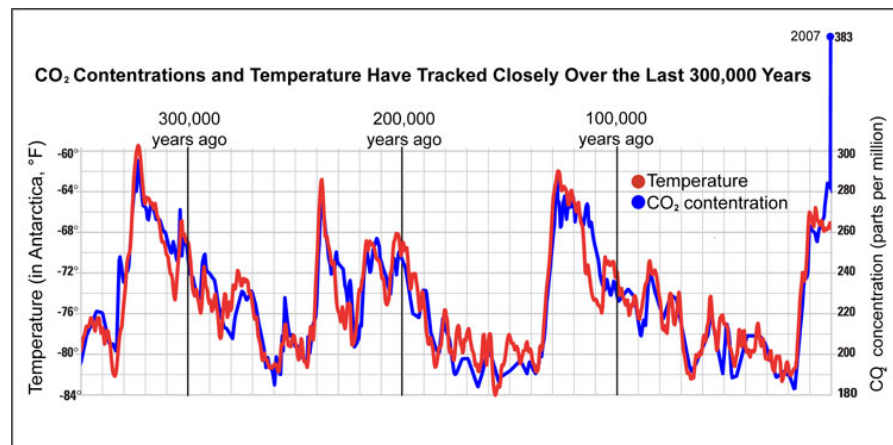
Challenge D: Meeting the challenges of a low emissions world

現存問題：

1. 食物系統會釋放溫室氣體、硝酸鹽和其他環境污染物，直接或間接地也破壞生物多樣性
2. 主要來源為氮肥的生產和應用，其次是畜牧業產生腸道發酵和糞便的溫室氣體(ex 非洲)
3. 許多國家溫室氣體減碳行動並不包括農業

如何改善：

1. 政府監管、創造市場激勵措施
2. 消費者壓力、企業社會責任
3. 科學導入(ex 精準農業、基改)
4. 減緩政策(生物燃料與食物系統間的衝突)



Challenge E:

Maintaining biodiversity and ecosystem services while feeding the world

現存問題：

1. 全球食物系統當前缺乏可持續性
2. 人口持續成長，資源仍有限，農漁面臨環境維護挑戰(ex 雨林)
3. 缺乏國際層面約束，發展中國家內則趨向營利導向

如何改善：

1. 全民意識型態的改變



Final : Future agriculture

Climate change: GHG now in the atmosphere will drive changes up to 2030.



Urbanisation - 2010 first year urban population exceeded the rural population ~55% 2025



Population increase
An extra billion people by 2025

