**The coming energy crisis**

**日益逼近的能源危机**

**1 Two hundred years ago, the world experienced an energy revolution that launched the Industrial Age. Ever since then, with the rapid increase of population density, the industrialized world's thirst for energy has more than tripled. Petroleum and natural gas are exploited as versatile and high quality energy products. Uranium is also tapped to fuel nuclear reactors and provide atomic energy.**

**两百年前，全球经历了一场能源革命，由此引发了工业时代的到来。从那时起，随着人口密度的迅速增加，工业国家对于能源的需求成倍成倍增加。石油和天然气被看作是用途多、质量好的能源产品而得到开发，而铀也得以开发，为核反应堆提供燃料并供应原子能源。**

**2 Cheap energy is the lifeblood of human society. But there is a dark side to the near monopoly of non-renewable fossil fuels like coal, oil and natural gas, along with controversial uranium, to supply our growing energy demands. The supply of these fuels is physically limited, and their use threatens our health and environment. Multiple international treaties have been proposed to limit the use of fossil fuels for this very reason. Fears of global warming aside, burning fossil fuels releases chemicals and particulates that can cause breathing problems, cancer as well as brain and nerve damage. Nuclear energy, once hailed as "too cheap to meter", has never been economically successful when all costs are factored in. Furthermore, public opinion polls show nuclear energy is too closely associated with disasters like the Chernobyl reactor meltdown and the Fukushima explosion, and with the danger that rebel insurgents could do damage with the toxic waste. Inexpensive and seemingly abundant non-renewable energy from dead plants and extinct animals fueled the 20th century economy, but geologists, climatologists, environmentalists, and many others are warning that the honeymoon may soon be over.**

**廉价能源是人类社会的命脉。但是，对煤炭、石油、天然气这些不可再生的矿物燃料及有争议的铀进行近乎垄断地使用以满足我们日益增长的对能源的需求的做法有其危险的一面。这些燃料的供应实际上是有限的，并且，使用这些燃料对我们的健康和环境都造成威胁。正因如此，人们制定了众多的国际条约，以限制对矿物燃料的使用。除了造成全球变暖之外，矿物燃料在燃烧过程中还会释放出某些化学物质和微粒，引发呼吸系统疾病、癌症，并造成对大脑和神经的损伤。如果把所有代价都考虑进来的话，曾经被称颂为“便宜到无法计量”的核能从经济效益上来说则从未获得过成功。而且，民意调查显示，核能总被认为与灾难密切相关，例如切尔诺贝利核反应堆熔毁事件及福岛核电站爆炸事件。同时，核能还具有一种危险，就是叛乱分子可能利用其有毒废物制造伤害。死去的植物和动物所产生的价格低廉且看似充足的非再生能源推动了20世纪的经济发展，但地理学家、气候学家、环境学家以及其他许多人都在警告我们：这样美好的时光很快就要结束了。**

**3 At some indefinite time in the near future, the last drop of oil, lump of coal or wisp of natural gas will be collected from the earth. The eventual depletion of fossil fuels that hitherto proved so reliable has left us with no choice but to prepare for a new age of energy synthesis. Most certainly, human demand for energy will not decrease or plateau but surge as world population grows to nine billion over the next 50 years. By the year 2020, world energy consumption is projected to show a linear increase of 50 percent.**

**在不久的将来的某个时候，地球上最后一滴石油、最后一块煤或最后一缕天然气将被开采。迄今为止一直被证明是稳定可靠的矿物燃料终将消失，这让我们别无选择，只能作好准备，迎接新的能源综合利用时代的到来。可以肯定，人类对能源的需求不会趋于减少或保持稳定，而是会随着世界人口在未来50年增长到90亿而迅速增加。据预测，到2020年，全球的能源消耗将直线增长50%。**

**4 How will we meet the sky-rocketing energy demands of the future? Until we perfect the technology of cold fusion, we'll have to focus on the development and increased production of energy from renewable energy source — sun, wind, water, and so on. While renewable energy sources are promising, an international confederation of scientists and engineers is working feverishly to overcome the various obstacles associated with these "new energy" technologies. The major challenge is to develop efficient and economically workable versions of these technologies.**

**我们怎样才能满足未来急剧增长的能源需求呢？在我们完善冷聚变技术之前，我们只能专注于开发太阳能、风能、水电能之类的可再生能源，并提高其产量。虽然可再生能源前景乐观，一个由科学家和工程师组成的国际联盟却正在积极工作，努力克服与这些“新兴能源”技术相关的各种障碍，其中最大的挑战就是如何使这些技术变得既高效又经济。**

**5 Take solar energy for example. It is a good option because there is an unlimited supply of glittering sunlight. Making it work on a large scale, however, is much easier said than done. It would be cost prohibitive to take the intricate gadgets of solar energy from the fringe of "green" society to the mainstream for major world consumption. The solar apparatus itself is ready for many new business and consumer applications, but it is way too expensive to replace the old combustion machinery of gears and motors with new electronic technology of semiconductors and transistors on a global or even a national scale.**

**以太阳能为例。由于耀眼的太阳光能够提供源源不断的能源，所以它是个不错的选择。但是，大规模地使用太阳能却是说起来容易做起来难。把制造太阳能所需要的复杂零件从“环保”社会的边缘推广到主流社会，使之成为世界主要的消费性能源，其代价之高让人望而却步。太阳能设备本身已是技术成熟，可以使商业和消费者进行许多新型应用，但是，在全球或者即便是在全国范围内，用新型的半导体和晶体管电子技术取代老式的用齿轮和发动机驱动的燃烧设备，其成本实在太高。**

**6 Wind power, which has been used effectively in some places for generations, is also rapidly growing in the energy market. The principle behind it is that wind converts rotary force into electricity by turning the blades of the turbine clockwise or counterclockwise around an axis. Unfortunately, wind power is very unreliable and its strength depends on local weather patterns, temperature, time of year, and location. In addition to this unreliability, wind power equipment is very expensive compared with other energy sources and won't become a viable alternative until we can slash the costs significantly. Also, a "wind farm" requires enormous land clearing to produce significant amounts of energy.**

**风能在一些地方已经被几代人有效利用，目前在能源市场中也发展迅速。风能的原理是：风通过驱动涡轮机叶片按顺时针或逆时针方向绕着一个轴旋转，从而把转动时所产生的力转换成电能。不幸的是，风能非常不稳定，其强度取决于当地的天气模式、温度、季节以及地域。除了不稳定的因素之外，和其他能源相比，风能设备造价昂贵。除非我们能将其成本大大降低，否则风能就不会成为一个可行的替代能源。而且，一个“风能农场”需要大片空旷的土地才能生产大量能源。**

**7 Hydroelectric power is another source of clean and renewable energy. It can be harnessed by controlling the natural outflow of water with different methods. The most popular is through dams, which, unfortunately, are no longer considered environmentally friendly. Most of the hydroelectric dams in the world are historically recent, but all reservoirs eventually will fill up with mud and require very expensive excavation to clear them up to become useful again.**

**水力电能是另外一种既干净又能再生的能源。人们可以通过不同方法来控制自然水流以进行发电。最普遍的方法是通过水坝，但不幸的是，建水坝已被认为是对环境不利的方法了。世界上大多数用于水力发电的大坝建造历史都不长，但是所有的水库最终都会被淤泥填塞，需要耗资巨大进行清淤才能使它们重新得到利用。**

**8 Biomass energy derived from plant and animal matter is still another renewable source being considered as a standby replacement for fossil fuels. Organic waste in the form of dead trees, leaves, animal corpses and food processing waste exists in abundance and can be used to produce energy. However, there is no way to ventilate the direct burning of biomass as fuel without diffusing carbon dioxide and other greenhouse gases into the atmosphere. These gases can pose a risk to the ozone layer, increasing overall exposure of human beings to harmful UV rays from the sun. Besides, it takes time and money to collect and transport biomass in its raw form to a central point for processing into fuel, and the automation of such a process is too difficult. So, for the time being, biomass has too many costly drawbacks to be a workable alternative to fossil fuels.**

**动植物物质所产生的生物能源也是一种可再生能源，且被认为是矿物燃料的备用替代品。以死树、枯叶、动物尸体以及食品加工废料的形式存在的有机废物十分充足，可以被用来制造能源。然而，将生物质作为燃料直接燃烧，通风时必然会将二氧化碳及其他温室气体排放到大气中。这些气体会对臭氧层造成威胁，增加人们受到来自太阳的有害紫外线照射的危险。除此以外，将生物质以原始形态进行收集，并将它们运送到某个中心站加工处理成燃料，这一过程既耗时又耗财，而且对这一过程实现自动化非常困难。所以，在目前，生物质能源有太多高成本方面的缺点，不能成为矿物燃料可行的替代品。**

**9 Although renewable energies are not yet economically competitive with fossil fuels, their price becomes more attractive when compared with the health and environmental costs associated with burning coal and oil. Perhaps the best solution to our growing energy challenges comes in a bulletin from the Union of Concerned Scientists: "Our society's future success cannot hinge on one single solution. The answer instead must come from a family of diverse energy technologies that share a unified purpose — they do not deplete our natural resources or destroy our environment." Despite the difficulties, it is important to remember that an energy crisis is approaching at supersonic speeds and will soon be upon us. In order to inaugurate a new era in energy, we must act quickly and work toward international collaboration to find the most effective solutions to our energy problems.**

**虽然从经济实惠方面来说，可再生能源没有矿物能源有竞争力，但是，与燃烧煤和石油所带来的健康及环境代价相比，它们的价格又变得较有吸引力了。也许，对于日益紧迫的能源挑战，最好的解决办法正如“忧思科学家联盟”所出的一份简报上所说的那样:“未来我们社会的成功不能依赖于某一单一的解决方案。相反，答案须来自一系列各种不同的能源技术。这些技术有一个共同目的：它们不会耗尽我们的自然资源，也不会破环我们的环境。”尽管困难重重，我们需要牢记的是，能源危机正以超音速逼近，即将来到我们面前。为了在能源领域开创一个新时代，我们必须赶快行动，努力寻求国际合作，以找到能源问题最有效的解决办法。﻿**

**A worldwide food crisis?**

**会有全球粮食危机吗?**

**1 Historically, only local governments worried about a widespread food crisis, but today, a sharp spike in food prices and the resulting food crisis can quickly become a worldwide phenomenon. Recent droughts along the equator, and in Russia and Ukraine — two countries which account for one-fourth of world wheat exports — caused wheat prices to surge. Many worry the tight supply will cause inflationary prices. They fear the skyrocketing grain costs in 2007, which harshly struck the world's poor and led to food riots, will recur.**

**在历史上，只有地方政府才会担心大范围的粮食危机，而如今，粮食价格的急剧上涨及由此导致的粮食危机会很快成为一种全球现象。最近发生在赤道沿线、俄罗斯及乌克兰的干旱使小麦价格不断飙升——俄罗斯和乌克兰两国小麦出口总量占世界出口总量的四分之一。许多人担心小麦供应短缺会引发其价格膨胀，他们害怕2007年使世界穷人遭受重创并引发食品骚乱的飞涨的粮食价格会再次出现。**

**2 Is their fear grounded? Consultancy firms measuring the status of commodities like wheat don't think so. Stocks of wheat are at sufficiently high levels, and harvest turnout from other big producers like the US is expected to stay strong. So unlike in 2007, the supply situation isn't desperate, meaning wheat prices should eventually calm down and level off.**

**他们的担心有根据吗？负责对像小麦这样的商品现状进行评估的咨询公司并不这样认为。目前小麦的储备非常充足，并且，重要农业生产国如美国等的农作物生产也有望十分强劲。所以，与2007年不同，现在粮食供应状况并不那样令人绝望，这也意味着小麦价格最终会恢复正常并平稳下来。**

**3 However, this rosy picture provides only temporary security. The bigger picture discloses a reality not so optimistic. Though current prices aren't as sky-high as in the panicked market of 2007, they're still at higher levels than before and are likely to stay that way. The Organization for Economic Cooperation and Development sees the average prices of products classified as essential such as grains, vegetable oils, and dairy products rising for the next decade.**

**但是，这一美好的画面只能带来短暂的安心。更大的画面所揭示的现实不容乐观。虽然目前粮食价格没有达到2007年引起恐慌的市场上的那种天价，但和以前相比，价格仍然居高不下，而且很有可能维持这样。经济合作与发展组织认为，谷物、植物油和奶制品这些基本食品的平均价格在未来十年都将持续上涨。**

**4 It doesn't take an oracle to foretell that the fight to feed the world will be a huge challenge facing the global economy over the next 20 years. Food production is suffering from decades of neglect of agriculture, a period when the sector was starved of the resources and technology it needed to keep up with rising world demand. Though more and more people are intrigued by the issue and there is a growing global consensus about the need for reform in farming, we're really only at the beginning of a long, expensive process of repairing world agricultural practices. That means food prices will stay high over the next several years, as will the risk of dangerous price fluctuations like the current one with wheat.**

**未来20年，让世界上所有人都吃饱饭将是全球经济所面临的巨大挑战，这一点很明确，不需要通过行家来预言。由于过去几十年对农业的疏忽，粮食生产受到影响，而这几十年正是农业这一行业急需得到资源和技术支持以满足日益增长的世界需求的重要时期。虽然现在越来越多的人对这一问题表示出兴趣，对农业耕作进行改革的需要也获得全球越来越广泛的认同，但事实上，在修复全球农业作业这样一项耗时长、代价高的工作中，我们还只处于起步阶段。这也意味着，粮食价格在未来几年会居高不下，正如目前小麦价格波动所带来的风险也会居高不下一样。**

**5 Food isn't like garments or other products traded on world markets. The issue of food is filled with emotion. Intermittent uncertainty in food markets will animate people to act when they would otherwise remain calm. No country, for example, wants to run out of food or watch sky-high prices push people into poverty and malnourishment. That can lead to riots or even revolutions. When emotions are running high enough, grain exporters and importers may take extreme measures to prevent a shortage, like hoarding and panic-driven wholesale purchases. In other words, the overreaction of market players will act like a pistol to the head, creating a crisis when none should exist.**

**粮食这一商品和世界市场上交易的衣服或其他商品有所不同。粮食问题是充满感情色彩的。粮食市场时断时续的不确定性会促使人们采取行动，而这种不确定性如果涉及的是其他商品，人们则会保持冷静。比如，没有哪个国家希望出现粮食短缺，眼睁睁看着粮价飞涨而使人们陷入贫穷和营养不良的困境，因为这样会引发骚乱甚至革命。当人们的情绪积聚到足够高度的时候，粮食出口商和进口商就会采取一些极端的手段，以防止粮食出现短缺。比如，他们会囤积粮食及因恐慌而大批量购买等等。换句话说，市场操纵者如果反应过度，其作用就如同指向头部的手枪，会无中生有地制造危机。**

**6 Will current prices stay high and volatile? Probably yes. There are enormous structural problems with the agriculture industry that have caused the great imbalance between supply and demand. These problems have a dual nature, one part of it on the production side, and the other on the consumption side.**

**目前的价格会一直居高不下且变化不定吗？很可能会的。农业产业结构方面存在的诸多问题已经引发了供求关系的巨大失衡。这些问题具有两面性，一个是生产方面的，另一个是消费方面的。**

**7 On the production side, global funding for rural infrastructure or technological research to keep yields growing has been very small, well below what is needed to keep crises at bay and to meet our future food demands. But in the past, whenever economists predicted massive shortages, technological advances like higher-yield strains of wheat would overcome the difference and rescue civilizations from large-scale starvation.**

**在生产方面，全球用于乡村基础设施建设或农业技术研究以保持粮食产量持续增长的资金非常少，大大低于能够使我们避免危机、满足人类未来食品需求所必需的资金投入量。但是，在过去，一旦经济学家们预测会有大规模的粮食短缺，就会有像高产量小麦之类的技术进步来解决这一供需差异，使人类免受大规模挨饿之苦。**

**8 On the consumption side, citizens of wealthier countries have grown accustomed to consuming more food than they need and eating more costly types of food like meat. This means more grain gets turned into livestock feed instead of food for people. Add in the new demand for bio-fuels, and you get a recipe for disaster. As an excerpt from a pamphlet by activist Peter Singer explains: " … the problem isn't that we are producing too little food; rather we're not eating the food we grow. Nearly 100 million tons of grain per year is turned into bio-fuel that goes into gas tanks. The problem is that we — the relatively affluent — have created a system of piracy where we consume four or five times as much food as would be possible if we were to actually eat the crops we grow directly."**

**在消费方面，富裕国家的人们已经渐渐习惯了消耗比他们实际需求更多的食品，也习惯了吃肉等更加昂贵的食物。这就意味着更多的谷物要被变成家畜的饲料而不是成为人们的粮食。再加上对生物燃料的新需求，灾难的发生就是可能的了。正如从活动家彼得·辛格的一个手册中所节选出来的一段话所表述的那样：“……问题不是我们生产的粮食太少，而是我们没有食用我们生产出来的粮食。每年几乎有一亿吨的谷物被转变成了油箱中的生物燃料。问题是我们——相对比较富裕的国家的人——已经创建了一种强盗体系，我们所消耗掉的粮食，与我们要是直接食用我们所生产的粮食比起来，可能是其四到五倍之多。”**

**9 How can we neutralize this problem and dodge the future crisis? The solution lies at the intersection of money and time. Councilors, legislators and bureaucratic agencies of some countries like India and Senegal have had the foresight to realize this fact and are giving more subsidies to agriculture.**

**怎样才能化解这一问题并规避未来的风险呢？其解决办法就是通过金钱和时间的共同作用。印度、塞内加尔等一些国家的议员、立法人员及政府机构已经独具慧眼地认识到了这一事实，并且正在给予农业更多的资助。**

**10 More than ever we need the appropriation of time and money away from the army and the militia and toward creating a coherent international plan to deal with hunger. We are about to rupture at the seams, with the world population expected to grow by 2.3 billion between 2009 and 2050. It is estimated that feeding a population of nine billion would require a 70 percent increase in global food production between 2007 and 2050. Why such a discrepancy? The rapidly growing population not only needs more basic foods, like grains, but also enjoys foods higher up on the food chain, like meat. They desire not only the basic essentials of life, but also more sophisticated technologies like automobiles that use bio-fuels!**

**我们现在比以往任何时候都需要把拨款和时间从军队和民兵建设方面转移到致力于创建一个有条理的解决饥饿问题的国际计划上来。我们就要在接缝处崩塌，面临食品供应与需求之间的巨大缺口，因为在2009到2050年之间，世界人口预计将增加23亿。而要让90亿人有饭吃估计需要将全球粮食产量在2007至2050年间提高70%。为什么会有如此巨大的差异呢？因为快速增长的人口所需要的不仅是像谷物之类的基本食品，他们也要享用食物链上的高端食品，比如肉类食品。他们不仅渴望生活的必需品，也渴望享受高端的技术产品，比如使用生物燃料的汽车！**

**11 All signposts point to the need for food production in developing countries to almost double. To achieve this goal, an enormous investment in agriculture from various sources is needed. Governmental agencies, non-profit organizations, agricultural scientists, private investors and charitable donors, all must partner together to build the capacity of the developing world to answer this tremendous need for food.**

**所有的迹象都表明，有必要把发展中国家的粮食产量翻一番。要实现这一目标，需要各方对农业进行大规模投资。政府机构、非营利机构、农业科学家、私人投资者以及慈善捐赠者都要合作起来，增强发展中国家的生产能力，以满足全球对粮食的巨大需求。**

**12 While we may not be seeing all the symptoms of a food shortage syndrome yet, we must be clear-eyed in our on-going support of food production. The message is explicit: We are on a collision course. But the problem is soluble. Like climbing a staircase, we must do it carefully and consistently if we are to reach our goal and prevent a global food crisis.**

**也许，我们现在还看不到粮食短缺综合征的所有症状，但是，在对现行的粮食生产提供支持方面，我们必须目光准确。有一点很明确：我们即将面临一个大麻烦。但是，这个问题是可以解决的。如果我们要实现目标并预防全球性的粮食危机的话，和爬楼梯一样，我们必须谨慎而且坚持如一。**