

ISSUES FOR
RESPONSIBLE
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FEEDING ASIA 哺养亚洲

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Editors

Benjamin McCarron
Lucy Carmody
Laura Dodge

Researchers

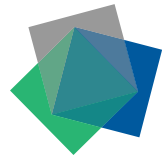
Gauri Nafrey
Allison Prevatt



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Translation:
Sun Xi and Bai Jie

Contributors:
With special thanks to Rebecca Lewis, Lena Brantmark, Katy Yung, Penny Hands, Ian MacDonald, Alexander Read-Brown and Jaideep Panwar.

EXECUTIVE SUMMARY

执行摘要

The dramatic food price rallies of 2010, echoing the surges and attendant social unrest of 2008, provide the context for this analysis of the challenges of feeding Asia over the coming decades. The issues are inherently complex and interrelated, but can be broadly categorised under the following headings: demand dynamics; supply pressures; impacts (environmental and social) and responses - price, policy and technology. This report also provides a disclosure based assessment of the readiness of Asian corporations operating in the food supply chain to meet the coming challenges.

2010年食品价格上涨迅速，使2008年“粮食危机”及随之引发的社会动荡再次出现，这为未来数十年内亚洲食品供应所面临挑战的分析提供了研究背景。本文所探讨和研究的内容本身是复杂且相互关联的，但仍可大致分为以下几个方面：需求的动力；供给的压力；（环境及社会）影响；价格、政策和科技的回应。此外，此报告还对亚洲食品供应链环节内各个公司应对挑战的准备情况进行了以信息揭露为主的评估分析。

Urban Asia switches to resource intensive foods

The first consideration is demand. While the growing number of mouths to feed is clearly a factor, rising incomes and changing diets, generally coinciding with rapid urbanisation, are found to be more significant. Changing food consumption patterns are particularly prevalent for those at lower income levels, where, after a move to the city, extra wages are often spent on meat and dairy products, packaged foods, and vegetable oils. Thus the rapid pace of development and urbanisation in Asia will continue to drive demand, much of which is for qualitatively more resource-intensive food products.

城市化亚洲转向资源密集型食品

需求是首要考虑因素。人口增加是导致需求变化的主要因素，然而，收入的增长、饮食结构的改变，一般同时伴随着加速的城市化进程，被发现具有更显著的影响。饮食结构的改变在低收入人群中尤为普遍。他们在迁入城市后，更多地将额外的收入用于购买通过密集型饲养、生产的肉类、奶制品、包装食品及植物油。因此，亚洲经济的飞速发展及城市化将会继续驱动以资源密集型食品为主的需求的增加。

This demand places a huge burden on the environment, both in terms of the inputs required and the impacts of providing them. It also presents an opportunity for the many actors, corporate and otherwise, involved in food supply.

这一需求从所需投入及其投入影响方面都对环境造成了巨大的负担，同时也对企业及其他食品供应链内的参与者们提供了巨大商机。

Putting Food on the Table: Key Factors and Players in the Food Value Chain 图解食品业：食品价值链内的主要因素和参与者

Raw Materials 原材料	Equipment 设备	Farming 农业	Manufacture 制造业	Distribution 分销	End user groups 最终消费群体
Water 水	Irrigation 灌溉	Smallholders 小农户	Processors 加工	Wholesalers 批发商	Households 家庭
Land 土地	Tractors 拖拉机	Cooperatives 合作社	Logistics 物流	Wet markets 露天市场	Restaurants, Hotels 餐馆, 酒店
Energy 能源	Farm equipment 农具	Agribusiness 农业企业化	Packers 包装	Small stores 小型商店	Canteen services 餐厅（食堂）
Seed 种子	Harvesting machinery 收割机	Itinerant harvesters 流动采收工人		Supermarkets 超级市场	Facilities management 设备管理
Fertilisers 化肥		Factory farms 农业工厂化		Logistics 物流	Defence, Prisons 国防, 监狱
Pesticides 农药		Aquaculture 水产养殖业		Packers 包装	Transport - Airlines, Shipping 交通-航空, 航运
Herbicides 除草剂					Schools, Hospitals 学校, 医院

Climate change adds pressure to strained raw material supply

The inputs required to feed upwardly mobile Asia will come under increasing pressure over the next few decades. The interlinked problems of water, energy and fertiliser supply, as well as productive land availability and the host of challenges presented by climate change, will persist and grow worse. The case study on corporate activity in the fertiliser market highlights the seriousness with which multinationals and governments view these issues: neither BHP Billiton nor Sinochem were given the green light by the Canadian government in their respective attempts to bid for Potash Corp.

气候变化使有限的原材料供应更添压力

为满足亚洲食品供应增长的趋势，相关投入将会在接下来的几十年内遭遇越来越大的回报压力。水资源、能源和化肥供应的紧张，以及可耕作土地量等问题和一系列由气候变化所致的考验互相作用，使得情况持续恶化。以下关于化肥市场中企业活动的案例分析显示了跨国公司和政府部门对待这些问题的严肃态度：必和必拓（BHP Billiton）和中化集团（Sinochem）对加拿大钾肥公司（Potash Corp）的竞购要求均未得到加拿大政府的批准。

Case Study: Scramble to secure inputs

BHP Billiton's \$38.5 billion hostile takeover bid for Canadian Potash Corp, a Canadian fertiliser company, in August 2010, highlights the value corporations and countries place on strategic investments in food production inputs. Sinochem, the state-owned Chinese chemicals group, deliberated a competing offer for Potash. However, a report by the Conference Board of Canada warned Potash to reject the bid, since China is a major potash importer, and "Sinochem has strong incentives for lower prices and will not be guided by the same market discipline and profit motive as commercial players."¹ Without a positive steer from the Canadian government, Sinochem did not submit a bid, whilst the BHP Billiton bid was subsequently blocked for failing to bring a perceived "net benefit" to Canada. According to Bloomberg this is only the second formal block by the Canadian government in 25 years.²

案例分析：为了保护生产投入而搅局

2010年8月，必和必拓（BHP Billiton）以385亿美元恶意收购加拿大钾肥公司（加钾，Potash Corp）的案例，凸显了企业和国家对食品生产投入的战略投资的价值取向。中国国有企业——中化集团（Sinochem），向钾肥公司提出竞价，但是，“由于中国是钾肥进口大国，而且中化集团有强烈的降价动机，并不会与商业对手遵守相同的市场规则和利润动机”¹，因此加拿大谘议局要求加钾拒绝（中化的）竞标要求。没有加拿大政府的正面支持，中化不能提交竞标要求；之后，因为不能给加拿大带来预期的“净利益”，必和必拓的竞标也随之被拒绝。根据Bloomberg的研究显示，这是加拿大政府25年来为数仅有的第二次正式阻止（商业竞购）²。

Productive land is a limiting factor, with urbanisation and degradation both reducing the land available for food, alongside a growing understanding of the danger of converting ecosystems, particularly rainforests, to agriculture. Biofuel production is also a significant source of competition for land and a symptom of global energy challenges, in particular that of increasing oil demand: the International Energy Agency has now stated that conventional crude supply peaked in 2006.³ Yet oil is deeply embedded within modern industrial methods of agriculture. With new fears over the viability of Asian nuclear power rollouts, energy input costs will be an increasingly important consideration in the food industry.

可耕作用地是有限的，而城市化和（土地）退化均使可用耕地数量有所减少，此外，越来越多的人也意识到将生态系统，尤其是热带雨林转化为农业用地的危险性。生物燃料的生产也需要侵占一定的耕地。生物燃料是全球能源、尤其石油产品需求面临挑战的征兆：国际能源署现已指出常规石油峰值已在2006年达到³。而石油生产是现代农业产业化的重要投入。随着新产生的对亚洲核能可行性的担忧，有关能源投入成本的考量将会显得越来越重要。

These broadly conventional economic factors are difficult enough to manage. Climate change makes the planning much more complicated, as it increases uncertainty for farmers over what crop to sow and when to harvest. In some cases just a small change in temperature can have a significant affect on overall yields. Other difficulties include rising sea levels: around half of the Mekong river delta is within two metres of sea level and at increased risk of salination, coastal flooding and even submersion over the coming century.⁴ This threatens to undermine rice cultivation in Vietnam, the world's second largest rice exporter. On a more positive note, increased levels of carbon dioxide can support yields, but farmers will need improved access to information and resources to take advantage of this benefit.

这些广义上的常规经济因素已经难以掌控。气候变化则使其更加复杂，因为气候变化增加了播种收割等农耕计划的不确定性。有时甚至是温度方面的细微变化都能对整体产出造成巨大的影响。海平面的上升则是另一个问题。湄公河三角洲的水稻种植使越南成为世界第二大稻米出产地。此三角洲约一半地区距离海平面仅2米之内，面临着本世纪与日俱增的土壤盐碱化、沿岸洪水泛滥乃至完全被淹没的风险⁴。从正面的角度来看，二氧化碳浓度的增加能促进粮食产出，但农民需要更多、更先进的信息及资源来应用这一优势。

Prices and volatility set to stay high

The themes of robust demand and tight supply are supportive of a strong outlook for food prices, within a context of continuing volatility. In 2010 alone, three major commodity markets, wheat, cotton and coal, were dramatically affected by extreme weather in Russia, Pakistan and Australia, respectively. Climate change intensifies the likelihood of such events.

价格动荡上升

强劲的需求和有限的供给共同构成了强劲的价格走势及持续波动的市场预期。仅在2010年，小麦、棉花和煤炭三大主要商品市场就均分别受到俄罗斯、巴基斯坦和澳大利亚极端气候的严重影响。而气候变化加剧了类似事件发生的可能性。

Food price rises spark riots in India, January 2011



Source: Associated Press/Mahesh Kumar A

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Global food prices: a twenty year review

全球食品价格二十年纵览



Commodity Food Price Index⁵ 商品食品价格指数⁵ 2005=100

Includes cereal, vegetable oil, meat, seafood, sugar, banana and orange prices 包括谷物, 植物油, 肉类, 海鲜, 糖, 香蕉和桔子的价格

Governments' hands are forced

Asian governments have no option but to respond to higher prices, though their approaches will vary according to the resource considerations and market developments prevailing in each region and country. Last year Russia, one of the world's largest wheat vendors, reacted to a crippling drought by closing its doors to exports; India swiftly followed. This led to significant global shortages, with huge ramifications for wheat prices. Governments are unlikely to be sympathetic to calls to open their markets given how swiftly unrest follows rising food prices. A march in New Delhi against rising food prices and unemployment attracted nearly 40,000 protesters in February 2011.⁶ Food prices have also been cited as a motivating factor in the social unrest in North Africa and the Middle East this year. For importing countries as well as corporate buyers who rely on open markets this presents an extra dimension to the challenge of ensuring continuity of supply.

政府被迫采取措施

亚洲政府别无选择只能被迫出台政策以应对价格上涨, 不过根据各国家及地区资源结构和市场发展程度的不同, 政府所采取的方法也不尽相同。去年在小麦市场上, 俄罗斯, 世界最大的小麦出口国, 通过取消出口来应对严重干旱, 印度也迅速地效仿了这一做法。这导致了全球市场上(小麦的)大量短缺, 以及小麦价格的巨大分歧。考虑到食品价格上升将迅速带来(政治的)动荡, 政府不可能出于同情心而打开本国的市场(以进行出口)。2011年2月, 新德里有近4万人参加了反对食品价格和失业率上升的游行⁶。在北非和中东, 食品价格也被认为是今年其政局动荡的因素之一。对于依靠自由市场的粮食进口国和企业买家而言, 这是保持稳定持续供给的又一挑战。

Prices drive returns for innovators

Higher prices will also encourage greater investment in research, development and productivity, likely aided by government incentives. Such investment and innovation are essential as there has been a long-term decline in the growth of agricultural productivity improvements. Genetically modified organisms (GMOs) are but one factor in this debate, with significant potential simply in the expansion of improved agronomic practices, particularly to smallholders. Micro irrigation and even micro fertilisation have a part to play, as does the application of information and communications technology (ICT). A case in point is satellite mapping that can detect changes in soil nutrient levels, making fertiliser use more efficient. These examples illustrate the increased importance of resource productivity compared to labour productivity.

价格将驱动回报给创新者

价格上涨加上政府的激励政策也吸引了农业发展及生产力研究方面的更多的投资。由于在提高农作物增产能力方面出现了长期停滞的状况, 这些投资和创新变得非常必要。转基因食品只是这场论战中的其中一个因素, 尤其对小农户来说, (转基因食品)在将完善的农学知识转推广应用方面有巨大的潜力。而微型灌溉技术甚至微型施肥技术也逐渐被业界所考虑, 此外还包括了信息通讯技术的应用。例如, 利用卫星标记能检测出土壤营养水平的变化情况, 使得化肥的使用更有效率。此外, 也有迹象表明与劳动生产率相比, 资源生产效率的重要性逐渐增加。

Alongside technological approaches are different organisational and management frameworks that speed up the adoption of improved agronomy through agricultural regions. Communications can also help here, improving the efficiency of developing world farmers who can now access market prices on their mobile phones, rather than guessing when to go to market.

除不同的科技方法之外, 采取另一种的组织及管理模式能够促进农业生产部门改善其生产方法。通讯技术也能运用于此, 提高发展中国家农民的交易效率。如今他们能利用电话随时获取市场行情, 而不用不停盘算何时亲自去市场打听价格。

The importance of packaging in reducing waste also deserves a mention. A huge amount of food is lost between farm and end-user due to pests, bruising and rotting, and appropriate packaging can significantly reduce such spoilage. The food industry should work towards low-impact transit packaging solutions, using resources already generally available.

恰当包装减少浪费也是（创新的）重要一方面。在食品从农场到达最终消费者之间，有大量的食品因为害虫、磨损等问题而变质。而恰当的包装能有效的减少此类问题的发生。食品工业应利用已经普遍可得资源，逐渐采用影响较低的运输包装模式。

Environmental impacts worsen

Aside from the food security considerations that resource constraints present, governments and in turn companies will be under increasing pressure to manage the social and environmental impacts of food supply. This pressure comes from improved understanding of the long-term implications of agricultural intensification, accelerated by the growing environmentally and socially conscious Asian middle class, newly empowered by social media. On the environmental side, the rapid biodiversity loss from deforestation and over-exploitation of fisheries are key considerations as well as cases of toxicity involving pesticide use, fertiliser run-off and waste from intensive livestock production.

环境影响恶化

除了要考虑目前资源有限情况下的食品安全问题，政府及各公司还要面临与日俱增的另一种由于管理社会和环境等因素对食品供应的影响而产生的压力。这一压力来自于对长期农业集约化生产影响的理解提高，加上中产阶层日益增长的环保意识和社会意识以及新生的媒体话语权。在环境方面，关键（影响）因素包括由森林采伐和渔业过度捕捞导致生物多样性的快速丧失，以及由于杀虫剂的使用、肥料残留和集约化畜牧养殖业过程中产生的废弃物对食品造成二次污染所产生的有毒食品。

Obesity becomes endemic

There is also a huge range of market factors on the social side. These include nutrition where higher prices exacerbate hunger and malnutrition, slowing progress towards the Millennium Development Goals. On the other hand there is a growing epidemic of obesity triggered by changing lifestyles, diets and new 'food formats' with dramatically higher salt, sugar and fat content. These issues are compounded by food safety and health considerations due to new diseases, the spectre of antibiotic-resistant bacteria arising from intensive livestock production (as evidenced by the repeated recurrence of avian and swine flu cases throughout Asia^{7,8}), and errors in processing or packaging that can result in chemical poisoning.

肥胖症蔓延

在社会方面也有许多的原因（会造成影响），而营养因素是其中之一。一方面，价格的上升加剧了饥饿和营养不良的状况，阻碍了千年发展目标的进程。另一方面，生活方式的改变及新形成的高盐、高糖、高脂肪的饮食习惯导致了肥胖症的蔓延。而由于新型疾病的产生，使通过集约化饲养的牲畜产生了耐药性（如亚洲近年来屡次发生的禽流感^{7,8}和猪流感^{7,8}），使市场遭受了恐慌。同时，食品处理包装过程中有害化学成分可能会对产品造成二次污染。因而对于食品安全和健康问题的担忧使得这些问题变得更加严重。

The food industry is exposed to the full range of labour risks involving a massive, under-regulated and largely low cost female workforce. Further controversy includes frequent questions over land rights and dispossession of land from subsistence farmers or indigenous populations. This has been particularly problematic in the Malaysian and Indonesian palm oil industry where drivers for national sustainable development are pitted against preservation of traditional lifestyles and conservation of tropical biodiversity.

在劳动力方面，食品产业内也存在着各种各样的风险，因为（食品企业）主要是被监管的、以女性为主的、低成本的、密集型的劳动力模式。此外，还有大量关于土地所有权问题及强占农民（或原住民）土地的问题。这在马来西亚和印度尼西亚棕榈油产业中尤为严重，因为这些国家的可持续发展目标与其传统生活方式及热带生物多样性保护相冲突。

Large Asian agribusiness companies will be exposed to additional environmental, social and governance (ESG) risks in the coming years as they increasingly acquire agricultural land in Africa. Many critics claim the benefits of enhanced yields are not likely to be shared with local communities.^{9,10}

在未来几年内，亚洲大型农业综合企业将会增加在非洲用于购买农业用地的投入，这必将凸显环境、社会及公司治理方面的风险。而许多批评已经断言其增加的产出收益不可能与当地居民共享^{9,10}。

A newer feature for Asian companies is the increased reputational risks for those involved in animal product supply chains as concern for animal welfare gathers momentum. This is resulting in closer inspection of practices such as shark-finning and the way in which animals, particularly battery chickens, are treated.

亚洲动物源性食品产业链内的企业还面临由于社会对动物福利与日俱增的关注而产生的声誉风险，这引起了人们对于企业如何获取鱼翅、养殖“饲料鸡”等问题的密切关注。

Risks and opportunities abound for investors

For investors, responsible or otherwise, the pressures in the food chain undoubtedly present opportunities, but with an increasingly complex risk profile. Sustainability factors in tandem with government approaches to food security have the potential to dramatically alter corporate prospects in all areas of food supply.

This applies where input price volatility changes the competitive landscape for retailers and producers and for suppliers that find new markets through alleviating resource problems. Proactive managements can add value by technological improvements as well as by organisational innovations, such as long term supply contracts with farming cooperatives.

投资者的风险与机遇

对于负责的投资者及其它投资者来说，食品产业链内的压力预示着可观回报的同时也伴随日益复杂的风险。可持续发展因素与政府应对食品安全的措施，具有提高企业在食品供应链各环节潜力的作用。这可能是由于价格波动引起的如销售商和生产商等竞争态势的改变，或者是为供应商找到了能缓解资源短缺问题的新市场。通过科技进步、与农村合作社签订长期供给合约等管理方式的改进，（企业）能利用积极的管理措施找到新的解决方案。

Aside from considering their resource dependencies, managements will also have to mitigate supply chain impacts. This is not a new challenge for companies supplying multinationals, but maintaining a reputation for responsibility is now increasingly important for all those looking to profit from Asia's fast-growing socially conscious middle classes.

除了考虑对于资源的依赖性，（企业）管理层还要控制供应链的影响。这一问题对跨国公司来说由来已久，但是若想从社会意识逐渐增强的亚洲中产阶级身上获取利润，维持负责任的声誉对企业显得越发的重要。

This report develops the issues mentioned above and highlights companies that, through strong disclosure of policy or through appropriate initiatives, demonstrate proactive approaches to the emerging risks and opportunities inherent in 'Feeding Asia'. We include many examples of Asian companies that have begun to integrate sustainable development issues into their business models. One such example is Britannia, an Indian biscuit and cake maker, which recently introduced new lines of fortified foods that aim to reduce malnutrition among children. In a move aimed to address growing consumer concern over nutrition, Britannia also removed trans fats from all its biscuits.

本报告详细论述了上述问题，并重点强调了那些通过有力的政策披露或适当的倡议活动来积极应对亚洲食品行业潜在风险及机遇的公司。我们囊括许多已经开始将可持续发展事务融入其商业发展模式的亚洲企业实例。比如 Britannia，一家印度饼干与蛋糕生产商，它最近引进了一条新的强化食品生产线以期降低儿童的营养不良问题。同时，为了应对消费者对于营养问题日益增长的关注，Britannia已将反式脂肪从其全部饼干产品中祛除。

Whilst we acknowledge that the food supply chain covers a wider universe of companies including machinery manufacturers, logistics, distribution and end retailers, this report focuses primarily on the leading players in the traditional food processing supply chain: agricultural producers, food processors, specialist food retailers

and restaurant chains with a strong bias towards the packaged consumer goods sector.

虽然我们明白食品供应链实际涵盖了包括器械制造、物流、经销和零售等更多领域的公司，但是本报告主要着重于传统食品加工供应链内，尤其是包装性消费品行业中的农产品生产商、食品加工商、专类食品经销商及餐饮类领先企业。

Sustainability performance at leading food companies

The following table highlights those companies within our Asian Food universe, as well as a selection of global leaders, that performed well on sustainability disclosure and performance according to the Asian Sustainability Rating™ (ASR™), an environmental, social and governance benchmarking tool developed by Responsible Research.

食品行业领先企业可持续发展表现

根据由Responsible Research开发的用于比较研究各公司环境、社会及公司治理表现的亚洲可持续发展评级工具(ASR™)，以下表格重点展示了亚洲食品行业领域可持续发展揭露与表现优异的公司以及全球领先跨国企业。

POSITION 排名	MNC LEADERS 领先跨国企业	COUNTRY 国家	ASR SCORE 可持续发展评级 亚洲可 总得分	GENERAL 一般表现	ENVIRONMENT 环境	SOCIAL 社会	GOVERNANCE 公司治理
1	DANONE 达能	FR 法国	92%	85%	90%	94%	96%
2	NESTLE SA 雀巢	CH 瑞士	88%	77%	95%	88%	88%
3	UNILEVER PLC 联合利华	UK 英国	88%	92%	80%	88%	92%
	AVERAGE 平均分		89%	85%	88%	90%	92%
ASIAN MNC LEADERS 亚洲领先跨国公司							
1	UNILEVER INDONESIA 联合利华(印尼)	ID 印度尼西亚	80%	92%	75%	84%	72%
2	NESTLE MALAYSIA 雀巢(马来西亚)	MY 马来西亚	70%	62%	75%	72%	68%
3	NESTLE INDIA LTD 雀巢(印度)	IN 印度	58%	54%	40%	59%	72%
	AVERAGE 平均分		69%	69%	63%	72%	71%
ASIAN FOOD LEADERS 领先亚洲食品公司							
1	UNIPRESIDENT 统一	TW 台湾	62%	54%	85%	78%	28%
2	CHAROEN POKPHAND FOOD 泰国正大集团	TH 泰国	60%	54%	30%	69%	76%
3	CHINA AGRI INDUSTRY 中国粮油控股有限公司	HK 香港	42%	46%	5%	44%	68%
	AVERAGE 平均分		55%	51%	40%	64%	57%

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Responsible Research Pte Ltd

Como House 4th Floor
6B Orange Grove Road
Singapore 258332

Tel +65 6304 3528

Email info@responsibleresearch.com

www.responsibleresearch.com

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