# 中外对话 Chinadialogue





总编 伊莎贝尔·希尔顿

英国人,国际新闻工作者,BBC资深主持人,《卫报》专栏作家,并曾为全球多家知名媒体撰稿。她是一位中国问题专家,同时担任英国皇家国际关系学会和英国皇家人文学会会员。2006年,她主持创立了"中外对话"(http://www.chinadialogue.org.cn)双语环保网站。

Isabel Hilton, editor and founder of chinadialogue.net, is a London-based international journalist, a former BBC senior broadcaster and a columnist for *The Guardian*.

She is an expert in Chinese affairs, a member of the Royal Institute of International Affairs and a Fellow of the Royal Society of Arts. In 2006, she set up the bilingual website (http://www.chinadialogue.org.cn) focusing on China's environmental issues.

#### 关于"中外对话"-

"中外对话"是一个独立的非营利性组织,以伦敦、北京、德里和圣保罗为中心开展工作。

"中外对话"的主要业务是其独特的完全双语网站,它通过发表精辟、原创的中外文章、评论和分析,促进世界理解中国崛起带来的全球性生态环境影响,进而共同寻求公平可行的全球环境问题解决之道。

"中外对话"在很多机构的资助下运作,其中包括英国环境、食品和农业事物部、壳牌(中国)以及许多基金会。

# 关于"中外对话"内部交流刊物及网站——————

《中外对话》内部交流刊物是"中外对话"网站文章的精华。我们从网站上精心挑选了趣味盎然而极富挑战性的深度报道以及展现科技进步的新闻信息,方便与您的交流。欲阅读更多精彩的文章,请您登陆"中外对话"网站(http://www.chinadialogue.org.cn)。

"中外对话"网站以中国前沿环境记者撰写的文章、对国际知名人士的访谈以及对全球重大问题的深入报道为主要内容,通过网站,您可参阅每日全球环境新闻、赏析高质量的文章和参与"零语言障碍"的讨论(双语发布)。

另外,通过全球双语志愿者的帮助,您还可以在线与英文读者顺畅进行跨文化交流。 在那里,您可以提出疑问、挑战专家观点、贡献您的知识和了解他人独到的见解。

加入讨论您就走出了解决问题的第一步。

### What is chinadialogue

*chinadialogue* is an independent, not-for-profit organisation based in London, Beijing, Delhi and Sao Paulo.

chinadialogue's primary vehicle is our website (http://www.chinadialogue.org.cn), a unique bilingual platform which promotes a global understanding of the environmental impact of China's rise by publishing informed articles, commentaries and analysis by writers from inside and outside of China. We aim to inform, educate, and contribute to building a global consensus on fair and workable solutions.

chinadialogue is now read in 208 countries and regions and in all regions of China.

## **About our journal**

Produced on a bi-monthly basis, our journal brings you the best articles and reports from *chinadialogue*. If you want to contribute to the discussion you can visit our website (http://www.chinadialogue.org.cn) to add your comments and thoughts. Join the debate and be part of the solution.

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(2018.01 - 2018.02)

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# 中国重塑生态环境治理顶层机构

新一轮国务院机构改革揭开帷幕,中国将组建自然资源部和生态环境部推动环境保护和生态文明

□ 马天杰 刘琴



2018年机构改革, 标志着中国即将开启生态环境"大部制"时代

全量 氧化碳环保部管,二氧化碳却归发改委管。"在 2013年的一个会议上,时任环保部部长周生贤公开表示他对于环保监管碎片化的无奈。

这一尴尬的局面将成为历史。 3月13日,新的国务院机构改革方案 在全国"两会"上公布并提交审议, 原属发改委的气候变化和减排职责, 连同分散在其他多个部委的环保 职责,将划归新组建的生态环境部,中国即将开启生态环境"大部制"时代。这一方案 3 月 17 日由全国人大进行表决。

# "九龙治水"或成历史

很长一段时间以来,人们习惯用 "九龙治水"形容中国生态环境治理 局面。涉及生态环境保护的各项工作 和职能分散在环保、发改、水利、农 业、海洋等不同的政府部门中,各部 门之间的合作和协调成本高昂。

公众环境研究中心主任马军指出:"原本地下水、流域管理、农业污染治理分散在多个部委,造成管理职责交叉重叠,甚至形成相互推诿。"对此,国家林业局昆明勘察设计院院长唐芳林也深有体会。他以国家公园为例进一步解释说:"以前出台一个国家公园体制试点方案,需要国家发改委等13个委、部、局盖章,简单问题复杂化,相互掣肘导致效率低下。"

在本轮机构改革中,分属不同 政府机构的生态环境保护职能被整 合到了新组建的两个部门中,新的 生态环境部将吸纳原先环境保护部 的全部职能、原属发改委的气候变 化和减排职能和另外五个部门的环 境保护职能。

除此之外,新的自然资源部将承 担起国有自然资源的"所有人"角色, 负责对土地、森林、草原、湿地和水 资源等自然资源的权属划分和管理, 并将管理同样是新组建的国家林业和 草原局。该局将是未来中国自然保护 区和国家公园的主管单位。

复旦大学环境经济研究中心副主任李志青表示,整合机构职能有助于降低部门间的协作成本,提高协作效率。唐芳林也认为:"现在,所有自然资源归自然资源部管,原来分散在众多部门的国家公园、自然保护区等自然保护地将进行统一

管理,彻底解决长期存在的交叉重 叠、争权推责等痼疾。"

本轮机构改革是 20 年来中国进行的第三次大刀阔斧的政府机构职能调整,并沿袭了 10 年一次的改革规律。值得注意的是,在每一次政府部门改革中,生态环境保护的地位都得到了提升和加强,从一个不起眼的局级单位一步一步攀升为如今担负多种职责的主要部级单位。政府机构演变折射出中国愈发强调环境保护和可持续发展的总体趋势。

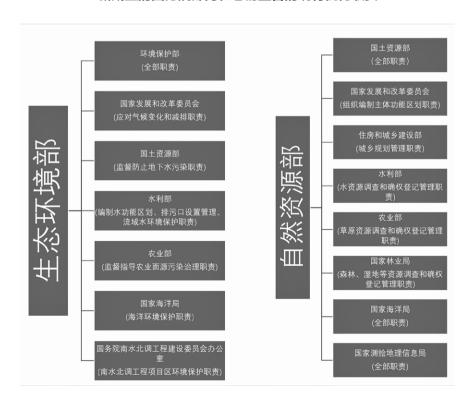
## "生态文明"理念落地

自从 2012 年"生态文明"理念被提升到与经济、政治、文化和社会建设同等重要的地位,外界对于这一理念的解读与猜测就不曾停息。 2015 年公布的《生态文明体制改革 总体方案》(以下简称"《总体方案》") 为这一理念在制度层面的贯彻落实 设定了总体原则、目标和路线图, 并提出到 2020 年"构建起生态文明 制度体系"。

环保专家彭应登告诉中外对话, 此次国务院机构改革是生态文明路 线图中最为具体化的步骤之一,并 为后续政策出台,如水权交易、生 态补偿等打下了基础。彭曾任北京 大气环境研究所所长,是环境保护 部规划环评专家库成员。

2015年的《总体方案》确立了"自然资本"、"空间均衡"和"生命共同体"等几个核心理念。并与之对应地提出"自然生态是有价值的",以及"整体性、系统性"管理自然资源的要求。"同时也强调,"人口规模、产业结构、增长速度不能超出当地水土资源承载能力和环境容量。"

### 新成立的国务院部门和它们整合的现有机构职责



新成立的两个部门所承担的职责与这几个核心理念相对应。自然资源部将成为中国大部分自然资源及其产权的"所有者",对自然资源及其产权进行调查登记,并建立自然资源的"有偿使用制度。"国务院发展研究中心研究员谷树忠、李维明曾撰文指出,长久以来,中国过度强调自然资源的经济价值,忽视和削弱了它们的生态价值、文化价值,并由此而导致自然资源的过度消耗甚至严重浪费,并认为,"建立健全自然资源资产产权制度,是生态文明体制改革的重点和难点。"

自然资源部还整合了原国土资源部、发改委和住建部的空间规划职能,有望成为整个国家的"总规划者",并将生态环境考量纳入空间规划中。例如"生态红线"的划定,未来将不再由多个部门各自进行,而将统一到自然资源部。"因为自然资源部对资源家底更清楚,划起来更有效,也避免不同部门应规划而打架。"彭应登说。

而两个部门的新职能都在一定程度上体现了生态系统整体性考虑。山、水、林、田、湖等生态环境不再被人为分割,而将统一到自然资源部进行管理和修复,而排向空气、河流、海洋、土壤的各种污染物,不管是二氧化硫还是二氧化碳,则会由生态环境部"一手抓"。

不过,新的职能划分并未像此 前的一些方案建议的那样,将自然 资源保护和污染防治进一步整合到一个"超级生态环境部"之下。目前的设置意味着在自然资源保护和污染防治之间仍需要一定的部际协调。生态区域规划部门可能仍需跨部门就污染排放监督进行沟通。"遇到一些事项,部际协作是在所难免的。"唐芳林解释说,"今后如果有国家公园受到附近水污染的威胁,生态环境部就有责任配合自然资源部协同处理。"

### 难题待解

专家认为,此次机构改革将有助于解决此前生态环境领域存在的一些老大难问题。

对此,全球环境研究所(GEI) 生态保护与社区发展项目经理彭奎 深有体会。他以森林和草原举例: "以前存在'林草之争'。改善某一区 域生态环境,是造林还是种草?如 果种树,经费就会拨给林业局,如果 是种草,经费就会给到农业部门。所 以,到最后实施的方案,实际上是部 门利益之争的结果。但现在把林和 草统一管理就解决了这个矛盾,更 有利于强化草原生态系统的建设和 管理。"

但新的生态文明体制格局仍需 处理一些棘手的问题。谷树忠和李 维明曾总结自然资源管理体制存在 的五大问题,其中中央与地方关系 是一个突出矛盾。一方面,中央政府 虽名义上掌握资源(如国有土地)的 所有权,但实际上这些资源的管理 权却掌握在地方政府手中,所有权 与管理权不匹配,"极易造成资产流 失。"另一方面,他们认为权益和责 任分配在中央与地方间也不合理。 资源所在地政府往往承担过多责任, 但获得较少收益,影响其积极性。

彭奎表示,大部制改革属于顶层设计,但从地方上来看,从省、市到县,今后是不是也要根据国务院机构改革来进行相关调整,"目前还不清楚。"

不过,从一些先行先试的领域 已能看到重塑"央地关系"的端倪。 在去年公布的《国家公园体制总体 方案》中,就已提出"分级管理" 思路, 先由中央政府和省级政府对 国家公园内的国有自然资源直接和 代理行使所有权,并逐步过渡到全 部由中央政府直接行使所有权。浙 江省是提前试点生态文明体制改革 的省份之一。在2017年7月公布 的《浙江省生态文明体制改革总体 方案》中,也提出了按照不同资源 的重要程度, 厘清省政府直接行使 所有权、市县政府行使所有权的资 源清单和空间范围。而行使所有权 职责的地方政府也将"享有所有者 权益。"⑤

马天杰, 中外对话运营副主编 刘琴, 中外对话研究员

# New dawn for environmental ministries

Two new cabinet level ministries will be tasked with managing natural resources and fighting pollution

☐ Ma Tianjie Liu Qin

"We take care of carbon monoxide, while carbon dioxide falls under the National Development and Reform Commission," commented a frustrated Zhou Shengxian, then China's Environment Minister, at a 2013 conference.

That type of bureaucratic fragmentation will soon become history if a sweeping plan to reshuffle cabinet level ministries, which was announced yesterday at the annual meeting of the National People's Congress (NPC), is passed on March 17.

Currently, the National Development and Reform Commission (NDRC) is responsible for managing greenhouse gases and combatting climate change. However, these duties, together with the environmental functions of various other ministries, will be passed to a new Ministry of Ecological Environment.

The move is the fourth time in three decades – each at a ten-year interval – that China's environmental agency (currently the Ministry of Environmental Protection) will see its remit expanded in a new department, highlighting the growing importance of environmental affairs in Chinese policy-making.

### From 'nine dragons' to two

In China, people have long used the term "nine dragons rule the waters" (jiu long zhi shui) to refer to the fragmented roles and responsibilities for managing the environment.

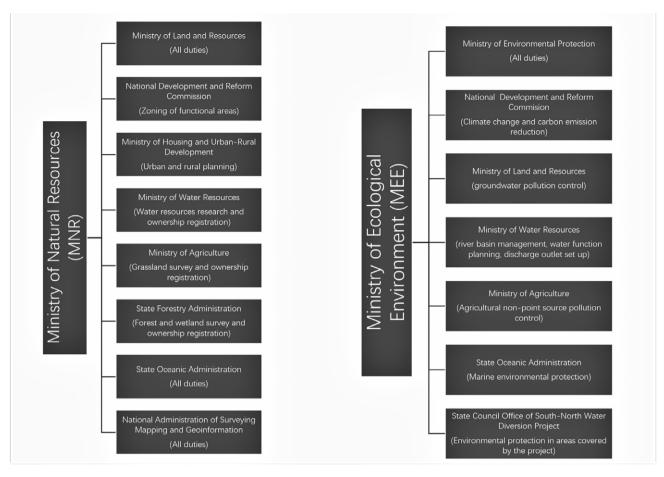
Ma Jun, a prominent environmentalist and director of the Institute for Public and Environment Affairs (IPE), observed that "groundwater, agricultural effluents and river basin management each fall under a different government department, leading to buck-passing and infights."

Tang Fanglin, an official with the State Forestry

Administration, told chinadialogue, "You used to need
stamps from 13 government ministries to get one document
about national park pilot schemes greenlighted."

All this is set to change though. The new plan will concentrate the scattered responsibilities of different government departments into two new ministries: the Ministry of Ecological Environment (MEE), and the Ministry of Natural Resources (MNR).

MEE will adopt most of the responsibilities of the Ministry of Environmental Protection, and incorporate



The new ministries and the various responsibilities they will take-over from existing departments (shown in brackets). Click to Enlarge

pollution-related functions from NDRC, the Ministry of Water Resources and the State Oceanic Administration, among others.

MNR, on the other hand, will merge the natural resources management responsibilities that used to belong to governmental bodies in charge of forestry, agriculture, land resources, etc. In the process, some existing government departments, such as the State Oceanic Administration, will be eliminated, while others, such as the Ministry of Water Resources will see their mandate reduced.

The reform is broadly in line with previous recommendations by top Chinese think tanks. In 2015, the Chinese Academy of Sciences suggested reorganising top government bodies into a "natural resources owner", a "natural resources manager" and a "pollution controller". MNR has emerged more or less as a natural resource owner and manager, while MEE will serve as the country's top

regulator of pollution, from all sources.

Experts have welcomed the move as a boost to bureaucratic efficiency. "It will definitely lower the coordination cost among government agencies," remarked professor Li Zhiqing, an environmental economist at Fudan University.

Eliminating the regulatory barrier that existed between greenhouse gases and other pollutants has been interpreted as a signal that tougher action on carbon emissions may be on the way.

Peng Peng, an analyst with the Chinese Renewable Energy Industry Association, argued that once MEE takes over all emissions, "it's almost unavoidable that companies will face the prospect of internalising the costs of greenhouse gas emissions," as the environmental agency has a long track-record and a readily available tool-kit for regulating emitters.

### Ecological civilisation formalised

The cabinet level reorganisation is also seen as a step forward for the much-discussed concept of "ecological civilisation". In 2012, at the 18th Party Congress, the need to build an ecological civilisation was elevated to an unprecedented level, highlighting the importance of environmental affairs to the Chinese leadership.

In 2015, a master plan for the reform of institutions and systems to realise ecological civilisation was promulgated. The plan listed a set of principles and objectives, and announced that by 2020, China should "complete institutional set-up in line with ecological civilisation."

"Establishing the new ministries is one of the most concrete steps along the way of implementing the master plan," Peng Yingdeng, former director of Beijing's Atmospheric Environment Research Institute, told chinadialogue. "It lays the foundation for the creation of key pieces of policies, such as payment schemes for ecological services," he added.

The 2015 master plan spelled out a few key concepts of ecological civilisation. It argued that "natural resources should be properly valued," and "holistically managed". It also stipulated that economic activities should not result in ecological burdens that exceed the capacity of the environment to manage.

The set-up of the two new ministries embody those concepts. A core duty of the MNR is to serve as the ultimate "owner" of most of the country's natural resources. To do that it will conduct census and surveys to ascertain the status and distribution of forests, wetlands and agricultural fields and assign proper values to those resources.

"Non-economic values of natural resources are chronically underappreciated, which leads to excessive exploitation and wastage," wrote Gu Shuzhong and Li Weiming, two researchers at the State Council's Development Research Centre, in 2016. They added: "Establishing proper ownership and valuation of natural resources will be key to ecological civilisation reforms."

The MNR will also become the country's top "spatial planner", incorporating ecological considerations.

"Instead of having multiple agencies drawing the so-called Ecological Redlines (zoning plans that seal off certain areas from development), the MNR will now act as the singular planner," said Peng Yingdeng, meaning there will be "no more contradicting zoning plans that need to consider conflicting imperatives."

Both the MNR and MEE reflect the "holistic management" idea, achieving reduced fragmentation in terms of regulatory mandates.

As Peng Kui, a project manager with Global Environment Institute (GEI), observed, "In the past, ecological rehabilitation projects used to fall victim to the competition between forestry and grassland administrations. The former would insist on planting tree as a means of rehabilitation while the latter preferred grass because such decisions determined funding to the respective agencies. With the merge, we can finally base such decisions on holistic, ecological considerations."

#### Unresolved issues

The reorganisation does leave some regulatory boundaries untouched. The plan released on Tuesday for two ministries does not include a recommendation from the Chinese Academy of Sciences to further merge pollution control with conservation to create a "mega eco-ministry", which would streamline environmental governance further. Under the new structure, authorities in charge of ecological zoning decisions may still need to reach out across ministries to get cooperation on emissions regulation.

"Some inter-ministerial coordination is unavoidable," Tang Fanglin told chinadialogue. "If a national park is

The new plan will concentrate the scattered responsibilities of different government departments into two new ministries: the Ministry of Ecological Environment (MEE), and the Ministry of Natural Resources (MNR).

threatened by polluted air in the future, MNR will certainly need to negotiate with MEE."

The relationship between central government and provincial and local authorities may also test the new institutional set-up. Experts have long argued that the dynamic between China's central government and the authorities at provincial level and under is one of the key complications of a new environmental governance structure.

"In some cases, the centre, as nominal 'owner' of natural resources, does not have de facto control of them at provincial level and below, allowing local authorities to squander them for profits," write Gu and Li, adding: "In other cases, managing the local resources comes with many responsibilities but few benefits are retained by local governments, which disincentivises stringent governance."

The reshuffle plan, being at cabinet level, does not immediately answer questions about centre-local alignment. "We still don't know if the restructuring at the ministry level will be mirrored at the local level," Peng Kui told chinadialogue.

Provincial pilot projects should help guide what happens next. For example, in Zhejiang province a "tiered ownership" scheme was devised to assess and allocate ownership of natural resources to different levels of government, from provincial to county level, based on their ecological significance. This matching process may incentivise better governance because it allows the official owner of the resource to also retain the benefits from managing it, instead of a higher authority.

Another part of the plan that lacks detail is how specific functions and responsibilities will be integrated into the new ministries. Climate change, for example, covers multiple sub-ministerial bodies under NDRC, including divisional offices and dedicated research centres. It is unclear if and how these NDRC units will be relocated to MEE.

Ma Tianjie is chinadialogue managing editor in Beijing.

Liu Qin is a researcher at chinadialogue.

# 展望 2018 年中国环境挑战

新的一年,环境治理方面的主要挑战有哪些?中国应该采取哪些行动?

□ 中外对话

几乎没有多少人料到 2017 年中国会成为气候变化行动新的希望和领袖,以及全球化的捍卫者。那么2018 年又会给我们带来什么?为了集思广益,我们采访了9位专家,请他们分享对中国在本年关键要务和挑战的看法。

#### 环境公平优先

### 李婧,前中国日报和南华早报资深 环境与气候记者,现为自由撰稿人

2018年,中国将面临从运动式 行政手段过渡到长效、公平的环境 治理体系的挑战。

"督察"无疑是 2017 年环境保护 工作的关键词之一。借鉴了中央纪律 巡视工作模式、有着"环保钦差"之称的中央环保督察组,有力地打破了有着复杂利益纠葛的地方保护主义;中纪委、中组部相关人员的加入,也向地方政府传递了明确的信号,即环境治理已成为官员考核、晋升的重要组成部分。"督察"、"巡视"这样高强度的行政手段可以说给一直以来不计环境代价发展经济的增长模式踩了一脚急刹车。

与此同时不可忽视的是,这些运动式的行政手段也带来了些意料之外的"附带损害":有些地方政府为应付检查强制关停企业,私营中小企业首当其冲,导致一些工人暂时失业;关停限产在短期内推高了不少原材料

的价格;操之过急的"煤改气"也在 冬季给民生、工业带来冲击。

过往的经验中不乏污染企业和项目在"环保风暴"过后死灰复燃的案例,因此如何保持环境污染的持续改善,将是 2018 年乃至未来几年中国环保领域的重点。

2017年底全国碳排放交易市场,2018年初环境税开征,这些新政策也意味着中国正逐步探索将过去忽视的资源环境成本内部化。所幸,就已公布的2017年经济数据来看,过去一年强力的环保督查对经济的总体冲击较为温和。未来一年中,在加强环境治理的过程中如何更有效地预测和缓解给经济及脆弱人群带



更多责任、更为可靠和透明的执法是2018年中国环境的重要看点

来的局部冲击,重视环境公平,也是决策者面临的新课题。

# 完善地方治理 谭浩,纽卡斯尔大学副教授

2018年的一项主要挑战是建立 一套针对地方政府和官员的系统化 绩效考核机制,从而让官员和公众 形成更加清晰和一致的预期。

中国地方政府以及地方政府官员往往要疲于应付各种不同的重点工作,而这些重点工作有时来自上级领导的临时指示或者是公众舆论的突然变化,很容易造成地方政府和官员进退两难。近期发生的河北省禁止燃煤取暖等事件表明,环境保护领域中"一时兴起"的工作方式可能会给中国的环境工作带来长期的负面影响。

当然,社会、经济与环境目标 之间的冲突并非中国特有的情况。 但中国某些政策的推出、解读和施 行均有较强的随意性,这方面仍有 改进的空间。

#### 执法工作要对路

孔宏德,美国德汇律师事务所管理 合伙人

庄博文,格林曼环境国际业务运营 总监

我们很高兴地看到,执法行动近期已经成为中国环境保护工作的一个重要特点。但是,环境执法行动要消耗大量的时间和资源。政府需要努力创建一种更具自我强化能力的机制,而不是简单依赖于外部力量(例如政府)确保环境法规的实施。

仅有处罚是不够的。简单粗暴的

执法往往无法顺利"落地";即便成功实施,也不会坚持太久。执法本身并非是确保守法的最有效工具:环境保护部门的官员毕竟分身乏术。必须采取一种机制,可以促使被监管单位和人员自觉地守法—一种使自我治理成为自然而然之事的积极的商业文化。这是阻碍政府真正实现"生态文明"的重要挑战,而且也是切实解决现行系统中诸多问题的唯一渠道。

虽然执法是一个重要的环节,但 要确保环境守法的可持续性,还需要 做到其他几点:1. 受监管者必须具备 环境自觉,这也就意味着需要加强 各个层面的教育;2. 受监管者必须有 能力做出改进,并具备改进所需的 资源;3. 被监管者必须参与到创造更 好环境的过程中去,并具有实现政 府所制定目标的动力。 .6.6.

2018年,中国将面临从运动式行政手段过渡到长效、公平的环境治理体系的挑战。 "督察"无疑是2017年环境保护工作的关键词之一。有着"环保钦差"之称的中央 环保督察组,有力地打破了有着复杂利益纠葛的地方保护主义。

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因此,举例来说,如果工厂主出于环境保护的原因必须将工厂搬迁,那么政策应该给予这位工厂主足够的激励,让他有动力建立一个更好、更清洁、科技含量更高的工厂,并为受到此类升级影响的员工提供再培训。

# 完善法律条例 张伯驹,自然之友总干事

2018年,中国有一些重要的环保立法和政策制定过程值得关注。

中国的土壤环境状况总体不容乐观,而且这一问题直接关乎食品安全和人体健康,但这一重要且严峻的领域尚未匹配相应法律,因此土壤环境立法就显得格外重要。2017年,《土壤污染防治法》正式进入立法程序,产生了立法草案的征求意见稿,并引发了专业领域的广泛讨论。

在我们看来,法律的核心是确责和追责,法律规制的核心内容应是确定谁享有权利、谁负有义务、谁承担责任。合理界定责任主体对于土壤环境保护乃至整个环境保护是十分必要的。土壤污染防治法的主要任务一是预防污染的产生,二是对污染的土壤进行治理修复,三是对造成的损失进行赔偿。明确界定责任主体,充分贯彻污染者负担原则,才能使有关责任方有充分的注意义务,采取必要预防措施,防止新的污染产生;才能明确修复和赔偿的责任主体,而不是"企业污染、政府买单、百姓受害"。在

这些方面,《土壤污染防治法(征求意见稿)》中尚未明确规定土壤污染治理和修复的责任主体确定规则,因此接下来的立法过程更显重要。

当然,土壤污染造成公益受损情况下的司法救济制度的设计、信息公开和公众参与、绿色金融机制等都是此次土壤污染防治法立法过程中尚待完善的地方。这部法律很有可能在2018年审议通过。因此,立法过程需要更多人和更多组织关注、研究、积极发表意见和建议。

此外,最近环保部审议通过了《排污许可管理办法(试行)》。作为今后中国环保制度的重要"抓手",排污许可制度不仅可能衔接多项环境管理制度,也是公众参与和信息公开的重要渠道和工具,值得环境行业从业者、研究者和环保组织在2018年密切跟进。

#### 遏制煤炭

#### 宋然平,世界资源研究所高级研究员

中国有望提前两到三年完成主要的气候变化目标。中国承诺到2020年非石化燃料在能源构成中的占比最低达到15%,碳强度在2005年的基础上降低40%到45%。到2017年第三季度,非石化燃料消费比重已经达到14.3%。基于政府的初步数据,我们估计中国的碳排放强度已经降低了45%,达到了2020年目标的上线。

尽管已经取得了这些进展,碳排放与煤炭消费预计将止跌回升,从而逆转过去三年的趋势。这在很大程度上是由于钢铁、化工、发电等能源密集型行业的回暖。

那么,这种回暖究竟是暂时的波 动还是长期的趋势?要实现生态文明 的愿景,中国需要采取更加强有力的 措施, 其中很多措施甚至可以给燃煤 电厂所有者带来财务上的利好。例如, 新的研究发现,在当前的政策导向下, 中国现有燃煤电厂的亏损将达到142 亿美元之巨。但是,如果中国 2017 年 之后禁止新建燃煤电厂,关停服役满 30年的燃煤电厂,并根据2摄氏度的 温升控制目标加速低碳电力的部署, 上述损失可以控制在最高23亿美元。 中国还可以将目前实行的绿色电力证 书自愿认购交易制度与强制性的可再 生能源组合标准挂钩,从而在不必动 用政府预算的情况下为可再生能源发 展提供持续的动力。

最后,全国碳排放交易体系应该得到密切关注。虽然排放交易或许不会立即成为减排的主要驱动力,但可以为中国在 2020 年进一步提出更富雄心的气候行动目标奠定基础。

#### 加快绿色投资

### 蕾切尔·基特,"人人享有可持续能源" 首席执行官兼联合国秘书长特别代表

2018年,中国有机会在领导地位上再进一步,但关键还要看其在

国内和国外采取何种行动。国内对清洁能源的需求已经令中国确立了风能和太阳能的主导地位。因此,中国企业在全世界竟然还有这么多待建的燃煤电厂实在很讽刺。具有广阔视野的"一带一路"倡议理应作出表率,证明其投资可以为所有人带来包容而清洁的增长。

从巴基斯坦的能源普及项目到非洲的能源存储,"一带一路"所提供的资金和支持能够发挥重大作用,帮助这些国家按时完成可持续发展目标。最后,电动汽车领域日新月异,几乎天天都有重大消息传来,而中国也正在成为这一行业的领袖。也许,2018年中国就有能力可以支持全世界的城市和国家将电动汽车作为校车、市政车辆和公共汽车的标配。

#### 规范国际项目融资

#### 王娃娃(音),银行观察财政政策官员

作为对国际批评的回应,中国

政府部门在 2017 年制定了多项象征 性指导意见,对中国政府和企业的 投融资项目的环境和社会绩效进行 管理。

实际上,这些不具法律效力的 指导意见几乎毫无作用。这是因为 大多数与中国银行签订融资协议的 项目是先签约,再来处理是否符合 接受国法律和国际最佳实践的问题。 因此,亟需采取强制监管措施(至少 是制定法律要求)来提高项目融资 协议达成之前在环境、社会和法律 等方面的尽职调查质量。

作为气候行动领导者,中国在对待海外煤炭项目时,需要拿出在国内关停燃煤电厂的态度。"银行观察"的研究表明,中国仍然是世界最大的煤炭技术出资国和出口国。为了改善其全球环境治理,中国必须停止对煤炭项目这个伪"生态友好"方案的融资。实际上,此类融资只会增加全球煤电产能,从而让温室气体排放总量更多。

#### 参与全球治理

### 保罗·埃斯特韦斯, 金砖国家银行政 策中心主任

多边发展银行(MDB)采用的政策往往将国家体系推到环境治理的中心,从而给社会环境治理机制带来威胁。多边发展银行越来越不以国际认同的准则为依归,而是日益依赖各国国内的体系去应对负面的社会环境影响。另外,世界银行的阶梯融资(cascade)方式虽然旨在创造一个有利于商业发展的环境,但往往通过去监管的方式吸引私人投资。

这两套政策叠加在一起经常使已经十分脆弱的国家监管体系承受更大的压力。另外,它们也是西方国家对中国在基础设施投资领域地位日益提升的一种回应。在这种情况下,必须对各国本国的体系如何应对这种不断增长的压力进行关注,并且让中国与西方大国一起积极参与更广泛的社会环境治理讨论。⑤

# What to look out for in 2018

What are the key challenges for environmental governance in the year ahead and what actions should China take?

□ chinadialogue

Few expected that in 2017 China would become the new leadership hope for climate change action and defender of globalisation. So what might 2018 bring? To get an idea, we've asked nine experts to share what they think are the key priorities and challenges for China this year.

#### Prioritise environmental justice

### Li Jing, freelance reporter and formerly senior environment and climate reporter for the China Daily and South China Morning Post

The buzzword for environmental protection in 2017 was "oversight". The Central Environmental Inspection Group struck hard against the complex of interests behind local protectionism; and the inclusion of staff from the Party disciplinary and human resources authorities sent a clear message to officials – performance on environmental protection is now an important part of your record and your chances of promotion.

But the unexpected "collateral damage" of these crackdowns cannot be ignored: some local governments

have forced businesses to shut down, with private SMEs bearing the brunt and some workers left temporarily jobless; the shutdowns and reductions in output have pushed raw material prices upwards; and a rushed coal-to-gas transition has caused problems for both residents and industry over the winter.

The key task for environmental protection in China for 2018 will be to sustain the improvements. New policies such as the national carbon trading market in late 2017, the collection of an environmental tax in early 2018 show that China is seeking to internalise once overlooked resource and environmental costs.

Fortunately, the data currently available for 2017 shows that the year's crackdowns had only a moderate impact on the economy as a whole. A new issue for policymakers will be how to spot and reduce localised impacts of environmental management measures on the economy and vulnerable groups and pay due attention to environmental justice.

#### Improve local government

# Dr Tan Hao, associate professor on China's energy transition at the University of Newcastle

Establishing a more systematic appraisal system for the performance of local governments and government officials will be a major challenge in 2018.

Local governments and their officials in China often struggle with different priorities that are sometimes subject to ad hoc directives from higher levels in the political system and changes in public opinion that can cause confusion. Recent events, such as the mishandled ban on coal heating in Hebei, have shown that an ad hoc approach to environmental protection may jeopardise China's effort to improve its environment in the long run.

Of course, the tensions between social, economic and environmental objectives are not unique to China. But the introduction, interpretation and implantation of certain policies in China could become less arbitrary.

#### Get business on board

### Peter Corne, co-head, Dorsey & Whitney Cleantech Business Group, and managing partner, Shanghai Office Johnny Browaeys, director of international operations at GREENMENT Environment

Environment enforcement campaigns are time consuming and require a lot of resources to execute. Punishment is not enough. Blunt enforcement does not always "land" well; nor does it "stick" well. Alone, it is not the most efficient tool for the purposes of compliance: environmental officials cannot be everywhere all of the time.

Instead, there needs to be a mechanism that inspires voluntary compliance, a supporting business culture that will naturally lead to self-governance. This is the challenge

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The main tasks of this law are to prevent pollution occurring, to clean up existing pollution, and to compensate for losses.

that stands between the government and a true "ecological civilisation". And it is the only way that a lot of the flaws in the current system can be realistically addressed.

Those that are regulated must become environmentally self-aware, thus more education is needed at all levels; the regulated must become capable of improvement; given the resources to do so, engaged in the process of building a better environment, and motivated to achieve the goals that the government has set.

#### Improve the rule of law

#### Zhang Boju, executive director of Friends of Nature

The outlook for soil pollution in China is not good, and this impacts directly on food safety and human health, yet despite its importance there is no legislation. In 2017 the legislative process for the Soil Pollution Prevention Law was started, and the resulting consultation draft sparked widespread discussion in professional circles.

The main tasks of this law are to prevent pollution occurring, to clean up existing pollution, and to compensate for losses. A clear definition of who is responsible whilst fully implementing the principle that the polluter pays is the only way to ensure those responsible take the necessary measures rather than the current situation of "businesses pollute, the government pays, the people suffer."

[We] need to see improvements to the design of the mechanisms for judicial redress, information transparency and public participation and green financing mechanisms.

#### Curb coal

#### Ranping Song, senior associate at World Resources Institute

China is on track to beat major climate targets two to three years ahead of schedule. Despite the progress, carbon emissions and coal consumption are projected to rise again, reversing a three-year trend. This is largely due to resumed growth in energy intensive industries, such as steel, chemical and electricity production.

Is this just a blip or a trend? For the vision of Ecological Progress to take hold, more robust measures are needed, many of which make financial sense even for coal power plant owners. For example, new research finds China's existing coal power plants would lose a whopping US\$14.2 billion under the current policy trajectory. However, if China banned new coal power after 2017, adopted a 30year retirement schedule for coal plant, and accelerated the deployment of low-carbon electricity in line with the twodegree Celsius goal, losses could be capped at US\$2.3 billion.

#### Accelerate green investment

#### Rachel Kyte. CEO and Special Representative of the UN Secretary-General for Sustainable Energy for All (SEforALL)

China has the opportunity to stake out its leadership role more determinedly in 2018. How it behaves overseas as well as domestically will be key.

Domestic demand for clean energy has created dominance in wind and solar energy. It is ironic therefore that Chinese entities still have so much at stake in proposed coal power generation around the world. China's expansive vision in its One Belt, One Road initiative could demonstrate that its investments can spur inclusive and clean growth for all.

From energy access projects in Pakistan to energy storage in Africa, funding and support from One Belt, One Road could be the difference in meeting the sustainable development goals on time.

Finally, it seems that not a day goes by without breaking news on electric vehicles - an area where China is becoming a leader. 2018 could be the year when China supports cities and countries around the world to adopt such vehicles as a standard for school buses, municipal vehicles, as well as public fleets.

#### Regulate international project financing

#### Wawa Wang, public finance policy officer, Bankwatch

In response to international criticism, Chinese governmental agencies have devised symbolic guidelines throughout the years to govern the environmental and social performance of projects enabled by Chinese financing and company investments.

These non-legislative guidelines have almost zero effect because most project financing agreements with Chinese banks take place before issues of non-compliance with recipient country laws and international best practices are dealt with. Urgent regulatory oversight – no less than legal requirements – is called for to raise the quality of environmental, social and legal due diligence before project financing is agreed.

In acting as a climate leader, China should approach its international coal projects with the same resolve as it is starting to demonstrate by halting coal-fired power plants at home. Bankwatch's research shows that China remains the world's largest financier and exporter for coal technologies internationally. To improve its global environmental governance, China needs to stop financing coal projects as a false "eco-friendly" solution, when in fact the financing enables an overall capacity increase in the global coal fleet, therefore, an overall increase of greenhouse gas emissions.

#### Engage in global governance

#### Paulo Esteves, director at BRICS Policy Center

Instead of focusing on internationally agreed standards, multilateral development banks (MDBs) are adopting policies that push country systems to the centre of the environmental governance landscape. This is a threat to socio-environmental governance because it relies on national systems to cope with undesired impacts.

Combined, these two sets of policies are stressing already fragile country systems. Moreover, they are part of a broader Western response to China's rise as a key source of investments in infrastructure. In this context, it is critical to monitor how country systems are reacting to this growing pressure, and to have China actively engaged, along with Western powers, in a broader debate on socio-environmental governance. 🤄

# 2017, 中国环保"撕裂"之年?

被多个争议所放大的"环保对立", 将考验中国环保政策执行者的公信力和定力,以及绿色转型的公平性。

□ 马天杰

值年末,本应是华北地区空气污染最为严重的时节,北京却难得地连现蓝天。数据显示,北京的这个冬天有可能是 2013 年以来空气质量最好的一年。但在中国民间,享受好空气的喜悦却被淹没在巨大的争议声中。

中国为了保证华北 28 个城市的 冬季空气质量而采取的坚决行动让 一部分人叫苦不迭。官方推行的"煤 改气"政策要求京津冀地区数百万 户居民在今年告别烧煤取暖。但工 程改造的进度不一,有的地方在尚 未通气之前禁煤,取暖失去燃料来 源,这对生活在华北严寒中的广大 农村居民来说不啻为一种折磨。而 更根本的是,大规模的煤改气令中国的天然气供应吃紧,冬季用气紧张的消息不时从各地传来,给人们的生活带来各种不便。

环保是谁的环保?为了城里人的好空气,农村居民就应该挨冻?这样的疑问被通过社交媒体放大,中国环保问题的"阶层"维度第一次被如此赤裸裸地呈现在人们面前。

这不是今年仅有的一次因环保 而产生的公开对立。9月,德国汽车 配件生产商舍弗勒罕见地发求助信 向中国环保部门"陈情",请求上海 的环保执法者给予它的一家供应商 更多时间。后者因污染违规而被环 保局责令关停。"关停这家工厂将造 成中国 300 万辆汽车的减产和 3000 亿元经济损失。"舍弗勒强调这家供应商的产品短期无法替代,关闭它 将对整个中国汽车供应链产生冲击。

面对以经济相"要挟"的舍弗勒,中国的环保部门没有退缩。"拿警告当儿戏",环保部在一次新闻发布会上正面"怼"了这家德国企业。在同一个新闻发布会上,环保部强硬反驳了关于"环保导致原材料价格上涨,影响经济运行"的论调,并举出大量事实数据,显示中国经济健康发展,环保不仅不影响经济,还提高经济增长的质量。

在强大的项层政治意愿和看似 坚实的民意基础加持之下,中国环

保的操盘手们并未被"环保与经济发展对立"的舆论捆住手脚。但几个月之后,煤改气的争议似乎让他们措手不及。环保部不仅软化了京津冀地区煤改气进度要求,北京还破天荒地重启了备用燃煤机组。要知道,北京今年刚刚将所有燃煤机组停机,正式告别煤电没多久。

尽管这场风波可以简单地认为 是环保向更大的"政治正确"让步(对 弱势群体的人文关怀),也有论者进 行了更深层次的追问:执行环保政 策的技术官员为何在管网改造工期 和天然气的供求平衡上"失算"了? 政策制定过程是否缺失了让执行者 "说不"的机会,以至有瑕疵的政策 被强力推行?

这场年底的环保争论似乎显示, 借助几年前的"末日空气"所激起 的民意而乘风破浪的中国环保之船 正遇到暗礁险滩。大刀阔斧的环保 措施正在触碰越来越多中国人的切 身利益,如果处罚排放黑烟的工厂 还能获得大多数人叫好,影响到取 暖、做饭和开车则未必。今年的数 据也从一个侧面反映了中国环保之 路的曲折。在经历连续三年下降之 后,中国煤炭消费在今年迎来反弹。 尽管不太可能回到2014年的高点 (有研究者认为中国煤炭消费已在那 时见顶),但这个中国环境(空气污 染和气候变化)的"晴雨表"式指 标在今年还是提醒人们,尽管有着 各种美好愿景支撑,在理顺一些深 层次矛盾之前,中国环境改善恐难 一蹴而就。

2017年,发生割裂的不仅是中 国国内的环保舆论场。中国的国内 国际环保形象之间也产生了微妙的 张力。无论是习近平主席在1月的 达沃斯论坛演讲, 还是秋季的十九 大报告,都传递了中国坚持绿色发 展与生态文明的强烈信号。但在另 一面,中国在海外的环境足迹却在 2017年屡屡引发争议。在中国国内 压减煤炭消费,减少污染排放的同 时,中国在海外兴建的煤电项目招 致了一些质疑。"这些(海外)煤电 项目尽管并不直接违反巴黎协定, 但肯定不符合协定的精神,"著名 的中国环境问题专家伊丽莎白 · 伊 科诺米 (Elizabeth Economy) 在美国 政治新闻网撰文说。

一艘满载鲨鱼的中国渔船今年夏 天在加拉帕戈斯群岛海域被截获,也 进一步强化了外界关于中国输出环境 问题的印象。这艘引发轩然大波的冷 冻船的船员随后被厄瓜多尔官方关进 监狱。在中国国内因长期过度捕捞而 导致"近海无鱼"的大背景下,中国 远洋渔业的海外足迹免不了受到转移 国内环境压力的质疑。

在国内和国外,中国环境问题在 2017年都呈现出一个"零和游戏"的 面貌。为了实现有益于一个群体的环 境目标,似乎就需要另一些群体来承 受更大的代价,无论这些群体是中国河北的农民还是拉丁美洲的渔民。这一年的国际环境也在强化人们对于环保"零和"性的认知。在这个"特朗普元年",这位奉行"美国第一"的新当选总统先是任命了一位反环保的环保署长,后又宣布退出关于气候变化的巴黎协定。全世界都从这位爱发推特的总统那里得到了讯号:美国国内环保政策在伤害产业利益,国际环保政策则在伤害美国整体利益。

尽管目前没有迹象表明中国的政 策制定者会步特朗普后尘, 但假如被 2017年冬天所放大的"环保对立"持 续下去, 他们的公信力和定力都将受 到考验。在互联网上,已有论者指出, 是制度性的转移支付在国内和国际两 个层面的缺失,导致了环保与贫困的 尖锐对立。因环保政策而受益的北京 市民, 无法通过相应的制度安排对承 受环保成本的河北村民进行足够的补 贴。而因为全球减排而承受发展权限 制的穷国居民, 也很难通过国际层面 的制度安排获得来自富国的充足资金 支持。对处于能源革命和生态文明建 设关键期的中国来说,绿色转型的公 平性这个议题已经到了需要放到决策 者案头的时候。⑤

马天杰, 中外对话运营副主编

# The 2017 review

Controversies and tensions tested the credibility and focus of policymakers

□ Ma Tianjie



For the first time, the 'class' aspect of environmental protection in China has been laid bare

The end of the year is traditionally the worst time for air pollution in northern China. But this year Beijing has enjoyed days of blue skies, with the winter outlook indicating the best air quality since 2013. Any celebrations though have been drowned out by huge controversies.

The resolute measures China has taken to ensure good air quality in 28 cities in northern China are causing others to complain of hardship. The policy of replacing coal with (less-polluting) natural gas requires millions of residents in Beijing, Tianjin and Hebei to stop using it. But progress has

been patchy and in some places coal burning was banned before gas supplies were secured, leaving residents without fuel for heating – and in the harsh winters of northern China, this is causing suffering.

A more fundamental issue is the pressure on natural gas supplies caused by the new policy, with news of shortages and inconvenience still coming in.

Who is environmental protection for? For the city dwellers to enjoy clean air must villagers freeze? Questions such as these have spread on social media and for the first time the "class" aspect of environmental protection in China has been laid bare.

And this is not the only public dispute to arise over environmental protection. In September, German car component manufacturer Schaeffler took the unusual step of sending a letter to China's environmental authorities, pleading for a supplier in Shanghai to be given more time. The supplier had been ordered to shut down for breaching pollution limits.

"Closing this factory will prevent the manufacture of 3 million cars and cause 300 billion yuan (US\$ 45.6 billion) in economic losses," Shaeffler said in the letter that was later leaked, stressing that the supplier's products could not easily be replaced and the closure would impact on China's entire vehicle manufacture supply chain.

Despite Schaeffler's playing the economic card, the environmental authorities did not back down, directly accusing the German company of "not taking warnings seriously" at a press conference.

At the same event the Ministry of Environmental Protection rejected claims that protection efforts were pushing up raw material prices. It backed up that rebuttal with data showing that China's economy is developing well and that rather than damaging growth, environmental protection is improving its quality.

With strong, top-level political support, and what looked like firm public backing, those responsible for environmental protection in China were not deterred by talk of new protections damaging the economy. But a few months later the controversy over the switch to gas caught them unawares. The ministry relaxed the schedule for the

changeover in Beijing, Tianjin and Hebei, and Beijing took the unprecedented step of using back-up coal-fired power generators.

Consider that Beijing only shut down its coal-fired generators this year and not long ago bid an official farewell to coal-fired power.

Although the heating switch could be interpreted as environmental protection trumping concerns for vulnerable groups, others took a closer look: why had the technicians implementing the policy miscalculated rollout schedules and natural gas supplies? Had there not been a chance during the policymaking process for those technicians to express doubts, preventing a flawed policy from being forced through?

This year-end controversy shows that the ship of environmental protection, carried along by the winds of public opinion, and fanned by the "air apocalypses" of recent years, has run aground on hidden reefs of class tension and concerns around social justice.

Sweeping environmental measures are affecting the interests of more Chinese people. Closing a polluting factory may still win cheers, but making heating, cooking and driving more difficult are less popular.

Annual data also shows how China's road to environmental protection will not be a straight one. After three years of falling, coal consumption rebounded this year. Although it is unlikely to return to the high of 2014 (some researchers think coal consumption in China will never reach 2014 levels again), coal consumption acts as a barometer for China's environmental progress (on air pollution and climate change) and this year reminds us that while there are many positive signs, environmental improvements will not be solved until some deep-rooted problems are addressed.

Who is environmental protection for? For the city dwellers to enjoy clean air must villagers freeze?

As well as environmental controversies at home, 2017 saw subtle tensions develop between China's environmental image at home and abroad. Whether it was Xi Jinping's speech at Davos in January, or the report of the 19th Party Congress in the autumn, the signals were strong and clear: China is sticking to green development and its vision of an ecological civilization. But China's overseas environmental footprint caused repeated controversy: China is slashing coal use and reducing pollution at home, so questions were asked about why it continues to finance and build coal-fired power stations overseas.

"China is not breaking the letter of its Paris commitments, but these Belt and Road investments are certainly not in keeping with the spirit of the agreement," said Elizabeth Economy, a well-known expert on Chinese environmental issues, writing on Politico.

The seizure of a Chinese fishing vessel laden with sharks off the Galapagos Islands focused attention on China's global environmental footprint. The crew of the vessel that caused the uproar were later jailed by the Ecuadoran authorities. With China's coastal fisheries exhausted after decades of overfishing, China's distant water fishing fleet is suspected of shifting the problem elsewhere.

Both at home and overseas there looked to be a "zerosum" character to China's environmental strategy. To achieve environmental aims benefiting one group, it seemed necessary to harm another. Whether that's farmers in Hebei, or fishermen in the Americas. And the international context strengthened that sense of a zero-sum game. In Trump's first year as an "America First" president, he appointed a head of the Environmental Protection Agency who is opposed to environmental protection and announced America would withdraw from the Paris Agreement. The message from the Twitter-loving president is clear: At home, US environmental policy is damaging industry, while international environmental policy is damaging US interests as a whole.

Although there are no signs yet that China's policymakers will follow in Trump's footsteps, if the environmental tensions seen this winter continue then both their credibility and focus will be tested.

Online commentators are saying that a lack of transfer payments, both domestically and internationally, is causing tension between environmental protection and poverty.

Beijing residents benefit from environmental policy, but there is no system to compensate Hebei villagers left to pay the costs. Meanwhile, residents of poor countries who suffer when their development rights are curtailed for the sake of global emissions reductions have inadequate systems through which they can obtain financial support from richer nations.

In China, at this key stage of its energy revolution and construction of the ecological civilization, it is time to place the issue of fairness during the green transition on policymakers' desks. ©

Ma Tianjie is chinadialogue managing editor in Beijing.

# 中国 2017 年煤炭消费小幅反弹

过去一年的经济刺激政策导致了中国煤炭消费短期上扬,但专家表示煤炭仍处于长期跌势。

□ 冯 灏 白莉莉 姚 喆

国国家统计局今天公布的数据显示,2017年中国煤炭消费量相比前一年度增长0.4%,小幅反弹。此前这一数字曾连续三年下降。

不过,由于同期一次能源消费总量增长了2.9%,煤炭占能源消费总量的比例实际上从去年的62%下降到60.4%,向2020年降至58%的目标更进一步。

同一份数据公报还指出,2017年,清洁能源(包含可再生能源和天然气)在中国能源消费中占比第一次超过两成,从19.7%升至20.8%。 其中,风力和太阳能发电量分别增长21.4%和38%。

多位专家认为, 小幅上涨不会

改变中国煤炭消费已于 2013 年前后 达到峰值的格局,低碳发展的趋势 也不会改变。

# 煤炭消费为何增长?

燃煤是加剧空气污染和气候变化的一大因素。中国煤炭消费已经 实现三年连降,煤炭去产能措施也 仍在继续,为何实际煤炭消费却出 现反弹?

能源经济和金融分析研究所 (Institute for Energy Economics and Financial Analysis)能源金融主管蒂 姆·巴克利(Tim Buckley)告诉中 外对话,2017年煤炭消费的小升可 能是个意外的短期现象。迎接中共 十九大的经济刺激政策带来的重工 业和建设项目的短期上扬,导致了 电力消费的小高峰,而同期水力发 电处于季节低潮期,于是煤炭消费 受到刺激。

此外,华北电力大学教授袁家海回顾,2016年底各地政府有过一轮经济刺激政策,导致2017年上半年各地的房地产建设增长迅速,这带动了钢铁、水泥等高耗能行业的复苏。

从 2016 年下半年到 2017 年底, 中国发电量和煤炭消费都经历了一 个陡升再缓降的过程。

### 煤炭强势难以持续

中外对话采访到的专家普遍认 为,经济结构的继续转型以及可再 生能源的强势发展意味着煤炭持续 增长的可能不大。

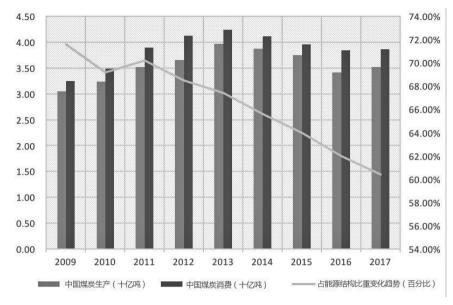
国务院发展研究中心产业经济研究部研究室主任许召元表示,2017年煤炭消费量增长0.4%只是短期的波动,今后几年煤炭消费量很可能会进一步减小,不会出现超过2013年峰值的情况。他认为2017年后大气污染防治、光伏风电等清洁能源优先发展政策的延续意味着能源结构将继续优化,例如煤改气和散煤替代工作的进一步扩大。

清华-布鲁金斯公共政策研究 中心资深研究员齐晔认为,中国房 地产市场正在经历史上最严酷的寒 冬,地方政府正深陷债务泥潭,无力 再进行大规模基础设施建设。事实 上,自2017年九月起,占煤炭消费 四分之三的煤电和钢铁生产就开始 下降。齐晔认为煤炭驱动的经济增 长已经终结。

袁家海则分析,2017年煤炭、油气消费的复苏很大程度上是由于价格上涨预期导致的囤货。在他看来,不仅煤炭,甚至能源消费总量都不会再延续2017年的势头。"今后几年,一次能源的消费增长就应该是在1.5%左右,不应该再高了。"袁表示。

"总体来说,煤炭消费已经达峰了,峰值不是一个点,也许是一个小平台。2017年有些波动,但是下降趋势中的小幅反复,并不是一个持

#### 中国煤炭生产、消费、占能源结构比重变化趋势 (2009-2017)



数据来源: 国家统计局

续的过程。"中国社会科学院能源数量经济与技术经济研究所能源研究室主任刘强表示。

# 低碳转型

尽管专家普遍认为去年煤炭的 反弹难以持续,但这仍然不失为一 个警醒。

2016年非化石能源在中国能源结构中的比重为13.3%,而中国在巴黎协定中所做的承诺是到2030年使这一数字达到20%。中国降低对煤炭的依赖对于全球实现将温升控制在工业时代前2度或1.5度以内的目标至关重要。

许召元指出,地方政府仍然会 有扩大投资项目、刺激经济增长的 冲动,但需要更加关注经济增长的 质量。此外,政府部门还需要重视利 用碳交易、电力市场化改革等方式 鼓励节约能源。

自然资源保护协会的中国气候能源政策主管林明彻则表示,中国正处于从煤炭向非化石能源的巨大转变过程之中,2017年煤炭消费的反弹显示出仍有很多工作需要完成。

"中国已经坚定地走上了这条路,接下来几年就要看它怎么深化和实施这些气候和能源雄心了。"林明彻说。⑤

冯灏,中外对话研究员 白莉莉,中外对话气候问题专员 姚喆,中外对话气候战略传播项目官员

# China coal use rises

Despite the setback, world's biggest coal user is still on a path towards clean energy

☐ Feng Hao Lili Pike Yao Zhe



Coal consumption in China is believed to have peaked, despite last year's increase

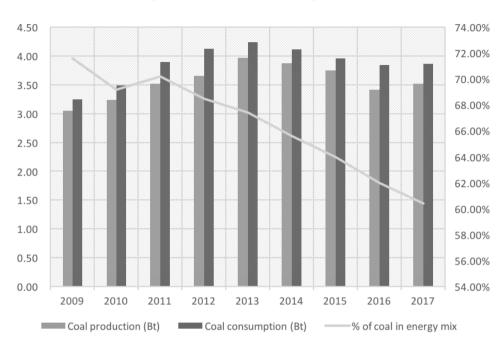
China's coal consumption rose 0.4% year-on-year in 2017, ending a three-year period of decline but the uptick was still well below the 2013 peak in coal consumption, according to an annual report released today by the country's National Bureau of Statistics (NBS).

Overall, the small uptick in coal consumption is an

aberration that will not derail China's path towards a lowcarbon economy, experts told chinadialogue.

The weight of coal in the country's energy mix has fallen to 60.4% from 62% in 2016, despite a 2.9% rise in total energy consumption.

It is also revealed that the share of clean energy (as



#### China's coal production and consumption (2009-2017)

Source: National Bureau of Statistics

defined by the NBS) in China's energy mix, which includes sources such as wind, solar, and also natural gas, expanded from 19.7% to 20.4%.

This was driven by increases of 21.4% and 38% in wind and solar energy output, respectively, as well as a 14.8% rise in natural gas consumption, the result of a massive campaign to switch heating systems from coal to natural gas.

#### Coal demand

Following a three-year decline, China's coal "comeback" has raised eyebrows given the country's efforts to shed excessive coal production capacity.

Tim Buckley, a climate finance expert with the Institute for Energy Economics and Financial Analysis, told *chinadialogue* that short-term conditions, including economic stimulus ahead of the 19th Party Congress, coupled with poor hydropower production in the same period, were responsible for the slight rise in coal consumption.

Yuan Jiahai, professor at the Northern China Electricity and Energy University, said that from late 2016, provincial governments embarked on a massive wave of investment in infrastructure and real estate, which prompted a recovery in energy- and coal-intensive industries such as steel and cement.

Under these economic initiatives, power generation and coal production soared for most of 2017, before slowing towards the end of the year.

#### Shaky comeback

However, the slight rise in coal consumption is not expected to last given China's continued economic reforms and energy transition. This means there is little chance for sustained coal growth.

Xu Zhaoyuan, head of the research office at the State Council Development Research Centre's Industrial Economy Research Department, says the 0.4% uptick is a short-lived fluctuation, predicting that coal demand will decline in coming years, and the peak in coal consumption in 2013 will not be exceeded.

The extension of current measures to prevent and control air pollution in 2018 and beyond, as well as the

state's continued push to develop renewables, mean that momentum for China's energy transition will remain, including the on-going switch of heating from coal to natural gas, and the end to usage of loose coal, noted Xu.

Furthermore, China's real estate development, which is a major driver of coal use, is facing restrictive regulations by central and local governments, noted Qi Ye, senior fellow and director at the thinktank Brookings-Tsinghua Centre.

"The traditional drivers of coal growth – construction and manufacturing – will continue to give way to the service sector in economic growth," said Qi. "We stick to our conclusion made in 2016: Coal-fired growth is over, despite the fact that coal remains the primary fuel for the Chinese economy."

Growth in coal consumption is not sustainable because much of the coal has been stocked in anticipation of further price hikes, and actual coal use could have been less, according to Yuan Jiahai.

He predicts that coal demand and total energy consumption in China will not see the same strong growth as 2017. "We are looking at primary energy consumption around 1.5% for the years to come. The kind of growth we saw in 2017 will not be repeated," said Yuan.

Many believe that coal consumption in China has already peaked despite fluctuations.

"It may not be a 'pointed' peak per se, but coal consumption has already reached a plateau," noted Liu Qiang, an economist with the China Academy of Social Sciences.

#### Transformation

Still, the 2017 coal consumption figure will serve as a reminder that the path towards a clean energy future will not be easy for the world's biggest coal burner.

China has promised to produce 20% of its energy from non-fossil sources by 2030 as part of the global effort to curb climate change. In 2016, non-fossil sources accounted for 13.3%.

The urge to boost economic growth through energyintensive infrastructure investment still exists in provincial authorities, said Xu Zhaoyuan, which will have to pay more attention to the quality of economic development. Apart from that, new tools and measures such as the national emissions trading scheme and marketisation of electricity distribution must be used to promote higher energy efficiency.

The coal consumption increase is a sign for China that "there is still much more work to do to push forward its clean energy transition", said Alvin Lin, China climate and energy policy director with the Natural Resources Defense Council.

He believes that the world leader in renewable energy production and electric vehicle uptake is firmly on a path toward clean energy, "but the next few years will require the deepening and successful implementation of its climate and clean energy ambitions". 🦃

Feng Hao is a researcher at chinadialogue.

Lili Pike is a strategic climate communications specialist for chinadialogue and the executive director of the Beijing Energy Network

Yao Zhe is a strategic climate communications officer at chinadialogue.

# 狗年中国:寻找人与狗和谐共处之道

过去一年,人与狗的关系成为中国社会的争议热点,农历狗年能否成为弥合分歧的契机?

□刘琴



动物福利团体希望政府能立法监控宠物虐待事件

个 刚刚步入农历狗年的中国,电 视晚会与祝福信息中到处可见 狗的可爱形象。这种喜庆气氛暂时掩盖了过去一年围绕狗而产生的争议。在人与狗应该如何相处的问题上,中

国社会呈现出两种激烈冲突的态度。 一类人爱狗如命,把狗当成自己的家 庭成员,甚至不惜为此攻击他人。另 一类人将狗当成一种可以随意处置的 动物,不仅其肉可吃,还可肆意虐待。 这两类人群常常因狗而爆发冲突,成为2017年中国社会的一道景观。专家认为,这种冲突将随着中国城市化进程的加快以及动物保护法的缺位进一步凸显。

### 打狗与救狗

从高速公路拦车救狗,到阻止 玉林举办狗肉节,因狗而爆发的争 斗时不时发生。其中,"长沙打狗" 事件在 2017 年末引起轩然大波。

2017年12月31日下午,湖南长沙,几名路人先后被一条拴在路边的金毛犬"可乐"袭击。接到报警后,当地派出所一名民警赶到现场,因找不到狗主人而用木棍将狗打死。

长沙民警棒杀金毛狗的视频传播到网上后,引发爱狗人士强烈不满。该民警不仅遭到网络谩骂,还受到人身威胁,其家人也受到骚扰。事件中,一位网民因散播民警个人信息而被拘留。

但"打得好"的呼声也不小,认为咬人的狗就应该打死。该民警所在派出所收到来自全国各地的锦旗,称赞此举"英勇无畏,为民除害",该民警是"打狗英雄,人民卫士"。

在动物保护专业人士看来,"长沙 样本"本质上反映的是养狗人士的不 负责任,以及政府部门的落后管理方 式。遗憾的是,事件在舆论场上却演 化为支持打狗与攻击民警的冲突。

# 更多养狗人

"随着中国城市化进程的加快, 养狗数量将增加,人狗冲突也可能 随之增加。"清华大学副教授、动保 网联合创始人蒋劲松说。

北京市公安局网站给出的数字显示,截止2012年北京登记犬只达到95万只。该网站没有提供更新的数据。据《瞭望东方周刊》报道,2005年北京市养犬登记数量为45.8

在动物保护专业人士看来, "长沙样本"本质上反映的 是养狗人士的不负责任, 以及政府部门的落后管理 方式。遗憾的是,事件在

舆论场上却演化为支持打

狗与攻击民警的冲突。

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万只,到 2013 年时登记在册数量接近 100 万只。加上未登记的,实际养犬数量超过 200 万只。而北京市 2013 年常住人口为 2100 万人。

在养狗人增多的同时,专注动物议题的机构也在增多。亚洲动物基金猫狗福利项目负责人陈敏婕告诉中外对话,2006年他们统计到大概中国有30多家动物保护组织,现在已超过200家,还有一些较小的机构未统计在内。

究其背后根源,蒋劲松认为,一方面随着经济水平的提高,越来越多的中国人有了饲养伴侣动物的物质条件。从精神需求来看,城市化后带来的工作生活压力增加,加上中国独生子女政策的实施,很多家庭的孩子缺少玩伴,对伴侣动物需求增加。同时随着老龄化社会的到来,猫狗又逐渐成为老人家中的陪伴。

# 犬只管理

随着宠物犬的增加,中国城市 犬只管理体系也开始承压。

"以前的管理方式显然已经跟不 上新情况的出现。"蒋劲松以长沙为 例解释说,《长沙市城市养犬管理条例》中规定,未佩带犬牌且无人牵领的户外犬只,一律视为野犬,由公安机关予以捕杀。"但伴侣动物已经成为一些人的感情寄托,扑杀狗相当于扑杀他们的亲人。这必然会引起爱狗人士不满。"

目前中国各个城市养犬管理不统一,各个城市都出台了犬只管理办法或条例,大多数是由公安机关主管,比如长沙、北京等。也有极少数由城市管理部门主管负责,比如深圳。

"中国养犬管理工作还处在一个发展的阶段,暂时还没有一个完全统一的做法。我们希望未来能成立独立的养犬管理机构或部门,更完善、专业的进行养犬管理。"陈敏婕说。

据陈敏婕介绍,大多数城市都 收取养犬管理费,在登记时交纳一 定的费用,同时免费注射狂犬病疫 苗。和以前相比,费用在逐步降低, 并且开始出现免管理费城市,如成 都、重庆、深圳等。

北京市公安局在 2017 年公布的 最新"养犬年检手续的通告"中规定, 重点管理区内每只犬缴纳年检管理 服务费 500 元。而在 2003 年之前, 养犬第一年登记费就要 5000 元。没 有登记的狗或者流浪狗就可能被执 法部门打死。

"交 5000 元,明摆着就是让你养不起。"此前,首都爱护动物协会会长秦肖娜在与中外对话交流时谈到。2003 年中国城镇居民人均可支配年收入为 8472 元。在北京"打狗"问题上,秦肖娜多次给北京市领导写信,称此举有辱北京国际形象。

此后,北京的犬只管理经历了 "严格限制养狗"到逐渐放宽的过程。 据中国网报道,2003年开始实施的《北京市养犬管理规定》取消了"严格限制"字样,并将养犬人首付管理费由5000元降至1000元,并改由公安机关对犬只统一管理。之后几年管理费又再次降低,直到目前的500元。

深圳也有类似过程。深圳市城管局新闻发言人告诉媒体,减少养狗人的费用不是为了鼓励市民养狗,而是希望引导养犬人自觉进行养犬登记。"之前政府部门对养犬行为所持的态度是禁止和限制,现在的思路是规范和引导,将养犬纳入政府的有序化管理。"这位官员说。

即便如此,北京一位养狗人士告诉中外对话,真正给狗登记、按规定来养的人可能不多。比如,北京规定一家只能养一只犬。"事实上,我想养几只就几只。因为可以多收管理费,主管部门也懒得管"。

# 狗主人的责任

"要减少人与狗的矛盾,最有效的办法是做好源头管理,做负责任的狗主人。"陈敏婕说,假如"可乐"当初身上有牵引绳,原主人能把狗牵好,后面一系列的悲剧就不会发生。"如果这些小事做不好,矛盾就会升级,让不养狗的人迁怒于狗。"

在媒体采访中,多有居民抱怨没有拴狗绳的大狗扑到人身上来,狗随 地大小便及噪音扰民。蒋劲松认为, 人狗关系实质上是人与人的关系。 狗 犯错时,要对狗的主人进行处罚。

除宠物犬外, 无主流浪狗也是这种矛盾的重要来源。这些或因走失,或因身患疾病而被主人遗弃的狗, 已让动物收容机构不堪重负。在陈敏婕的印象中, 几乎每一个动物收容机构都是满员。据媒体报道, 中国小动物保护协会因为救狗太多而养不起, 协会创始人晚年欠下高额债务。

驻地北京的动物保护组织它基金选择与离北京 1000 多公里外的西安红石榴流浪动物救护中心合作,共同推出助养项目,尽量帮助这些狗回归家庭。该中心一年内收留了85 条狗,已被领养61 只。"伴侣动物最好的方式还是回归到家庭,收容机构只是暂时过度的家,"项目负责人陆萍表示。

## 缺位的动物保护法

长沙打狗事件凸显中国城市犬 只管理难题,也为政府相关部门与 动物保护机构合作提供了契机。"与 政府部门合作正是我们工作的一个 重点。"陈敏婕告诉中外对话。事件 发生后,他们和南昌小动物保护协 会一起拜访了江西省南昌市公安局 并开展座谈,探讨合作管理犬只。

但动物保护人士认为,要处理 好人狗矛盾,最根本的是制定出台 中国的动物保护法。 连续多年"两会"召开时,都有人大代表或政协委员提出制定"反虐待动物"或"动物保护"相关的法律。2017年"两会"结束时,中国青年网发布的"网友点赞最多的议案提案"榜上,名列第一的是全国人大代表郑孝和所提出的"虐待动物应受行政拘留"建议,总赞数145318个。

近 10 年前公布的动物保护法(专家建议稿),从饲养、繁殖、运输等多个环节做出了规定,建议禁止遗弃或者虐待动物,增强宠物主人的责任心,保护和救助流浪猫犬,并提出兼顾未养宠物者的利益,减少社会争端。但目前该法仍停留在建议阶段。

"没有动物保护法,这是中国经济高速发展中的一个短板。"蒋劲松认为。各个动物保护组织也在积极推动动物保护法的制定,"新法律的出台需要时间,但我们不会放弃。"几位接受采访的动保人士表示了相同态度。

"一条狗的生命只有十几年,可以说 2018 年的这个农历狗年,几乎是狗狗们一生中度过的唯一一个本命年。我们应该善待它们。"陆萍不由感慨。⑤

刘琴, 中外对话研究员

# More rights for dogs

This year's lucky zodiac animal faces divided opinion over its place in urban life

□ Liu Qin

As China enters the Year of the Dog, cuddly images of man's best friend are everywhere – on TV, as mobile memes, and on billboards.

But the celebrations are a temporary truce in a deep culture war. On one side, stands an army of dog lovers who adore their pets and treat them as family, on the other, those who view dogs as possessions, to be eaten or mistreated at will.

The "Changsha dog-beating incident" on 31 December was the latest event to highlight the cultural rift between dog-loving animal rights activists and those who either don't see the point or are hostile.

As more Chinese adopt urban lifestyles and buy pets, commentators and animal rights activists predict divisions will deepen. Animal welfare groups say an animal protection law – combining sharper teeth and a gentler touch – is needed to manage the problem.

#### Beaten to death legally

A golden retriever named Cola catalysed China's latest

discussion of animal rights. Cola attacked several passers by in Changsha, Hunan province, after being left tied up by the roadside. The police were called. Unable to find Cola's owner, a police officer beat the dog to death.

Reactions were fierce, and divided. The policeman received online threats and abuse from dog-lovers. His family was harassed. One person was arrested for posting his personal information. Others praised his heroism for tackling an aggressive animal that had to be put down, and showed appreciation by sending traditional silk banners.

#### Old-fashioned rules

Animal protection professionals say the Changsha controversy highlights the need for an animal rights law, as well as specific reforms to dog registration, welfare and management systems – all under pressure from rising pet ownership.

"The old management system obviously can't keep up with new circumstances," says Jiang Jingsong, a Tsinghua 44

Animal Asia found China had about 30 animal welfare groups in 2006, whereas today there are more than 200.

University academic and co-founder of animal protection site Dongbaowang.org, speaking of the Changsha case.

Greater affluence means that more city dwellers can afford a pet than 40 years ago, while demographic trends have produced many lone children and elderly people in need of companionship.

Dog ownership has more than doubled in Beijing, though exact figures are hard to come by. Registration and management systems differ from city to city.

#### More pets

Beijing Public Security Bureau's most recent figures from 2012 show nearly one million registered dogs. Website Oriental Outlook says pet dog numbers doubled from 458,000 in 2005 to almost one million in 2013. Add in unregistered dogs, and Beijing has a canine population of more than two million dogs to 21 million humans (using 2013 figures).

Animal rights groups have sprung up too. Surveys by Animal Asia found China had about 30 animal welfare groups in 2006, whereas today there are more than 200, says Chen Minjie, head of the organisation's dog and cat welfare campaign. Their list does not include numerous smaller, informal groups.

#### Dog registration

"There's no single unified system in place," says Chen, adding "In the future we'd like to see an independent dog registration body so this task can be done more professionally."

Public security authorities handle dog registration in most cities, including Changsha and Beijing. A few, notably Shenzhen, give the job to urban management officials. Beijing's rules allow public security officials to destroy any unaccompanied dog without a registration tag, regarding it as a stray.

#### Fees

Dog registration fees shot up in the early days of widespread pet ownership to discourage people from getting pets. Nowadays, fees are being lowered or abolished altogether to encourage pet registration. Fees also include the cost of immunisations.

Today, registering a dog in Beijing costs 500 yuan (US\$79) a year according to the Public Security Bureau's 2017 notice.

Registration used to cost 10 times as much and at a time when people earned far less – in 2003 it was 5,000 yuan even though disposable income for China's urban residents averaged 8,472 yuan.

"The 5,000 yuan fee was clearly aimed at making dogs unaffordable," said Qin Xiaona, head of the Capital Animal Welfare Association in an earlier conversation with chinadialogue. After 2003, clauses about "strictly limiting" ownership were deleted from the regulations.

Shenzhen, Chengdu, and Chongqing have since scrapped fees. "In the past the government aimed to ban or limit dog ownership, but now the thinking is to guide and regulate it," a Shenzhen urban management spokesperson told the media.

Some cities – including Beijing – limit the number or size of dogs in urban areas, but these rules are seldom rigorously enforced.

### Messy and aggressive

Many people complained, when asked by the media, about

being jumped on by unleashed dogs, of dog mess on the streets, and noisy dogs. Such problems are caused by lax owners so it is they who should be punished, argues Jiang.

"If you don't do the small things properly, minor problems can escalate and people blame the dog," agrees Chen.

Stray and abandoned dogs are often the focus of complaints. Chen says every dog shelter she can think of is full. Aita Foundation, a Beijing based animal welfare group, has taken to rehoming dogs over 1,000 kilometres away in Xi'an, finding homes for 61 Beijing strays there in a single year.

Some welfare groups took the Changsha incident as a chance to approach government agencies about working together, says Chen, whose organisation held a joint meeting with Nanchang public security authorities, alongside Nanchang Small Animal Protection Association.

#### Awaiting reforms

But animal welfare activists say an animal protection law remains key to solving these problems.

Laws protecting animals have been proposed at the annual meeting of China's parliament, the National People's Congress, for years.

"It takes time to get a new law on the books, but we won't give up," says Jiang.

The draft of a proposed animal protection law was circulated at the meeting almost a decade ago, but nothing has been enacted since.

It covered feeding, care, breeding, and transportation, and it forbade abandonment and mistreatment while including measures to educate pet owners and protect nonpet owners' rights.

At the end of the 2017 sessions, Youth.cn published a list of the proposals most liked by its readers. Topping the rankings with 145,318 likes was a proposal that cruelty to animals be punished with detention, put forward by representative Zheng Xiaohe.

"Dogs don't live long enough to see more than one Year of the Dog, so we need to be kind to them in this one," sighed Aita's project officer Lu Ping. ©

Liu Qin is a researcher at chinadialogue.

# 治理塑料污染: 特蕾莎·梅访华之旅的蓝色议程

一套特别限量版的《蓝色星球》纪录片,表达出特蕾莎·梅向习近平寻求合作,共同治理塑料污染的意愿。

□李婧

**作** 决塑料污染问题的重要性是 上周英国首相特雷莎·梅访华 期间希望向习近平主席传达的重要 信息之一。

此次是特蕾莎·梅担任英国首相后首次访华。据报道,她在北京与习近平主席会面时敦促他采取更多行动解决塑料污染问题。为了强调这一讯息,特蕾莎·梅还向习近平赠送了一份精心挑选的礼物:一套BBC自然系列纪录片《蓝色星球 2》,并附有该片主持人、自然博物学家大卫·爱登堡爵士特地为习近平录制的赠言。

2017年,该系列纪录片因提升了公众对海洋塑料污染(尤其是工

业污染和塑料微粒对海洋生物的破坏)的认识而广受赞誉。

特蕾莎·梅担任英国首相后首次访华,向习近平赠送了一份精心挑选的礼物:一套BBC自然系列纪录片《蓝色星球2》,并附有该片主持人、自然博物学家大卫·爱登堡爵士特地为习近平录制的赠言。

据一位首相发言人称,特蕾莎·梅 告诉习近平,"全世界都有责任为子孙 后代解决塑料污染问题。"

她提到了中国目前正在长江上清理塑料微粒,防止其进入海洋。

发言人称,习近平和特蕾莎·梅 还讨论了两国在环保方面的共同承诺, 包括对巴黎气候变化协议的支持,以 及打击象牙和非法野生物贸易的决心。

中国官方媒体新华社的报道中尽 管没有具体提到塑料垃圾,但发表了 习近平关于应对共同挑战的评论。

"两国应深化在联合国、20国集团、世界贸易组织等多边机制下的交流合作,推动解决气候变化等全球性挑战。"习近平说。

### 携手合作

据北京磐石环境与能源研究所 资深研究员毛达称,中国在塑料垃 圾问题上反应冷淡的一个原因可能 是两国在这一方面"缺乏双边合作 的基础"。

中国针对包括塑料、废纸、纺 织品以及某些金属废料在内的国外 垃圾的进口禁令已于今年1月生效。 据一直致力于宣传零废物目标的毛 达说,这项禁令带来的一个副作用 是切断了中外塑料垃圾处理公司之 间的联系。

尽管如此, 英国可能会加强与 中国的接触,参考联合国相关决议, 力求促成一项应对海洋塑料污染的 全球协议。

英国在最近发布的25年环境规 划中承诺大幅减少并在可能的情况 下预防几种海洋塑料污染,特别是 来自陆地污染源的污染。

然而,环保人士称,这个计划的 力度不够,因为2050年这个目标期 太远了。此外, 计划还漏掉了押金返 还方案(即向退还塑料废弃物的消 费者返款)。

以挪威为首的一些国家试图达 成一项更加有力、具有约束力的国 际条约, 力求终结海洋塑料污染。

"习近平越来越愿意把中国置于 全球环境治理的领导地位,就像对 待巴黎气候协定那样。"毛达说。

"同样,国际社会如果想就海洋 塑料垃圾达成一份有力的条约,中 国的积极参与是必不可少的。"他说。

### 塑料政策

2011年,中国超越欧洲成为全 球最大的塑料生产地。直到去年,中 国还是全球最大的废旧塑料进口国 和回收国。作为全球最大的塑料垃 圾生产国,中国的一举一动都引人 注目。中国在此类谈判中的立场也 受到了印度等其他主要发展中国家 的影响。

现在,中国国内的塑料政策关 系到了其国际声誉。然而,中国在遏 制国内塑料污染方面面临巨大挑战, 这可能会妨碍其在国际上发挥更积 极的作用。

中国有大量的小型回收企业, 其中很多是简易的家庭作坊。他们 将有毒废料排放到了土壤、空气和 水源中,促使当局出台禁令,禁止废 物讲口。虽然这将对国内回收商造 成沉重打击,但长期来看,中国领导 人希望这一变化能够促进回收产业 的优化。

国家发改委正在起草新的法规, 限制或取代塑料在制造业供应链中的 使用,从而推动循环经济转型。(在循 环经济中,废物变成了有价值的原料, 用于生产新产品。) 但毛达指出, 中国 对于塑料的监控依然薄弱, 这给决策 者带来了挑战。

由于数字经济的发展, 电子商 务对包裹包装和食品配送的巨大需 求导致一次性塑料的消耗急剧增长, 这给中国的垃圾处理部门增加了压 力。例如,仅2016年,网上购物塑 料包装袋用量总计多达 147 亿个。

另外, 迫切需要更好地研究塑 料微粒对水系统的影响。中国科学 院的研究人员说,要想对塑料微粒 实施有效管理,需要首先填补巨大 的知识鸿沟。⑤

李婧, 自由撰稿人, 关注环境与气候议题

### **UK-China pledge to fight plastics**

May gives Xi a copy of Blue Planet and looks for cooperation on plastic pollution

□ Li Jing

The importance of tackling plastic pollution was one of the key messages British Prime Minister Theresa May wanted to deliver to President Xi Jinping during her visit to China last week.

On May's visit, her first to China, she reportedly pressed Xi to do more to address the scourge of plastic waste at their meeting in Beijing. The message was reinforced by a carefully chosen gift: a box-set of BBC nature series Blue Planet II, with a specially recorded message from naturalist Sir David Attenborough.

In 2017, the TV series was lauded for raising public awareness of ocean plastic pollution, specifically the destruction of marine life from industrial pollution and microplastics.

According to a Downing Street spokesperson, May told Xi that, "The world has a collective responsibility to tackle plastic pollution on behalf of future generations."

She pointed to the work being done in China to remove plastic particles from the Yangtze River to stem their harmful flow into the ocean.



Prime Minister Theresa May drinks tea with President Xi Jinping

Xi and May also discussed a shared commitment to protecting the environment, including their support for the Paris climate change agreement and determination to tackle the ivory and illegal wildlife trades, according to a spokesperson.

In China, official news coverage of the meeting from Xinhua reported comments from the Chinese leader on tackling common challenges, although there was no specific mention about plastic waste.

"The two countries should enhance cooperation under multilateral mechanisms, including United Nations, Group of 20, and World Trade Organisation, and find solutions for global challenges, such as climate change," Xi said.

### Working together

One reason behind the lukewarm response from China may be the "lack of basis for bilateral cooperation" on plastic waste between the two countries, according to Mao Da, a senior researcher at the Rock Environment and Energy Institute in Beijing.

China's ban on foreign waste imports, including plastics, paper, textiles, and some types of metal, came into effect in January. A side effect has been to sever ties between Chinese and foreign companies that deal in plastic waste, according to Mao, who has campaigned for a zero-waste agenda.

Nonetheless, the UK is likely to push engagement with China toward reaching a global deal to tackle ocean plastic pollution, referring to a United Nations resolution that is dedicated to achieving this.

The UK committed to significantly reduce, and where possible prevent, several kinds of marine plastic pollution, particularly land-based sources, in its recently released 25year Environmental Plan.

However, environmental campaigners claim the plan does not go far enough because its 2050 target date is too far away. Also, it omits deposit return schemes that pay consumers to return plastic waste.

Some countries, led by Norway, have pushed for a more robust and binding international treaty to end marine plastic pollution.

"Xi Jinping is increasingly willing to put China in a leader position when it comes to global environmental governance, as in the case of the Paris climate accord," said Mao.

"Similarly, if a robust international treaty on ocean plastic waste is to be reached, China's active participation will be indispensable," he said.

### Plastic policy

China overtook Europe as the world's largest plastics producer in 2011. Until last year, it was also the world's biggest importer and recycler of scrap plastics. As the biggest producer of plastic waste, China's role is being closely watched. Its stance in such negotiations is also influenced by other major developing countries, such as India.

China's international reputation is now linked to its plastic policy at home. However, the massive challenge of curbing plastic pollution domestically may hinder China's ability to play a more proactive role internationally.

Numerous small-scale recycling businesses in China, many of which are simple family workshops, have released toxic waste into the soil, air and water supply, prompting the authorities to ban waste imports. While this will deal a heavy blow to domestic recyclers, in the long run the shift could optimise the recycling industry, hope China's rulers.

China's National Development and Reform Commission is drafting new regulations to limit or replace use of plastics in manufacturing supply chains, as part of the country's shift toward a circular economy – an economy where waste becomes a valuable input into new products. Yet China's monitoring of plastics is still weak, posing challenges for policymakers, according to Mao.

The new digital economy has seen consumption of single use plastics soar due to massive demand for parcel packaging and food delivery through e-commerce businesses. This has added pressure to China's waste disposal sector. For instance, in 2016 alone, a total of 14.7 billion plastic bags were used in packages from online shopping.

The need for better research on the impacts of microplastics on water systems is also pressing. Researchers at the Chinese Academy of Sciences say a major gap still exists between knowledge of the problem and effective management. ⑤

Li Jing is a freelance writer covering environmental and climate issu

### 气候风险阴云笼罩达沃斯论坛

环境和气候将成为今年全球商业发展的首要风险。 难以想象?但这正是本周达沃斯世界经济论坛传达出的讯息。

□ 苏姆亚·萨卡尔



达沃斯世界经济论坛将极端气候列为全球面临的最大威胁

球商界与政界领袖表示,极端天气事件可能成为2018年全球商业与贸易发展的最大威胁。谁曾料想,十年前人们还认为最大的风险应该来自资产价格崩盘和石油、天然气价格飙升等经济因素。

1月23日,一年一度的世界经济论坛(World Economic Forum,简称WEF)在瑞士高山度假小镇达沃斯召开。而一周之前该论坛发布的《2018年全球风险报告》显示,全球经济领袖已经连续第二年将极端天

气评为目前全球面临的最大威胁。

通过对商界、政府和民间团体近1000 名专家的调查,这份最新版报告发现,自从该报告于13年前开始发布以来,人们对风险的认知已经发生了显著变化。相比于市场崩溃、系统性金

融失灵和财政危机, 近些年来人们担 心更多的是极端天气、自然灾害和无 法缓解的气候变化风险。2010年以前, 环境风险甚至还不能排进这个风险名 单的前五名。而到了2018年,在排名 前五的风险中, 三个都是环境风险。

2018年报告主要关注了五类环 境风险,分别是:极端天气事件和气 温变化: 生物多样性流失加剧: 大 气、土壤和水资源污染; 气候变化 减缓和适应措施失灵; 以及低碳转 型相关风险。无论从发生的概率还 是产生的影响来看,上述风险在这 份最新报告中都排名靠前。

### 走向危机边缘

过去十年间,这五类环境风险 的排名都在稳步上升。该报告作者 称: "2017年是飓风灾难和极端高温 尤其突出的一年, 而二氧化碳排放 量也在四年内首次出现上升。我们 已经把地球推向了崩溃的边缘,环 境破坏已经越来越明显。"

本次调查进行期间, 哈维、伊尔 马和玛利亚等大西洋飓风正在美国、 加勒比和波多黎各地区一带肆虐。据 统计,2017年大西洋飓风季让美国付 出了前所未有的代价。据估计,17场有 命名的风暴共造成损失超过 2000 亿 美元。来自瑞士再保险公司的数据显 示,2017年自然和人为灾害造成的经 济损失总计达到3060亿美元,较上 年几乎翻了一番。

2017年经历的坏消息还远不止极 端天气一个。这一年,全球二氧化碳 排放量出现了多年来的首次上升,从 而使《巴黎气候协定》中的"保证全 球气温与工业化前水平相比上升不超 过 2 摄氏度的目标"受到了威胁。

世界经济论坛表示,"专家们正 在为下一个高风险年做准备",并 指出,全球风险也呈现出上升的趋 势。该论坛表示:"我们就 2018 年风 险的发展轨迹问题采访了将近 1000 人, 其中有59%的受访者认为风险 会加剧,仅有7%的受访者认为风险 会下降。"

### 缺少切实行动

苏黎世保险集团每年都协助世 界经济论坛撰写年度风险报告。该 集团首席风险官塞西莉亚: 雷耶斯 表示, 虽然气候与其他环境风险已 经连续七年被世界经济论坛评为全 球最大风险之一, 但是在稀缺自然 资源(如水资源)管理和环境威胁适 应力构建等方面,目前的举措仍需 大力加强。

发展中国家尤其如此, 他们对 全球变暖的"贡献"最小,但遭受 的影响最深重。应对气候变化所需 的资金只能通过全球债券与股票市 场筹集,但是目前这些资金却基本 被投资在了化石燃料领域。正如专 家们去年11月在波恩气候峰会上所 说的那样,提高气候变化行动目标 和募集所需巨额资金两件事之间是 密不可分的, 政府和金融部门必须 将其视为同一个挑战。

风险管理是这个挑战的主要组 成部分。雷耶斯认为:"风险管理者 必须全面了解全球供应链上的每一 个风险点,从而找出潜在的风险漏 洞。如今在进行风险审计时,不仅要 考虑财产与基础设施破坏、员工安 全等传统环境问题, 更要将资源稀 缺性和社会挑战等问题也纳入考量 范围之内。" ら

苏姆亚·萨卡尔, 新德里记者及编辑。

### Climate on Davos agenda

As the World Economic Forum meets this week, environmental risks are high on the agenda

□ Soumya Sarkar

Global business and political leaders have said extreme weather events would likely pose the greatest threat to business and commerce in 2018, which marks a major departure from what they thought even 10 years ago, when economic factors such as asset price collapses and oil and gas price hikes were perceived as major risks.

For the second year running, extreme weather was rated the world's biggest threat, according to the Global Risks Report 2018, released last week by the World Economic Forum (WEF), whose annual meeting starts today at the alpine resort of Davos in Switzerland.

Based on a survey of nearly 1,000 experts in business, government and civil society, the latest edition of the report has seen a dramatic change in risk perception since its inception 13 years ago. In recent times, fears of extreme weather, natural disasters and failure to mitigate climate change have clearly outranked economic factors such as market collapses, systemic financial failures and fiscal crises. Before 2010, environmental risks didn't even make the top five. In 2018, three of the top five likely risks are environmental.

The 2018 report looks at five categories of environmental risks — extreme weather events and temperatures; accelerating biodiversity loss; pollution of air, soil and water; failures of climate change mitigation and adaptation; and risks linked to the transition to low carbon. All these risks were ranked high in terms of both likelihood and impact in the latest report.

#### Pushed to the brink

All the five risks listed in the environmental category have risen steadily in the past 10 years. "This follows a year characterised by high-impact hurricanes, extreme temperatures and the first rise in CO2 emissions for four years," authors of the report said. "We have been pushing our planet to the brink and the damage is becoming increasingly clear."

The survey was conducted at a time when violent hurricanes in the Atlantic, such as Harvey, Irma and Maria, were wreaking havoc in the United States, the Caribbean and Puerto Rico. The 2017 Atlantic hurricane season was

the most expensive in US history, with losses estimated to be over US\$200 billion from the 17 named storms during the season. The total economic losses from natural and manmade disasters in 2017 reached US\$306 billion, which was almost double the previous year's losses, according to insurance firm Swiss Re.

The bad news in 2017 was not limited to extreme weather. For the first time in years, carbon dioxide emissions rose in 2017, jeopardising the Paris Agreement goal of limiting average temperature rise to within 2 degrees Celsius of pre-industrial levels.

"Experts are preparing for another year of heightened risk," the WEF said. "When we asked nearly 1,000 respondents for their views about the trajectory of risks in 2018, 59% of their answers pointed to an intensification of risks, compared with 7% pointing to declining risks."

### Not much action on the ground

Although climate and other environmental risks have featured among the WEF's top global risks for seven consecutive years, current approaches to managing scarce natural resources such as water and to building resilience to environmental threats still leave much to be desired, according to Cecilia Reyes, Group Chief Risk Officer of Zurich Insurance Group, which helps WEF prepare its annual risks report.

This is particularly true for the developing countries, which have contributed least to global warming but suffer the most due to it. The amount of money that is required to combat climate change is available only in global bond and equity markets, but these are heavily invested in fossil fuels. Raising ambition to act on climate change and raising the large amount of funds needed are so interconnected that governments and the financial sector must see it as a single challenge, experts said at the Bonn climate summit in November last year.

Managing risks is an essential part of the challenge. "Risk managers need to develop a comprehensive understanding of every point of risk within the business' global supply chain to identify potential vulnerabilities," Reyes said. "Any such audit today needs to include issues such as resource scarcity and social challenges alongside more traditional environmental concerns such as damage to property and infrastructure or the safety of employees." ©

Soumya Sarkar is a New Delhi-based writer and editor.

## 中拉论坛部长级会议确定新的优先合作领域

会议强调可持续性,但必须立即把语言转化为行动。

□ 罗伯特·苏塔



智利外交部长埃拉尔多·穆尼奥斯和中国外交部长王毅在中拉论坛上

去三年里,世界发生了天翻地覆的变化,即将卸任的智利总统米歇尔·巴切莱特在首都圣地亚哥参加中国-拉美和加勒比国家共同体论坛(以下简称"中拉论坛")第二届部长级会议时这么说道。

2015年1月,中国与拉共体33国 共同举行的首届中拉论坛部长级会议 在北京召开,该会议每3年举行一次。 那时,《巴黎协定》尚未诞生;《2030年 可持续发展议程》还在酝酿;经济保 护主义的回归不可想象,巴切莱特说。 首届会议召开后,该论坛就在 环境合作方面取得了进展,智利外 交部长埃拉尔多·穆尼奥斯说。

"我们支持多边主义,支持共同面对并治理气候变化、自然灾害等问题,"穆尼奥斯说。

那时候,中国已经通过"一带一路"倡议大大提升了自身的国际影响力。在今年的峰会上,各国外长也承诺将加强与中国在环境和气候变化方面的合作,该项目因此成为关注的焦点。

与会各方通过了《圣地亚哥宣言》,将环境确定为"互利与发展"的八大优先领域之一;并发表了一份关于拉美在"一带一路"倡议中新角色的正式声明,而且很快还将发布一份更为详细的中拉 2019-2021 年共同行动计划。

在第一届中拉论坛公布的 2015-2019 年中拉合作计划中,中国国家主席习近平承诺将在接下来的 10 年内在该地区投资 2500 亿美元,并使中拉贸易额增至 5000 亿美元。这番承诺一度成为全球各大媒体的头条新闻。在今年的峰会上,各方对中国在资金方面的期许很高。

### 是新的道路, 还是长久的障碍?

外交部长王毅在开幕式上转达了 习近平主席的贺信。信中指出,中拉 论坛已成为中拉整体合作的主渠道, 带动各领域合作取得丰硕成果。

上届论坛发布的合作计划曾宣 布有意建立包括基础设施、科学技 术以及文化交流在内的多个行业分 论坛。

围绕环境这个偶尔会导致中拉 关系紧张的话题建立专门的平台将 是朝着正确方向迈出的一步,拉丁 美洲中国研究中心主任、前智利驻 华大使费尔南多·雷耶斯·玛塔认为。

"我们已经开始为中拉双方在环 境等主题上的反思创造空间,"雷耶 斯·玛塔说,他同时也强调,新的宣言中有一段内容专门提到了要努力实现《2030年可持续发展议程》。

"这么看来,是有进步的,"他说。

拉共体成立于 2011 年,但目前 仍没有办公室、联系电话和电子邮 件地址,与中国和拉美国家所参与 的更为成熟的多边论坛相比,也不 具备相应的机构能力。

例 如,与 亚 太 经 济 论 坛 (APEC)和 20 国峰会不同,拉共体 为组织内外的非国家参与方提供的 活动空间非常有限。

当中拉对话问及这一领域取得 了什么进展时,联合国拉丁美洲经 济委员会执行秘书艾丽西亚·巴塞 纳指向了中拉论坛在学术等领域的 分论坛。

"我们可以一点点朝着这种类型的 分论坛前进,"她解释说,"2019-2021 年的行动计划谈到了开放的政府,向 社会公开信息,让社会参与进来,我 觉得这就是我们的方向。"

### 一带一路连接拉美

中拉论坛部长级会议标志着拉 共体正式承认加入中国的"一带一 路"倡议,尽管中国外交部最近正 式发布的总结与巴拿马签订的新协 议的文件中才首次提到这一点。

穆尼奥斯称,各方对这一结果 "非常满意"。

他同意巴切莱特的意见,认为 21世纪各国之间的互通性增长了四 倍,不仅有原先的海上和陆路贸易路 线,还有数字和空中通道作为补充。

王毅在全体会议上说:"中拉合作好比一棵果树,如果双方引来'一带一路'的清泉悉心灌溉,中拉整

体合作和双边合作就能更加枝繁叶茂,结出更多甘甜的果实。"

然而,中国在拉美投资的某些 基础设施项目因劳工和环境方面引 发的争议却让社会学家奥古斯托·巴 拉斯感到担忧。

"一切看似很美,但中国在该地区的行为却应另当别论。中国在投资和贸易领域的言辞和行动之间还有 差距。"他说。

批评人士警告,中拉经济关系 面临着经济和环境的不可持续性。 拉美从中国进口的一系列产品中包 括许多高附加值制成品。

而拉美国家向中国大量出口的 却是大豆、石油等耗水量大、碳排 放高的初级原材料,并且这些产品 受全球价格波动的影响,包括曾损 害拉美经济的全球经济衰退。

"这不是中国的错,"智利外交 部前外交政策主任卡洛斯·波塔莱 斯告诉中拉对话。

"如果商品价格下跌或上涨,那都发生在市场上。"他还说,每个国家应对价格冲击的能力取决于它的 生产系统。

巴塞纳说,与中国合作伙伴合作有助于为拉美经济部门增添活力,比如说农业,并通过可再生能源供能,增强他们的可持续性。她还称赞了中国在公共交通部门的工程。

"中国坚定地致力于减少城市污染,这是有一定经济成本的,"她还说,"中国就可再生能源做出了明确的承诺,为《巴黎协定》做出了贡献。"

"他们对此的重视对我们的地球 非常重要,"她说。⑤

罗伯特·苏塔, 中拉对话执行编辑, 常驻英国伦敦

### China-LatAm grow closer

Ministerial forum emphasises sustainability but must now turn words into action

□ Robert Soutar

The world has changed dramatically in the past three years, outgoing Chilean President Michelle Bachelet told the second ministerial meeting of China and the Community of Latin American and Caribbean States (CELAC-China) in the capital Santiago.

When the inaugural triennial meeting between China and the 33-nation Western hemisphere bloc took place in Beijing in January 2015, there was no Paris Agreement on climate change; no 2030 Sustainable Development Agenda; and a return to economic protectionism was unimaginable, Bachelet said.

Since that first meeting the forum has made progress on environmental cooperation, said Heraldo Muñoz, Chile's foreign minister.

"We're supporters of multilateralism, of governing to face problems like climate change and natural disasters together," said Muñoz.

In that time, China has greatly increased its international presence through the Belt and Road initiative (BRI). At this year's summit, the project took centre-stage as foreign ministers also pledged to ramp-up cooperation with China on environment and climate change.

Parties released the Declaration of Santiago, which

identifies environment as one of eight priority areas for "mutual benefit and development"; and made a formal declaration on Latin America's new role in the BRI. A more detailed Cooperation Plan for 2019-2021 is expected to follow soon.

The first China-CELAC forum announced the 2015-2019 Cooperation Plan, where President Xi Jinping grabbed headlines worldwide by pledging to invest US\$250 billion in the region and increase trade to US\$500 billion in the next decade. Expectations on China to commit finance loomed large at this year's summit.

### New path, or enduring obstacles?

Delivering a message from Chinese President Xi, foreign minister Wang Yi said that CELAC has become the main channel for overall cooperation with Latin America and for achieving "great outcomes".

In the old cooperation plan, the forum declared its intention to establish numerous sector-specific fora, including on infrastructure, science and technology, and cultural exchanges.

The creation of a dedicated platform for environment – a subject that has at times strained relations between China and Latin America – would be a step in the right direction, according to Fernando Reyes Matta, director of the Latin American Centre for China Studies (CELC) and a former Chilean ambassador to China.

"We've begun to create spaces for reflection between China and CELAC on such themes as environment," said Reyes Matta, also highlighting that the new declaration includes a paragraph on working towards the 2030 Sustainable Development Agenda.

"In that sense, there's progress," he said.

CELAC, which was inaugurated in 2011 but still has no office, phone number or email address, doesn't have the same institutional capacity as more established multilateral fora in which China and Latin American countries participate.

Unlike both the Asia-Pacific Economic Forum (APEC) and the G20, for example, CELAC provides limited space for non-state actors within or alongside it.

Asked by Diálogo Chino (part of the chinadialogue network) what advances there had been in this area, Alicia Bárcena, executive secretary of the UN's Economic Commission for Latin America (CEPAL), pointed to China-CELAC's academic and other sub-fora.

"Bit-by-bit we can advance towards for of that nature," she said, explaining; "in the 2019-2021 action plan it talks about open government, of opening information up to society and involving it, so I think that's where we're headed."

#### Belt and Road reaches Latin America

The CELAC-China meeting signalled the formal recognition from a regional body of Latin America's integration into the BRI. Although, it was first mentioned in a recent official Chinese Ministry of Foreign Affairs (MFA) document summarising new agreements with Panama.

Muñoz declared parties to be "very satisfied" with this outcome.

He echoed Bachelet's comments that 21st century connectivity is fourfold, with new digital and aerial channels to complement old maritime and overland trade routes.

Wang told a plenary session: "If cooperation were a fruit, the Belt and Road Initiative would be the stream that nourishes the tree."

However, sociologist Augusto Varas expressed concern at controversies over non-compliance with labour and environmental regulations associated with Chinese infrastructure projects in Latin America.

"It all seems very beautiful, but China's actions in the region are totally different. There's a big gap between the rhetoric and the reality of investments and trade," he said.

Critics have warned about the economic and environmental unsustainability of China's economic relationship with Latin America. The latter imports a range of products from the former, many of which are manufactured goods with added value.

Latin America overwhelmingly exports commodities such as soybeans and oil to China. These are water- and carbon-intensive to produce and are subject to fluctuations in global prices, including downturns that have hurt Latin American economies.

"It's not China's fault," Carlos Portales, a former director of foreign policy at Chile's ministry of foreign relations, told Diálogo Chino.

"If commodity prices go down or up, that happens in the market." He added that the level of vulnerability to price shocks is down to the productive system in each country.

Bárcena said that working with Chinese partners is helping add dynamism to sectors of Latin American economies, such as agriculture, and make them more sustainable by supplying it with energy from renewable sources. She also complimented Chinese engineering in the public transport sector.

"China has strongly committed to making its cities less polluted, as this has had an economic cost," adding; "they've also contributed to the Paris accord with clear commitments on renewable energy."

"The weight they're giving that is very important for the planet," she said. 🦃

Robert Soutar is Managing Editor of Diálogo Chino, based in London.

### 自行车的"高速"梦

在厦门,一条首次出现的自行车高速路引发了关于路权、经济性和城市交通未来的思考和憧憬

□邓涵

到 今年1月26日,中国首条、世界最长的空中自行车道-厦门云顶路自行车高速路开通整整一年了。这是中国对舶来品-"自行车高速路"的首次尝试。

自行车高速路概念源于欧美, 2013年住房城乡建设部颁布的《城 市步行和自行车交通系统规划设计 导则》中首次将其列为自行车专用 路的一种形式。

厦门的自行车高速路采用全高架模式,同时禁止行人、电动车、三轮车等进入,并与其他交通方式隔离,拥有完全独立的自行车路权,尚属国内首例。该高速路因地制宜利用厦门BRT(快速公交)高架桥

底空间建造离地面净空 5 米、单侧净宽 2.5 米的全线双向自行车高架,全长约 7.6 公里,连接多个大型居住社区、重要公共建筑、公园和中学等。项目建设单位的数据显示,截止2017年7月,骑行量共计达41万人次,日均约4000人次,日最高骑行量达12000人次。2017年11月该项目荣获"中国人居环境奖"范例奖。

由于是"第一个吃螃蟹",国内 尚无针对自行车高速的规范。厦门 市政府收集整理国外相关文献以及 与国际机构合作交流,提出国内首 创的技术标准和管理规范,明确规 定了自行车专用道禁停、限速、载 人载物等详细的行驶规则,对驾驶 机动车、电动自行车以及步行进入 自行车专用道等违章行为进行警告 或处罚。

### 舶来品的思考与讨论

在全国轰轰烈烈地规划与建设过程中,自行车高速这个舶来品也引发不少思考。一方面,自行车高速路确实可以达到名副其实的"高速"。经交通与可持续政策研究所(ITDP)实测,厦门自行车高速由于全线高架,全程无交叉口冲突、红绿灯、行人、路侧公交站、路侧停车的干扰,骑行者可在自行车高速上畅行无阻,骑行速度可达 25-30



厦门自行车高速

公里/小时,皆超过2017中国拥堵前十的城市高峰平均车速(21.09-24.24公里/小时),可实现自行车在城市中高速、安全通行的初心。

但另一方面,相比现状不容乐观的地面自行车出行系统,全线高架自行车高速的高投入和低流量也引发不少争议。经 ITDP 实测,厦门自行车高速流量较地面流量(自行车+电动车)低,推测原因有自行车高速的阶段性规划实施、路网布局、市民对新事物接受程度以及天气等。

目前自行车高速在厦门甚至国 内仍处于探索阶段,没有科学系统 的评价体系对该项目进行经济、社 会、文化方面的定性定量分析。同时由于上位规划和基建施工等问题,自行车高速尚未形成贴合大众出行需求的完善出行网络。再者,自行车高速的完全封闭形式和"点到点"的快速通达特性对中短途、灵活自由的自行车出行需求之间也存在矛盾,需要一定时间的磨合。

### 国际经验

对于"厦门模式"引发的思考和讨论,自行车高速发展较早的欧美地区有一定的借鉴作用。自行车高速路在不少提倡自行车友好的国家和

城市已成为"标配",如伦敦的 Cycle Superhighways 系统、荷兰的 F35 自行车高速路、德国的 RS1 自行车高速公路、波哥大的绿色长廊 Juan Amarillo Greenway 等。纵观国外的最佳案例,自行车高速首要特性是有独立路权,与其他交通方式实施物理隔离避免干扰,确保自行车的安全高速通行。其次,在不可避免的冲突点和连接处,如道路交叉口、河道铁路等位置进行自行车专用信号、高架隧道等形式的优化。第三,自行车高速设施符合自行车出行舒适、便捷的特性,道路平坦或缓坡、路网健全可达等皆是需要考虑的因素。

然而要让自行车成功回归城市, 单靠自行车高速无法实现,需打造一 个完整系统的城市自行车出行体系。

积极推进自行车高速的建设, 终究是为了让更多人采用自行车等 绿色交通出行方式,缓解城市交通 拥堵和污染,增进城市空间活力,让 城市更可持续健康发展。

单从出行环境而言,《城市步行和自行车交通系统规划设计导则》定义了自行车道体系包括自行车专用路以及一级、二级、三级自行车道。城市在"强健"自行车专用路和一级自行车道等城市自行车出行的"主动脉"的同时,应该更多关注"毛细血管"-直接连通小区和商业的二级、三级自行车道,此类自行车道往往因为道路空间不足、路权分配不均、严重违章占用等问题导致出行环境日益恶化。

同时,完善的自行车出行体系还 需全方位的战略规划支持。世界公认 的自行车王国-丹麦的人口为 562.4 万人,却有自行车数量超过450万辆, 全国有20%的通勤出行方式为自行 车。据中国城市规划设计研究院的研 究, 在机动化的强烈冲击之下, 良好 的自行车出行氛围与丹麦将自行车出 行提升至国家战略密不可分。《自行车 上的丹麦 - 自行车发展国家战略》包 括一、以自行车为工具,增加出行通 畅、清洁环境;二、以骑车为乐、更 健康的生活和新体验; 三、安全上学 和娱乐出行、更好的交通文化等三大 目标,从城市规划、基础设施、骑行 文化、运维管理、公共参与、财政激 励等进行全方位的自行车出行战略。 中国城市不仅要注重干基础设施建 设, 更要加强对自行车出行战略系统 性的研究规划和战略措施,方能逐步 推进和实施自行车出行的美好愿景。

波哥大市长 Enrique Penalosa 说过,"自行车道体现了这样一种理念:一个骑着 30 美元自行车的公民和一个驾驶着 30000 美元小汽车的公民同等重要。"或许"厦门模式"的自

行车高速像新潮时尚的共享单车一样,让原本逐渐被忽略的自行车以震撼夺目的高姿态回归城市,逐步改变人们"汽车本位"的思想,让更多的人骑上自行车,再度掀起回归自行车王国的浪潮。

实际上,自行车高速已在中国各地出现。早在2016年北京已着手回龙观至上地(中关村软件园)之间的自行车高速研究,目前方案已经确定正在进入实施阶段,预计2018年内建成。2017年广州启动了"广州市自行车专用道概念方案研究",成都也开始规划在环城生态区建设一条全长约100公里,设计骑车速度可达60公里/小时的自行车高速公路。中国这个曾经的"自行车上的国家"正探索着与自行车的再次拥抱。⑤

邓涵, 交通与发展政策研究所(ITDP) 中国办公室, 非机动车交通和城市发展项目工程师

### Can expressways get people cycling again?

Chinese cities are building bicycle expressways but cyclists need more than dedicated lanes

□ Deng Han

The bicycle has seen a dramatic fall in popularity in China in recent decades. In the period 1978-1996, it's estimated that 45% of urban commutes were on two wheels, declining to 35% between 1995-2002, and to 10% in big cities in later years.

But some Chinese cities are now trying to stop this decline by building dedicated cycle lanes to encourage people to get on their bikes again. These new expressways allow riders to commute quickly whilst protecting them from car users and other traffic on bustling roads.

China's first elevated bike lane and the world's longest at 7.6-kilometres is the Yunding road bicycle expressway in the south-eastern province of Fujian, which is now a little over a year old.

What's special about Xiamen's expressway is that it is fully elevated, segregated from other traffic, and off-limits to pedestrians, electric bikes and three-wheelers. This makes it the first piece of infrastructure in China aimed solely at cyclists.

The expressway uses space below the elevated roads of Xiamen's Bus Rapid Transport. It sits five metres above

ground and has two lanes, each 2.5 metres wide. It connects numerous residential areas, important public buildings, parks and schools.

By July 2017, 410,000 journeys had been made on it, an average of 4,000 a day, according to its builders. The busiest day saw 12,000 trips. In November 2017, it was awarded the China Residential Environment Prize.

#### Backpedalling

The idea of bicycle expressways originated in the United States and Europe, but Chinese cities have become a lot more interested in them following years of urban planning that has focused on cars and mass transit.

In 2013, the housing ministry published guidelines for planning pedestrian and bicycle infrastructure, which discussed bicycle expressways for the first time.

Xiamen's expressway is China's first attempt at this type of infrastructure. As there were no regulations in place to guide its construction, the local government referred



The Xiamen bike expressway is fully elevated and off-limits to pedestrians, electric bikes and three-wheelers

to overseas research and consulted with international organisations before putting together China's first technical standard and management norms.

#### Uncertain benefits

Bicycle expressways can undoubtedly rival other forms of transport for speed. Tests by the Institute for Transportation and Development Policy found that elevated expressways free of intersections, traffic lights, pedestrians, bus stops and parked cars, allow bikes to travel at 25-30 kilometres an hour – faster than the average speed of cars during rush hour in ten of China's most congested cities.

But Xiamen's all-elevated expressway has also caused controversy because of its high cost and low utilisation. ITDP found the raised expressway in Xiamen was used less than bike lanes at ground level, which are open to electric bikes. This may be because the expressway is still being developed and does not cover all locations that people want to commute to. The closed-off nature of bike expressways does not always meet the need for short and medium-distance point-to-point journeys.

It may also take time for people to become familiar with the new infrastructure and be willing to use it in different types of weather. There is also a lack of high-level government support for such infrastructure, meaning cities have been on their own to plan and construct them.

#### International experience

As Chinese cities embark on more bicycle expressways, it's hoped that schemes in the US and Europe can help inform best practice. Expressways are normal in many bike-friendly cities and countries: London has Cycle Superhighways, Holland its F25 High-Speed Cycle Route, Germany the RS1 bicycle highway, and in Bogota, Colombia, there is the Juan Amarillo Greenway.

What's clear is that the most important feature of a bicycle expressway is exclusive road rights – a physical separation from other forms of transport to avoid interference and ensure safe travel at speed. When overlap is unavoidable, such as at junctions or river and rail crossings, traffic lights specifically for bikes are put in place or tunnels are built. Also, the road surface should allow for

comfortable and convenient journeys. The smoothness of the road surface, gradients, and the number of points the expressway reaches all need to be considered.

But if the bicycle is to make a return to our cities, expressways aren't enough – a complete bicycle transportation system is needed.

The point of promoting bicycle expressways is, after all, about getting more people to use bikes and other green transportation options, reducing urban congestion and pollution, increasing the vitality of urban spaces and bringing about healthy and more sustainable urban development.

#### Capillary lanes

China's guidelines for the design of pedestrian and bicycle infrastructure define "exclusive" bike lanes and three classes of shared bike lane. The problem is that cities are focusing on lanes that give greater priority to bikes when they need to focus more on "capillary" bike lanes that provide access to communities and businesses. It is often here that a lack of space, lack of road rights and illegal occupation of roads creates chokepoints for bicycles, which puts people off from cycling.

A complete bicycle transportation system also needs comprehensive support at the strategic planning level. Denmark, which is recognised as a global leader in this area, has a population of about 5.6 million people – and 4.5 million bikes. In fact, 20% of commutes in Denmark are made by bike. According to research by the China Academy of Urban Planning and Design, the elevation of bicycle transport to the level of a national strategy was essential to create these conditions, despite the impact on motorised transport.

That national strategy included three targets: the use of the bicycle for easier journeys and a cleaner environment; enjoyable and healthier lives and new experiences; safe trips to school, and enjoyable journeys and a better transportation culture. The strategy was comprehensive, covering urban planning, infrastructure, bicycling culture, operations and maintenance, public participation and financial incentives. Alongside focusing on infrastructure, Chinese cities must bolster systematic research and planning like this if they are to bring about an increase in bicycle usage.

Bicycle expressways are appearing all over China. In 2016 Beijing started looking into an expressway between Huilongguan and Shangdi, site of the Zhongguancun Software Park. Plans have now been approved and the expressway is due to open in 2018. In 2017 Guangzhou started looking at ideas for dedicated bike lanes and Chengdu has started planning a 100-kilometre expressway through its greenbelt, which would allow travel as fast as 60 km/h.

The mayor of Bogota, Enrique Penalose, once said that bike lanes show that the person on a \$30-dollar bike is as important as the person in a \$30,000 car. It is hoped that bicycle expressways like that in Xiamen and the newly popular shared bike schemes, will bring bikes rolling back in to the cities and change car-centric attitudes. Getting people back on bicycles can restore China's reputation as the "Kingdom of Bicycles". ©

Deng Han is NMT (non-motorised transport) and urban development program engineer at the Institute for Transportation and Development Policy's China office.

### 特高压输电:热潮后的冷思考

特高压线路曾经被奉为远距离电力输送的成功解决方案, 而如今中国在这方面的热情开始减退。

□埃徳蒙・唐尼

国是全球特高压(UHV)输电线路的测试场。相比于过去常见的高压线路,特高压技术在超远距离电力输送方面效率高得多。

自 2006 年以来,中国已经累计建设了19 条这样的输电线路,每条价值数十亿美元,总长度近 3 万公里,供应全国 4% 的电力需求。相比之下,世界上还没有任何其他国家拥有一条完全商业运营的特高压线路。

但是,中国对特高压的热情开始 减弱。电网公司与中央和地方政府之 间存在利益冲突,这项技术本身也表 现不佳,最近的一些项目更是因电力 产能过剩而陷入窘境。

这意味着新输电线路的获批速

度开始放缓,而电网企业也不大可能 完成新建目标。

### 特高压线路建设的 宏伟规划

中国的煤炭、水电、风能和太阳能资源都集中在内陆,而能源需求却高度集中在城市化的东部沿海地区。因此,中国的电网企业希望通过特高压项目解决电力远距离输送问题。

如果采用普通的高压输电线, 长途运输过程中要损失大量电力。 而特高压线路的好处是可以大幅降 低这种损失。 中国目前采用的特高压线路有两种。第一种是特高压直流(UHVDC)线路,适合两地距离超过1000公里的输电项目;第二种是特高压交流电(UHVAC)线路,更适合稍短的距离但可在沿途留有分支链路。

电网公司一直在积极推动这项技术。其中,经营区域覆盖中国 88%的领土面积的国家电网公司对此尤其感兴趣。其 2013-2020 年建设计划显示,该公司计划在 2013 年前建设6条特高压交流电线路、13条特高压直流电线路,并在 2020 年前建设10条特高压交流电线路、27条特高压直流电线路。仅在内蒙古,国家电网公司就提出要在 2020 年前建设11

条覆盖全区煤炭和可再生能源热点 地区的特高压线路。

但是相关项目的推进却非常缓 慢,而且也几乎没有分析人士认为 国家电网能够顺利实现其 2020 年目 标。实际上, 国家电网的特高压交流 电宏伟目标的核心工程——全国特 高压骨干网计划似乎近期也不太可 能实现了。

### 争议四起的特高压项目

虽然国家电网的特高压计划壮 志满满,但是无法始终与中央和各 省级政策制定者保持步调一致。

在这个骨干网的问题上, 中央 官员的意见与国家电网产生了冲突。 国家电网曾计划通过建设"三纵三 横一环网"的特高压交流电网,将 所辖几个地区连成一张电网。但是, 中央官员担心,这种互联互通的超 大型电网可能会造成全国性大停电 的连锁反应。分析人士认为, 国家电 网暂时搁置了这个骨干网计划,将 发展重心放在各电网内部的特高压 交流电线路建设上。

与此同时,由于电力需求增长 放缓,内陆地区特高压直流输电线 路建设的经济效益也开始下降。

全国电力需求平均增速已经从 2003-2012 年间的 11.7% 下降到了 2012-2017年间的4.5%, 其中2015 年最低,仅有0.5%。来自《彭博社

新能源财经》的数据显示,需求增 速的下降加剧了中国电力行业产能 过剩的问题,其中2016年产能过剩 更是高达35%。

产能普遍过剩意味着对新建输 电项目的需求也会相应减少。

2014年,《国家能源局关于加快 推进大气污染防治行动计划 12 条重 点输电通道建设的通知》发布。根 据该计划,中国将在2018年前完成 九条特高压线路的建设。国家能源 局官员在2017年12月表示,该计 划"能够满足2020年前中国主要用 电地区的电力需求。"

因此, 近来新建特高压项目(完 成建设需三至四年)的批复速度一 直较慢,这是意料之中的。其中, 2016年仅有一个项目获批,2017年 只有两个。

### 紧张的地方关系

某些计划开展特高压项目建设 的地区政府对其也持有怀疑态度。

相比于从其他省份进口电力, 建设自有电厂可以增加各省的国内 生产总值、就业机会和收入。因此, 即使新输电线路有中央政府的支持, 有时也无法被各省接受。

比如,四川特高压直流4号输 电线路计划将四川的水电输送到江 西省,并被正式列入"十三五(2016-2020"规划。但是国家能源局的官

员去年秋天指出, 江西不想要这些 电力。2018年, 江西将有多个火电 厂并网发电, 所以他们想把新的输 电线路建设推迟到 2025 年之后。与 之类似,在商谈了多年后,湖北省仍 不愿接受来自西北地区的远途输电 线路项目。

### 令人失望的收益

电网公司谨慎对待特高压线路 是有自己的理由的。这些大型项目的 收益取决于其可传输的电量。但是现 有线路的利用率低于预期, 其中非水 电线路利用率低的问题尤其明显。

此外,特高压对缓解中国内陆可 再生能源弃电问题的影响也令人失 望,从而更加削弱了投资的理由。所 谓"弃电"指的是由于电网消纳能力 不足或煤电配额挤占等原因无法入网 而被浪费的电力资源。

中国的特高压线路同时输送风 能、太阳能和煤电,而煤电目前仍然 是中国主要的电力来源。但是,只需 占用一小部分特高压线路输送能力就 能将大量的可再生能源从内陆输送至 沿海市场,这是特高压技术支持者积 极推动这一技术推广的一大原因。

然而,特高压技术在经过了十年 的发展之后,中国的可再生能源弃电 水平仍然高居不下, 西北地区尤为明 显。2017年,全国平均弃风、弃光率 分别为 12% 和 6%, 比 2016 年略低几

相比于从其他省份进口电力,建设自有电厂可以增加各省的国内生产总值、就业机 会和收入。因此,即使新输电线路有中央政府的支持,有时也无法被各省接受。

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个百分点。中国仍存在着提高的空间; 在欧洲,风电占比较高国家的弃风率 却一直低于 5%。

环境研究人员达林·麦基和地理学家汤马斯·亨尼格的分析显示,2015年云南的弃电总量可能达到950亿千瓦时,是公布的弃电量的六倍还多,相当于葡萄牙和新加坡两国一年的用电量总和。

### 落后的风能和太阳能

2016年,特高压线路成功输送 可再生电力1725亿千瓦时,占全国 用电总量的3.2%。然而,其中93% 的电量都来自五条水电专用线路。

中国的一些非水电输电线路的可再生能源输送量低于支持者的预期。根据《财新能源》对于国家电网相关专家的引述,在同时输送煤电和可再生能源电力的目标占比应为 30%。至少在 2016年的部分时间里,有三条这样的线路在运营,但他们的表现不均衡。其中,宁东 - 浙江和哈密南 - 郑州两条线路的可再生能源电力占比分别为 29% 和 23%,而锡盟 - 济南线路没有输送任何可再生能源电力。

浙北-福州线最初的规划是输送核电和风电,但2016年并没有输送任何风电。至于该线路后来是否开始输送风电,尚无相关报告,但该线路已经开始输送煤电。

希望这些问题都只是暂时的。 2017年启动的一条非水电特高压输 电线目前实际输送的是煤电,因为 当初规划的可再生能源配套项目出 现了延期。好在总体来说,中国首批 特高压输电线在首个五年运作期内 已经实现了总输电量的大幅提升。

自 2016 年中期以来,多条新建可再生能源特高压输电线路相继并网。2017 年前九个月,弃风弃光率出现了显著下降。

但是,新增特高压直流项目的空间正逐渐缩小,这也成为了西部省份一直担心的一个问题。长距离输电基础设施的建设可能跟不上快速增长的可再生能源供电需求。

### 深化电力产业改革

中国内陆地区的弃风弃光现象 当然不能只怪特高压输电线路。其 实,中国电力行业正面临着一系列 更广泛的挑战,而这也是 2015 年开 始的电力改革的重点内容,其中就包括几个专门针对特高压问题的措施。但是要想妥善解决特高压线路建设面临的诸多阻碍,就必须进行更为全面的电力系统改革。

其中包括:1) 电力交易市场改革,让沿海省市能够从内陆地区(当然也包括从本地)快速购买电力;2) 采取措施,提高长距离清洁能源相对于当地煤电资源的竞争力;3) 通过改革,减少中央和省级政府在电网规划方面的争端。

如今,改革才刚刚开始。虽然中国对发展特高压输电线路的热情在消退,但是这种技术仍然会在中国可再生能源转型中发挥关键作用。而电力部门改革的成功与否,将决定这项技术在中国的可再生能源转型过程中会发挥怎样的作用。⑤

埃德蒙·唐尼,云南大学中美富布莱特项目 学者

### Power line plan in trouble

Celebrated as the answer to long-distance electricity transmission, China's enthusiasm for UHV lines is weakening

□ Edmund Downie



Pervasive overcapacity means there is less need for new transmission projects

China is the global test bed for ultra-high voltage (UHV) transmission lines, a technology that can carry electricity across vast distances with much greater efficiency than the high voltage lines that you're probably used to seeing.

Since 2006, it's built 19 of these multi-billion-dollar lines, stretching almost 30,000 kilometres and supplying 4% of national electricity demand. For comparison, no other country has a single UHV line in full commercial operation.

But China's enthusiasm for UHV is waning. The technology is beset by conflicts of interest between grid companies and central and local governments. The lines themselves are underperforming, and more recent projects are coming online amid a period of electricity generation overcapacity.

This means that approvals for new lines have slowed, and grid companies are unlikely to meet their targets for new ones.

### Big plans

Chinese grid companies have pursued UHV projects to solve a logistical dilemma: coal, hydro, wind, and solar resources are concentrated in the interior, but the heaviest energy demand is along the urbanised east coast.

In normal high voltage lines, a lot of the power is lost as it's moved across China's enormous terrain. The benefit of UHV lines is that they have dramatically reduced losses.

China has deployed two types of UHV line. Direct current (UHVDC) lines suit transmission from A to B over distances of more than 1,000 kilometres; whereas alternating current (UHVAC) lines work better over slightly shorter distances but permit branching links along the way.

Grid companies have been keen adopters, with State Grid, which covers 88% of China's territory, especially interested. Its 2013-2020 construction plan envisioned six AC and 13 DC lines by 2013, and 10 AC and 27 DC lines by 2020. In Inner Mongolia alone, company officials spoke of 11 lines running from the province's coal and renewable hotspots by 2020.

But rollouts have slowed, and few analysts expect State Grid will deliver on its 2020 target. In fact, its national UHV backbone scheme, which is the centrepiece of its UHVAC ambitions, looks unlikely to happen anytime soon.

### Sparks fly

State Grid's UHV plans suggested remarkable ambition, but did not always align with those of central and provincial policymakers.

Central officials have clashed with State Grid planners on its backbone scheme, which envisions a lattice of six UHVAC lines to synchronise grids that are currently in State Grid's territory. But officials worry about nationwide blackouts cascading across these interconnected grids.

Analysts suggest that State Grid has shelved the backbone plan for now and is focusing on UHVAC lines within individual grids instead.

Meanwhile, the economic case for new UHVDC lines from the interior has weakened amidst slowing growth in electricity demand.

National demand growth averaged 11.7% from 2003-12 but fell to 4.5% in 2012-17, bottoming out at 0.5% in 2015. This drop has deepened overcapacity in China's power sector, which according to Bloomberg New Energy Finance was 35% in 2016.

Pervasive overcapacity means less need for new transmission projects.

China's "Priority Transmission Lines for Air Pollution Prevention", a scheme announced in 2014 that included the construction of nine UHV lines, is set for completion this year. National Energy Administration (NEA) officials said in December 2017 that this scheme "can satisfy electricity demand for the country's main power consumption regions before 2020".

Unsurprisingly, then, approvals for new UHV projects – which take 3-4 years to construct – have been slow, with just one project approved in 2016, and two in 2017.

#### Local tensions

Certain regional governments targeted for UHV projects have also been sceptical.

Provinces get larger boosts to gross domestic product (GDP), employment, and revenue from building their own power plants rather than importing power from other provinces. Even new lines with central government backing have sometimes failed to get provincial acceptance.

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Central officials have clashed with State Grid planners on its backbone scheme.

For example, the UHVDC Sichuan Number Four line would take Sichuan hydropower to Jiangxi province, and was singled out for construction in the 13th Five-Year Plan (2016-2020). But as NEA officials noted last autumn, Jiangxi does not want this power. The province is bringing more coal-fired power plants online in 2018 so wants to delay the new line until after 2025. Hubei province is also reluctant to accept long-debated new lines from north-west China.

### Disappointing gains

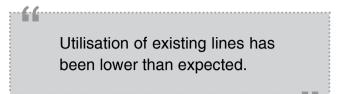
Grid companies have their own reasons for being cautious about new UHV lines. Revenues from these mega-projects depend on the amount of power they can transmit. But utilisation of existing lines has been lower than expected, with non-hydro lines performing particularly badly.

What's more, the impact of UHV on renewable energy "curtailment" in inland China has also been disappointing, undermining the case for investment. Curtailment refers to energy that never reaches the grid and is wasted, for reasons including a lack of transmission capacity or quotas for coalpower consumption.

China's UHV lines transmit wind and solar power in combination with coal power, which remains the major electricity source. Nonetheless, even a minority share of UHV transmission capacity can still take sizeable loads of renewables from China's interior to coastal markets. Backers of UHV lines have jumped on this point when championing the technology.

Yet after a decade of UHV development, renewable curtailment levels remain high, especially in north-western regions. National curtailment rates in 2017 were 12% for wind and 6% for solar, several percentage points below their 2016 peaks. Still, China has room for improvement; in Europe, curtailment rates in countries with high levels of wind-power production have been consistently below 5%.

Analysis by environmental researcher Darrin Magee and geographer Thomas Hennig suggests that in 2015, curtailment in Yunnan reached 95 terawatt hours (TWh) - more than six times the reported rate, and enough to power Portugal and Singapore combined for one year.



### Lagging wind and solar

UHV lines successfully transported 172.5 TWh of renewable energy in 2016, or 3.2% of national power consumption. However, 93% of that power came from five lines used for hydropower only.

Some of China's non-hydro lines have relied less on renewables than supporters had hoped. Caixin Energy reports that, according to experts at State Grid, renewable shares in lines planned to take a coal-renewable mix should target 30%. Three such lines were in operation for at least part of 2016. Their performance was uneven. Ningdong-Zhejiang carried 29% renewables, and the Southern Hami-Zhengzhou line's share was at 23%, but Ximeng-Jinan took none at all.

The Zhebei-Fuzhou line was framed initially as a vehicle for nuclear and wind consumption but did not take any wind in 2016. Reports are unclear on whether it has since added wind to its power mix – though it has added coal.

It is hoped that these shortfalls will be temporary. One non-hydro UHV line that launched in 2017 has been relying on coal because the renewable projects planned to accompany it faced construction delays. Overall transmission volumes increased significantly for China's first UHV lines in their initial five years. Several new UHV lines that take renewables have also come online since mid-2016.

But the shrinking space for new UHVDC projects is a persistent concern for Western provinces, where rapid capacity additions in renewable energy has left longdistance transmission infrastructure struggling to keep pace.

#### Power sector reforms

UHV is certainly not solely to blame for renewable curtailment problems in the interior. They point to a wider

### 环境新视野 New takes on global environment

set of challenges facing China's power sector, which are the focus of reform initiatives launched in 2015. These reforms have included some UHV-specific measures. But many hindrances to the development of UHV lines are best addressed through more comprehensive power sector reforms.

These include power trade markets to make it easier for coastal provinces to buy power from the interior (and locally) at short-notice; measures to strengthen the competitive position of long-distance clean energy against local coal plants; and reforms to reduce disputes around grid planning between central government and provinces.

These reforms are at an early stage. But while enthusiasm for UHV in China is fizzling, the technology will still have a role in the country's renewable transition. How successful the reforms are will determine what kind of a role that is. ©

Edmund Downie is a Fulbright scholar at Yunnan University.

### 清洁技术革命必须摆脱破坏性采矿

清洁能源不可或缺的"技术金属",其生产过程隐含着惊心动魄的环境和社会正义问题。

□ 朱莉·科林格

大 "技术金属"(包括稀土元素、锂、铌和钶钽铁矿石)需求量将大幅上涨的预期引发了国际社会对拉美一些标志性地区发展命运的激烈辩论。

遥远的亚马逊、玻利维亚高地以及墨西哥的索诺拉沙漠不仅拥有丰富的文化和生物多样性,而且享受着大自然赋予它们的地质馈赠。有人估计,拉丁美洲拥有的技术金属元素总储量为5000万吨,约占全球已知供应量的40%。

技术金属的开采带来了一个难题:以当地的环境和民众生计为代价采掘可以推广清洁能源技术的资源,是否值得?

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数据来源:美国地质调查局《矿产品概要》、《金融时报》、巴卡诺拉矿业。根据美国地质调查局的数据,巴西的锂储量虽然不大,但拥有全球95%的铌储量和18%的稀土储量

之所以被称为技术金属,是因为它们是发展现代技术的必要条件,是清洁能源技术转型不可或缺的组成部分。矿业公司的作业方式就跟他们所要开采的地形一样多种多样。全球各地的矿业公司争先恐后地赶到阿根廷、智利、玻利维亚和墨西哥,将那里的锂资源开采出来,用于生产电动汽车、风力涡轮机和其他技术所必需的电池。他们几乎丝毫不会考虑当地居民的长期生计安全。

几十年来,位于巴西内陆米纳 斯吉拉斯州经认证的铌矿一直是全 球节能汽车、钢结构和飞机所使用 的超合金的最主要来源。哥伦比亚 民间开采的钶钽铁矿是生产移动电 话的关键原材料,而一些小型采矿 合作社则满心期待地指望靠那些据 说蕴藏在巴西亚马逊冲积粘土矿床 中的稀土元素大赚一笔。

### 不划算的买卖

许多情况下,推动清洁能源转型的技术组件是在中国等美洲以外的地方生产的。也就是说,原始材料或微加工的材料从拉美的土层中开采出来后,被运往东亚的外资工厂,随后再以电池、太阳能电池板、磁铁和信息技术的形式出口。

有时候,这些组件会在东南亚的 组装厂(例如向电动汽车制造商特斯 拉出售机电元件的新加坡安特工程有 限公司经营的工厂)稍作加工,随后 发往世界上较富裕地区的消费市场, 包括拉丁美洲的主要大都市。

拉丁美洲作为原材料出口方和 制成品进口方,导致该地区的经济体 成为了贸易关系中不利的一方,其出 口价值始终低于进口商品的价值。

这一全球背景很重要。尽管中国对南美技术金属的直接需求最受关注,但这背后的推动力其实是全球对清洁能源和信息技术的需求。这些技术的生命周期还远没有达到完全清洁。但这不应被解读为反对推广清洁能源技术的论据。早在20年前,人类就应发展清洁能源了。此外,石油炼化、稳定核反应堆以及水力发电也需要这些金属。

### 气候变化不是 疯狂采矿的理由

为确保清洁能源的生产过程是 真正清洁的,人类需要改变资源开 采的现状。这一变革必须由开采所 在地的社会牵头,并得到国际社会 的支持。

这是一项艰巨的任务,尤其是 因为国际公司、民选官员、主要金 融机构和小型非正规勘探者中间居 然还有人对到 21 世纪的"黄金国" 大赚一笔的神话深信不疑(欧洲殖 民探险家深入南美洲的未知区域所 寻找的传说中拥有巨大财富的神秘 国度,就是受这个传说所鼓动)。重要的是,技术金属往往被比作黄金(白色的黄金、新的黄金、或者 21世纪的黄金)的原因在于它反映了一种快速致富的心态,以为只有最大胆的人才能获得全球最重要、也最具标志性的环境之下蕴藏的无尽宝藏。快速开发被认为是解决国家发展、全球气候危机、区域稳定等诸多问题的方法。

这些都是"黄金国"传说的现代版本。民选官员将满足中国的资源需求作为促进繁荣的关键,以此彰显其重要性。而他们提出的大多数方法像极了20世纪的绿地采矿项目。这种项目为了开采矿产,必须砍伐森林,抽干池塘水,并且将原住民从他们祖先留下的土地上迁离。

从巴西到玻利维亚再到墨西哥,破坏性采矿最极端的拥护者宣扬一种极为扭曲的民族主义观点:任何试图阻止对重要环境大规模破坏的举动,都是对国家发展主权的冒犯。小规模采矿者抓住了这种情绪,把自己定位成站在国家进步最前线、最具探险精神的冒险家,时刻准备着为了推动国家发展,开辟新的地方,寻找新的资源。再加上为了抗击气候变化,技术金属的需求日益增长,现代版"黄金国"传说的吸引力也一如既往地强大。

而这中间往往存在着不可避免 的冲突:全球推动清洁技术普及的

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全球推动清洁技术普及的行动固然值得称道,但技术金属矿床所在地农村和原住民的生计遭到破坏而带来的不幸代价也在逐渐显现。这是一种常见的以强敌弱的场景。

行动固然值得称道,但技术金属矿床所在地农村和原住民的生计遭到破坏而带来的不幸代价也在逐渐显现。这是一种常见的以强敌弱的场景,其潜含义就是,为了提供更加清洁的能源技术所需的原材料以维持气候,人类将不得不摧毁一些环境;并且让脆弱的社区承受代价。

然而,越来越多的研究表明,打 破固有的商业模式不仅有利于当地 的生计,而且对整个星球的福祉也 有益处。生态系统与农村和原住民 社区之间是相生相息的关系,它对 维持地球气候的稳定至关重要。

这就加深了这个问题的难度:如果气候稳定是最终的目标,清洁技术是实现这一目标的手段,那技术金属就是必不可少的。清洁技术的推广对减缓和适应气候变化至关重要,但如果采购技术金属的社会和环境成本会加剧气候变化,那要怎么办?

### 技术进步或可打破矛盾

幸运的是,灵活采矿("传统" 矿石和含金属的废料共同治炼)、尾 矿再处理、以及利用电子废弃物循 环和回收技术金属等方面取得了令 人振奋的突破, 让未来的矿业企业 摆脱社会和环境暴力成为了可能。

南美洲的研究人员和企业正在 引领这方面的发展,有时他们独立 开展研究,有时则与北美、欧洲和 中国的研究人员展开合作。南美大 陆上遍地都是早年间开采铁、铝、 金、银、铌和磷酸盐等矿产时留下 的废料,里面含有丰富的技术金属。 对这些废料进行再处理有三重好处, 即减少现有的污染来源,保护敏感 地区免受新的采矿作业的破坏,同 时满足日益增长的全球需求。

这些进程必须由南美洲的政府及 社会实体主导,并获得世界其他地区 消费经济体的支持。坏消息是,因为 现有的采掘利益很难撼动,所以建立 一个更加公正可持续的资源开采模式 还面临着相当大的阻力。这一部分是 因为大规模采矿活动服务于更广泛的 地缘政治利益,一部分是因为小规模 采矿者很难被取代,还有一部分是因 为市场总是传递出一味看重低价、不 管环境影响的讯息。所有这些因素把 殖民时代的市场传递机制又带到了今 天,全球精英们以拉丁美洲的自然环 境和民众生命为代价,满足其对资源 和技术的需求。 好消息是,替代模式已经日渐成型,它们需要的是政策支持。每个人都可以发挥作用,协调全球利益,推动清洁能源技术整个生命周期的"绿色化"。拉美经济体可以支持并推广先进的回收方式,制裁危害重要环境和生命的大、小规模采矿者,同时投资增值加工,促进国内收入的增加。

对中国而言,这意味着分享环境修复方面的专业知识,防止其在拉美的采矿前沿再次出现环境灾难。对包括技术公司及其分包网络在内的全球主要市场参与者而言,这意味着要让供应商负起责任,坚持社会和环境方面的良好实践。

确保清洁能源技术在整个生命 周期中做到真正的清洁,对于建设 可持续的未来至关重要。⑤

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朱莉·科林格著有《稀土前沿:地面之下到 月球之上》,由康奈尔大学出版社出版。

艾弗里·霍尔对本文亦有贡献。

### Mining needs clean tech

Recycling and recovering rare earth metals could limit the social and environmental costs of destructive mining

□ Julie Klinger



Bolivians have mined salt on the Salar de Uyuni lake for generations. It is now a site of lithium extraction

The anticipated spike in demand for "technology metals", including rare earth elements, lithium, niobium, and coltan, has ignited fierce debates over the development destiny of some of Latin America's most iconic places.

The remote Amazon, the Bolivian highlands, and the Sonoran desert in Mexico are rich in culture and biodiversity on the one hand, and in geological endowments on the other. Some estimates put Latin America's combined reserves of these elements at 50 million tonnes, or roughly 40% of known global supply.

Mining technology metals presents a conundrum: is the sacrifice of local environments and livelihoods a fair price to pay for the proliferation of clean energy technologies?

They're called technology metals because they're essential for modern technology and indispensable to the clean energy technology transition. The practices of mining companies are as diverse as the landscapes they excavate. Mining companies from around the world have hastened to mine the lithium in Argentina, Chile, Bolivia, and Mexico to produce the batteries essential for electric cars, wind turbines, and other technologies, with little regard for the long-term livelihood security of the people who live in these places.

For several decades, Brazil's certified niobium mine in the interior state of Minas Gerais has supplied most of the world's energy efficient vehicles, steel structures, and airplanes with these super-alloys. Coltan, informally extracted in Colombia, is a crucial input into mobile phones, while several small-scale mining cooperatives have high hopes for the rare earth elements believed to be in the alluvial clay deposits of the Brazilian Amazon.

#### Poor trade terms

In many cases, the components for the technologies that will power our clean energy transition have been produced outside of the Americas, in places like China. This means that primary or minimally processed materials have been pulled from the subsoils of Latin America, shipped to factories operated by foreign companies in East Asia, and then exported in the form of batteries, solar panels, magnets, and information technologies.

In some cases, these components make intermediate stops in assembly facilities in Southeast Asia, such as those operated by Interplex Holdings in Singapore, which sells electro-mechanical components to electric vehicle (EV) manufacturer Tesla, before hitting consumer markets in more affluent parts of the globe, including in Latin America's major metropolises.

Latin America's position as exporter of raw materials and importer of finished technologies traps these economies in a dynamic of declining terms of trade, where the value of



their exports is consistently lower than the value of their imports.

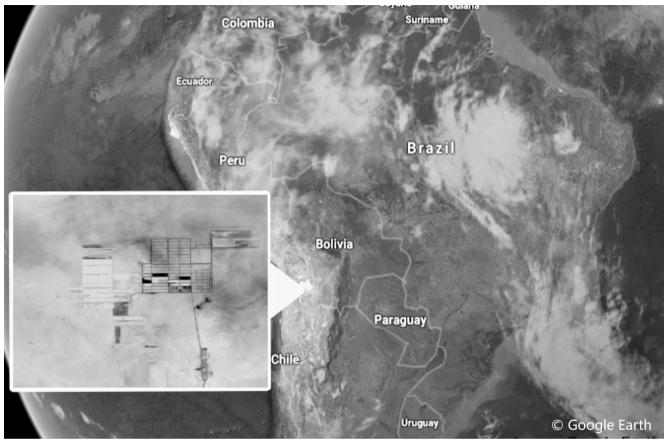
This global context is important. Although China's direct demand for South America's technology metals grabs headlines, it is driven by global demand for clean energy and information technologies. This means that the lifecycles of our technologies are far from clean. This should not be interpreted as an argument against the widespread deployment of clean energy technologies, which should have happened two decades ago. These elements are also used to refine petroleum, stabilise nuclear reactors, and generate hydropower.

#### False choice

Ensuring that clean energy generation is truly clean requires a shift in the status quo of resource extraction. It must be led by societies in which extraction is taking place and supported by the international community.

This is a tall order, not least because myths of hitting it big with a 21st century El Dorado – a mythical place of great wealth that drove European colonial explorers ever deeper into South America's uncharted lands - remain surprisingly pervasive among international firms, elected officials, major financial institutions, and small-scale, informal prospectors. It is significant that technology metals are often compared to gold – white gold, the new gold, or 21st century gold – because it reflects a get-rich-quick mentality in which only the boldest will capture untold treasures lying beneath some of the most important and iconic environments of the world. Rapid exploitation is seen as the solution to so many problems: national development, the global climate crisis, regional stability, to name a few.

These are the contemporary variants of the El Dorado



A lithium plant on Bolivia's iconic Salar de Uyuni, visible via satellite

myth. Elected officials invoke the importance of satisfying China's resource demand as the key to greater prosperity. The methods proposed overwhelmingly resemble 20th century greenfield mining projects, in which forests must be felled, ponds drained, and indigenous people removed from their ancestral lands to get the goods.

From Brazil to Bolivia to Mexico, the most extreme advocates of destructive mining deploy a particular nationalistic twist: any cause that attempts to stop the wholesale destruction of vital environments is an affront to the nation's sovereign right to develop. Small-scale miners have seized on this sentiment, positioning themselves at the front lines of national progress as the most risk-ready adventurers prepared to penetrate new places and find new resources to power national development. Taken together with growing demand for technology metals to combat climate change, the contemporary El Dorado myth is as powerful as ever.

Too often, this is presented as an inevitable conflict: laudable global moves toward clean technology deployment have the unfortunate cost of literally undermining rural and indigenous livelihoods unfolding atop the technology metals deposits. This common David-and-Goliath framing tacitly accepts that some environments will have to be destroyed to provide the raw materials required for a more clean energy technology to sustain the climate, while also leaving it up to vulnerable communities to fend for themselves.

However, a growing body of research shows disrupting business as usual is not only in the interest of local livelihoods, but also broader, planetary wellbeing. The ecosystems that sustain, and are sustained by, rural and indigenous communities are vital to maintaining larger global systems of climate stability.

This deepens the conundrum: if climate stability is the ultimate goal, and clean technologies are the means to that end, then technology metals are indispensable. The proliferation of cleaner technologies is essential to climate mitigation and adaptation. But if the social and environmental cost of sourcing them aggravates climate change, then what is to be done?

### Flexible mining

Fortunately, exciting breakthroughs in flexible mining (the practice of smelting metal-bearing wastes with "traditional" ores), tailings reprocessing, and recycling and recovering technology metals from electronic waste promises a future of mining that leaves the social and environmental violence of the enterprise in the past.

Researchers and firms in South America are pioneering these developments, sometimes independently, other times in partnership with researchers in North America, Europe, and China. Technology metals are abundant in the existing mine wastes that dot the continent from earlier eras of iron, aluminium, gold, silver, niobium, and phosphate extraction. Reprocessing these wastes would have the triple bonus of reducing existing sources of pollution and protecting sensitive areas from new mining operations while meeting growing global demand.

Public and private entities in South America must lead these processes, and consuming economies in the rest of the world must support them. The bad news is that there is considerable resistance to a more just and sustainable model of resource extraction because existing extractive interests are difficult to dislodge. This is in part because large-scale mining serves broader geopolitical interests; in part because of a lack of alternatives for small-scale miners; and in part because of persistent market signals that accept only the

lowest price, regardless of environmental impacts. All of this brings colonial-era dynamics into the present, in which global elites satisfy their resource and technology needs at the cost of Latin American landscapes and lives.

The good news is that alternative models are already being developed. What they need is policy support. Everyone has a role to play in coordinating interests across global space to "green" the entire lifecycle of clean energy technologies. Latin American economies can support and expand cutting-edge recovery practices, sanction large and small-scale miners who harm vital landscapes and lives, and invest in value added processing to generate more revenues at home.

For China, this means sharing expertise in environmental remediation in order to prevent the recurrence of environmental disasters on its mining frontiers in Latin America. For major global market players, including technology firms and their subcontracting networks, this means holding their suppliers accountable for socially and environmentally sound practices.

Ensuring that clean technology is truly clean through the course of its entire lifecycle is essential to building a sustainable future. ⑤

This article is republished from Díalogo Chino

Julie Klinger is the author of Rare Earth Frontiers: From Terrestrial Subsoils to Lunar Landscapes, available via Cornell University Press.

Avery Hall contributed to this article.

# 中国绿色债券发展引发国际投资者关注

中国蓬勃发展的绿色债券市场正在向国际投资者张开怀抱。

□ 王 遥 蒂亚斯·隆德·拉森



为了促进绿色债券市场进一步发展,中国正着力改善国际投资者的准入渠道

**2017** 年,中国绿色债券 发行量占全球总量 的三分之一,迅速成为全球绿色金融领域的领跑者。绿色金融是一个

相对年轻的领域,它主要关注与可持续发展业务相关的金融产品。

然而,2017年中国金融机构发 行的386亿美元的绿色债券中,绝 大多数面向的都是国内市场,国外发行量仅有66亿美元。为了促进绿色债券市场进一步发展,中国正着力改善国际投资者的准入渠道。

### 为何发展绿色债券

近年来,为实现可持续发展,越来越多的企业转向绿色债券市场。对于企业来讲,可持续发展需要投资,而投资就需要举债,这可以通过发行债券来实现。绿色债券与传统债券的不同之处在于,公司只能将募集的资金用于可持续发展项目。

2015年以来,利用绿色债券筹资就一直是中国经济绿色发展的重要组成部分。在绿色债券的助力下,企业进行了生产设备升级,降低了生态足迹;城市对基础设施进行了电气化;融资机构可以筹集资金,为那些有望将创新型绿色技术推向市场的中小型企业提供资金支持。

### 对外开放

为继续促进绿色债券的发展,中国如今将目光投向了国际市场。这是因为未来几年,中国每年需要约3-4万亿元的绿色投资。同时,国际投资者对绿色资产也表现出浓厚的兴趣:2017年6月的民调显示,欧洲有38%的投资官表示他们已参与了绿色债券市场,有50%表示出对可再生能源的兴趣。

换句话说,中国的绿色债券供 不应求,尤其从长远看,更是无法满 足国外的需求。

但是, 众所周知, 中国的金融市场极为封闭, 因为政府对货币政策和人民币汇率有所控制。

但是我们的分析显示,中国对 金融市场的管控已经有所放松,预 示着中国的绿色债券将会进一步对 国际投资者开放。

### 绿色金融成为"新潮流"

尽管中国绿色债券市场规模有限、发展时间不长,但根据国际清算银行、汇丰银行和法国外贸银行的研究,相比于传统市场,投资者在绿色市场中可获得更高的安全性和收益。

对中国某些地区的企业来说, 绿色环保形象可以帮助他们从银行 获得更优惠的融资,从而减少企业 内部的波动性,形成更有利于长期 发展的经营理念。

银行可以通过发行绿色债券, 将现有的绿色贷款打包成为期限更 长、风险更低、利率更低的新债券。 这样可以减轻银行资产负债表的压 力,增加了授信空间。而且相比直接 贷款,绿色债券期限较长,形式也更 加多样,对发行者来说也就意味着 风险较低。这一机制已获得中国银 行业监督管理委员会的支持。

最后一点,有证据表明,我们低估了当前绿色市场的规模和受欢迎程度。有很多符合绿色标准的债券只是没有获得绿色债券的资质。据估计,在正式引入绿色债券的概念之前,中国企业发行的债券中大约有30%的符合绿色债券的标准。随着发行主体逐渐意识到绿色债券的优势,会有更多的债券获得绿色认

定并发行,这将是发行量增加的又一渠道。

对于看重信息的投资者来说, 绿色债券在风险和环境足迹控制方 面更具优势。由于绿色信贷需要经 第三方审计,以确保资金投向绿色 项目,因此与传统债券相比,其透明 度和信息披露程度更高。

现有的绿色债券已经显示出比传统债券更高的稳定性,且在二级市场的换手率也略高于传统债券。虽然绿色债券市场规模仍然小于传统市场,但对于这一市场的多数投资者而言已经足够。同时,投资绿色债券也有助于形成良好的声誉和市场信号。

### 进入中国绿色债券市场的渠道

如今,国际投资者有三种进入 中国绿色债券市场的渠道。第一种 是通过"债券通",它允许国际投资 者(包括小型投资者)通过香港信托 机构购买内地债券。

二是通过中国银行间债券市场。中国人民银行 2016 年发布了允许境外机构投资者投资银行间债券市场的公告,放宽了对商业银行、证券公司、基金管理公司、以及养老基金、慈善基金等中长期机构投资者的准入限制。

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欧洲有38%的投资官表示他们已参与了绿色债券市场,有50%表示出对可再生能源的兴趣。换句话说,中国的绿色债券供不应求,尤其从长远看,更是无法满足国外的需求。

以上两项举措都有利于外国投资者进入内地市场,也表明外国投资者未来有可能获准参与内地绿色债券市场。去年11月份,财政部的一位发言人在介绍新出台的立法时表示,将允许外国企业收购中国的银行并持有中国投资机构的多数股权。此举将进一步放开小型投资者通过外资银行参与中国金融市场的渠道。

但除此之外,还有第三种方式,即各国的投资者可以购买中国主体在境外发行的债券。近期中国主体在境外发行债券的例子包括:中国银行、中国工商银行、中国三峡集团分别在泛欧交易所、卢森堡交易所、爱尔兰证券交易所发行了人民币、欧元和美元债券。中国企业和银行之所以发行海外债券,是因为这样可以获得较低的利率,并且为其境外投资提供外汇便利。

### 立法

更多的准入渠道听起来似乎是 件好事,但是外国投资者对于中国 绿色债券市场仍不够了解,如债券 类别、资金募集监管、发行前的审 核与审计等。而且他们也不知道该 如何搜集这些方面的信息。

好消息是,中国绿色金融专业委员会正在与欧洲投资银行合作,推动中欧绿色债券标准的一致化。这将使投资者有可能直接将已有知识应用到国外市场。双方在11月份完成了第一步工作,在中欧标准之间建立了兼容性框架,从而便于投资者进行直接比较。

发行国际绿色债券与发行国内 债券的流程不同,因此金融行业尚 需形成一套规管海外发行的制度。 例如,发行国外债券必须另经中国 国家发展和改革委员会(NDRC) 审批。

总而言之,中国绿色债券的迅速发展代表了中国资本市场的发展速度。而随着国内市场的扩大,下一步将是走国际化的道路,帮助中国在未来几年弥合 3-4 万亿美元的绿色投资缺口,同时向全世界表明其对放开国内市场的决心。

中国正在采取切实措施,努力 消除横在外国投资者与中国法规和 发行主体之间的障碍。2018年中国 绿色债券能否实现快速的国际化将 取决于这些措施的推进步伐。⑤

王遥,中央财经大学绿色金融国际研究院院长,中国金融学会绿色金融专业委员会副秘书长

马蒂亚斯·隆德·拉森,中央财经大学绿色金融国际研究院国际合作部负责人、研究员

### China's green bonds catch on

Foreign investors are getting easier access to China's booming green bond market

☐ Wang Yao Mathias Lund Larsen

China issued one third of the world's green bonds in 2017 and has quickly become a world leader in green finance, a relatively new area that focuses on money products related to sustainable business.

But of the US\$38.6 billion in green bonds issued by Chinese institutions in 2017, the majority was in the domestic market, with just US\$6.6 billion issued abroad. To help the green bond market grow further, China is looking to improve access to international investors.

### Why green bonds?

Increasingly, businesses are turning to green bonds to finance efforts to become sustainable. For a business to do this it needs investment. This requires taking on debt, which can be done by issuing a bond. What makes green bonds different from conventional bonds is that companies can only use the borrowed money for sustainable purposes.

Since 2015, money raised with green bonds has been an important component in greening the Chinese economy. Businesses are using them to update production facilities

and reduce their ecological footprint, cities to electrify infrastructure, and finance institutions to raise funds to lend to small and medium sized enterprises that have prospects for bringing innovative green technologies to market.

### Opening up

China is now looking beyond its domestic market to continue the expansion of green bonds. It's doing this because the country will need an estimated 3-4 trillion yuan in green investments annually in the coming years – meanwhile, international investors have shown a keen interest in green assets: 38% of European investment officers polled in June 2017 said they were in the market for green bonds, 50% said they were interested in renewables.

In other words, the supply for Chinese green bonds falls short of the demand, particularly from abroad, by a long way.

But Chinese finance markets are notoriously closed to outsiders because the authorities wish to control monetary policy and the currency exchange rate of the RMB.

But as our analysis shows, there is some progress in this area, meaning China's green bonds will become more accessible to international investors.

#### Green is the new black

Despite the limited size and short history of China's green bond market, research by the Bank of International Settlements, HSBC, and Natixis suggests that investors can find greater security and earnings in a green market than a conventional one.

For companies in certain areas of China, a green profile allows access to cheaper financing from banks, resulting in less volatility and greater long-term thinking within companies.

For banks, issuing green bonds allows them to bundle existing green loans together into a new bond with a longer running time, lower risk and lower interest rate. This frees up space on the bank's balance sheet to extend new loans. And because green bonds take longer to mature and are more diversified than direct loans, they present a lower risk to the issuer. This process is encouraged by the China Banking Regulatory Commission.

Lastly, evidence suggests that we have underestimated the size – and the popularity – of the existing green market. Not all bonds that meet the criteria of green bonds have been labelled and issued as green. It is estimated that before the green bond label was officially introduced, about 30% of corporate bond issuance would have qualified as green. As issuers become increasingly aware of the advantages of green bonds, more and more of those bonds will be labelled and issued as green, providing another source of increasing issuance.

For information-hungry investors there are added advantages to green bonds with regards to risk and the environment. Compared to conventional bonds, they have a higher degree of transparency and information disclosure because a third-party auditor has to make sure that the green credit is being used for green purposes.

Existing green bonds have shown to be less volatile than conventional bonds while also trading slightly higher in secondary markets. While the market for green bonds is still smaller than the conventional bond market, the size remains adequate for most investors looking to buy or sell green bonds. Investing in green bonds also provides a positive reputational and market signal.

#### Access

Today there are three ways that international investors can tap into China's green bond market. The first is the Bond Connect Program, which allows international investors, including smaller ones, to buy bonds through a Hong Kong based trustee.

The second is the Direct China Interbank Bond Market. which was launched by the People's Bank of China in 2016. This opened up access to a wider range of investors by relaxing rules for banks, securities companies, fund management companies, and long-term investors in insurance and pensions, etc.

These two initiatives have increased access for foreign investors and given an indication about future possibilities in the market for green bonds. In November a Ministry of Finance spokesperson outlined new legislation that will allow foreign companies to own Chinese banks and hold majority stakes in Chinese investment houses. This will further allow small investors to trade in Chinese markets through their foreign banks.

But there is also a third way, wherein Chinese issuers list their bonds offshore, providing wide access for

Existing green bonds have shown to be less volatile than conventional bonds while also trading slightly higher in secondary markets.

investors of any origin. Recent examples include Bank of China's issuance on the Euronext Exchange, Industrial and Commercial Bank of China on the Luxembourg Exchange, and the China Three Gorges Corporation on the Irish Stock Exchange. These issuances were in yuan, euro and the US dollar. Chinese companies and banks issue abroad because they can receive lower interest rates and get easy access to foreign currency for investments outside of China.

#### Legislation

More access may sound like a good thing, but foreign investors still don't understand enough about the Chinese green bond market when it comes to different bond categories, proceeds regulations, pre-issue verification and audits. They also don't know how to find information in these areas.

The good news is that the Green Finance Committee of China is working with the European Investment Bank to harmonise green bond standards between Europe and China. This will give investors the chance to apply their existing knowledge to a foreign market. The first step was completed in November, providing a framework for compatibility between the standards, and allowing investors to make a direct comparison.

The process for an international green bond issuance is different than for a domestic one so the practice is yet to be institutionalised in the financial industry. For example, foreign issuance has to undergo a different approval procedure by the National Development and Reform Commission (NDRC).

Ultimately, the rapid expansion of green bonds in China shows the pace at which capital markets there can develop. And as the domestic market expands, the next step will be to internationalise, helping China to realise the US\$3-4 trillion green investment gap in the coming years, while showing the world that it is serious about its commitment to widen access to its markets.

Serious efforts are underway to remove obstacles between foreign investors and Chinese regulations and issuers. Whether the internationalisation of Chinese green bonds can expand substantially in 2018 depends on the pace of these efforts.

Wang Yao is director general of the International Institute of Green Finance (IIGF) at the Central University of Finance and Economics.

Mathias Lund Larsen is director of International Cooperation, and research fellow at the International Institute of Green Finance (IIGF), Central University of Finance and Economics.

# 打造全国碳市场, 中国需要更大雄心

中美新签署的数百亿美元天然气订单对气候变化来说意味着什么?

□休・斯莱特

**12** 月 19 日,国家发改委召开 重要电视电话会议,就全国 碳交易市场(ETS)的框架问题与各 省政府进行了交流。

全国碳交易市场的运作框架已 经筹备多时,日前才正式获得国务院 批准。碳交易市场的建设将分为三个 阶段,以两省五市自 2013-2014 年开 始的 7 个试点市场为基础,实现平 稳过渡。

全球都对中国的气候行动给予 了极大的关注,而全国性碳交易市场 的建立恰逢其时。美国有意退出《巴 黎协定》的行为引发了不少恐慌,人 们担心其他国家也会因此收回此前 的减排承诺。



中国在获得经济高速发展时,也在经历着空气污染的困扰

## 多项措施推动碳交易 市场机制全面落实

2015年,习近平主席宣布中国 将在2017年建立全国碳交易市场。 此后,相关准备工作便紧锣密鼓地 展开了。

市场新规要求二氧化碳排放大 户必须上报历史排放数据,并且数 据需经过第三方独立核实。这个过 程的可信度对整个碳交易市场的公 平公正而言至关重要。如果数据申报 没有可信度,市场的公平性就难以保 证,那么企业可能就不愿意投资。

此外,有关部门还通过培训确保 参与碳交易市场的相关各方了解相关 规定。随着各省级培训中心的建立, 培训工作还将得到进一步强化。

市场建立初期将首先纳入发电 行业的排放大户,之后将纳入其他 行业的排放大户。即便初期将只包 括电力行业,但中国的碳交易市场 规模仍然将是全球最大,而且领先 幅度很大,大致是欧盟碳交易市场 总交易量的两倍。

## 限额分配,任重道远

2017年5月,三个行业(电力、水泥和铝业)的配额分配方案草案发布,其中明确了排放企业的配额基准值和配额计算方法。排放超过配额的企业必须在市场中购买额外的排放许可。

全国碳交易市场要想取得成功, 配额分配就不宜过度宽松,否则会 稀释企业对排放许可的需求,减排 的积极性也会随之减弱,而另一方 面,如果配额分配过于严格,相关行 业的运营成本则会太高。 全国碳交易市场要想取得成功,配额分配就不宜过度宽松,否则会稀释企业对排放许可的需求,减排的积极性也会随之减弱。另一方面,如果配额分配过于严格,相关行业的运营成本则会太高。

发电行业是首个纳入碳排放交易市场的行业,同时也是最大的碳排放源,因此势必成为整个碳交易市场的核心。电力行业的历史排放数据可信度最高,从而大大降低了配额分配的难度。而其他主要排放行业目前正在积极建立历史排放数据库,因此可能会在晚些时候被纳入全国碳交易市场。

2017年5月出台的配额分配 方案草案中的配额计算方法针对不 同类型电厂设立了11个配额基准 值。能效较低的电厂(比如小型燃 煤轮机电厂)的基准值要高于平均 水平。

合理的配额分配首先应该能够 激励企业关停或逐渐淘汰低能效电 厂,因为这样做的成本更低。山东、 河南、内蒙古等省份都拥有大量小 规模、低能效的燃煤电厂。这类电 厂也是东北地区(吉林、黑龙江、辽 宁)电力供应的重要来源。由于燃煤 发电在上述北方省份的经济结构中 占有重要比重,因此过去几个月内 部协商的焦点就是不同省份的限额 分配。管理部门必须做到既避免行业成本过度上升,同时又能确保低成本减排措施得到充分鼓励。

#### 碳价走高的空间有多大?

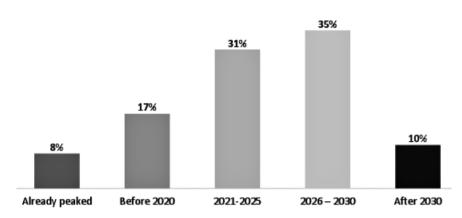
事实上,在碳交易市场试点期间,购买额外配额的价格通常低于预期,这说明政府仍有提价空间。

中国碳论坛每两年进行一次中国碳价调查。最近我们公布了2017年的调查报告,总结了包括咨询机构、业界、学界、金融部门、交易平台和非政府组织在内的260个主要利益方对中国碳市场价格未来走向的看法。

在前几次的调查中,受访人预计 2014年到 2016年间碳价会走高,而实际情况却是,碳价呈下滑趋势,这说明市场配额过多导致了价格走低。

尽管如此,2017年的调查显示,受访者仍然相信碳价会走高。平均来看,他们预计在全国碳交易市场正式启动后,碳价会比现有7个试点市场的平均价格水平(38元/吨,约合5.8美元/吨)要高,会在2020年和2025年分别达到74元/吨(约合11美元/吨)和108元/吨(约合16美元/吨)。

调查还显示,相比于非工业机构,工业界的受访者对市场价格的预期更高。而在欧洲和澳大利亚进行的类似调查中,工业界人士对碳定价的预期相对较低。然而,我们2015年的调查也显示,中国工业界对碳价的预期较高。这个结果再次说明,政府在碳交易系统设计方面可以更具魄力。



对中国碳排放什么时候会达到峰值的预期

## 对碳排放的影响

碳交易体系的主要目的就是削減碳排放。而本次调查结果也非常乐观,因为受访者都认为碳排放交易能够在未来对投资决策产生越来越大的影响。有38%的受访者预计碳交易将在2017年对投资决策产生重要或适度影响;而预计将在2025年对投资决策产生影响的受访者比例达到了75%。

本次调查结果还显示,碳市场的中期发展仍然存在不稳定因素。相比于 2015 年的调查结果,认为碳排放交易将在 2020 年对投资决策产生重大影响的受访者比例已经从 30% 下降到了 17%,其中部分

原因应该是 2017 年一直缺乏政策明晰度,包括碳交易市场的确切启动时间以及碳交易市场体系的法律基础。

然而,从长期来看,各方都坚信 碳交易市场会在扭转投资模式、推 动低碳经济转型方面发挥重要作用。

中国已经承诺将在 2030 年达到 碳排放峰值。调查显示,90% 的受访者认为这个目标可以实现,55% 的受访者认为在 2025 年甚至更早就能实现这个目标。有趣的是,8% 的受访者估计中国的碳排放已经达到峰值。近日由全球碳预算 (Global Carbon Budget) 提供的数据显示,去年以来中国的碳排放可能上升了约 3.5%,但是令人鼓舞的是,有越来越多的

利益相关方认为中国会在2030年之前达到碳排放峰值。

# 平衡碳价成本, 电力行业改革势在必行

虽然全国碳交易体系会对发电 行业的经济状况产生越来越多的影响,但是,中国电力定价缺乏灵活 性,这意味着其他消费者在节能方 面并没有太大动力。

针对这一问题,一些试点地区要 求用电大户必须加入该地区碳交易市 场;但是,全国交易系统并没有采用 这种方法。然而,近期开展的电价改 革却为电力企业将碳价成本转嫁给其 他消费者提供了一个机会。比如,广东 和浙江已经开始着手为建立短期发电 权交易系统奠定基础。

随着电力定价越来越灵活,发 电企业最终将有望将碳成本转移给 用电大户。我们希望山东、江苏等 用电大省也能尽快推动改革。这样 一来,碳市场和电力市场改革就可 以相辅相成、互相促进了。⑤

休·斯莱特,中国碳论坛研究与项目经理

# China's carbon market needs ambition

To pressure polluters, the new trading system must avoid being too generous with permits

☐ Huw Slater

The National Development and Reform Commission held an important teleconference on December 19 with provincial governments in which it shared the framework of the national emissions trading system (ETS). (For some background on what China's carbon market is and why it's important read this explainer).

The structure for the market's operation has been in preparation for some time and has now received sign-off from the State Council. The ETS will have a three-stage implementation process to provide a smooth transition from the seven pilot markets that began in five cities and two provinces in 2013-14.

The establishment of a national ETS comes at a crucial time of global interest in China's climate action. The intention of the United States to withdraw from the Paris Agreement sparked fears that other countries would backtrack on commitments to reduce emissions.

#### The road to the big launch

Preparations for the market intensified after President Xi Jinping announced in 2015 that China would launch the ETS by 2017.

For those companies that emit a lot of carbon dioxide, it became a requirement to report their historical emissions data, which will be subject to independent verification. The reliability of this process is important for the integrity of the market. Without confidence in data reporting, companies may be reluctant to invest in a market that does not ensure a level playing field.

Making sure that stakeholders in the carbon market understand its requirements has also been underway through training. This will be strengthened with the establishment of regional training centres in a number of provinces.

To begin with, the system will cover major emitters

in the electricity generation sector. Other sectors of the economy that are large sources of emissions will join in the coming years. Even limited to the power sector, China's ETS will still be the largest market in the world by a wide margin, covering about twice the emissions as the European Union ETS.

#### Allowance allocation

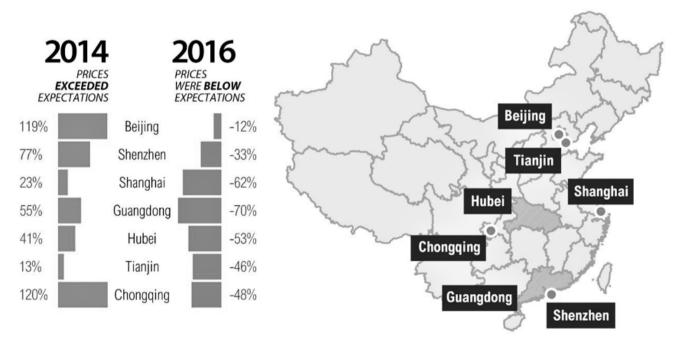
Draft allocation plans for three sectors (power, cement and aluminium) were released in May 2017. The plans specify benchmarks and the methodology for determining which generators can receive up to 100% of their allowances under the ETS for free. For companies that emit more than their allowance allocation, additional permits must be purchased on the market

For the national carbon market to be successful it's important that the allowance of permits is not too generous, otherwise demand for permits will be dampened and polluters will have limited incentive to reduce emissions. On the other hand, if allowance allocation is too strict then the costs for industry may be too severe.

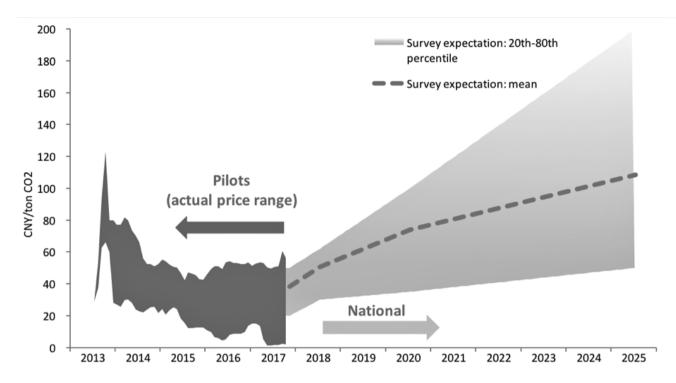
As the first sector covered and the largest source of carbon emissions, power generation will form the core of the carbon market. The power sector has the most reliable dataset for historical emissions, making allocation of allowances easier. The other key emitting sectors are currently in the process of establishing these datasets, and will thus be included in the national scheme at a later date.

The trial allocation methodology released in May set eleven benchmarks for different types of power plant. For less efficient plants, such as those with small coal turbines, the benchmark is higher than average.

Allocation should ideally incentivise companies to retire or scale-down inefficient plants first because it will be cheaper to do so. For example, provinces such as Shandong, Henan and Inner Mongolia each have a substantial fleet of the smallest and least efficient coal-fired power plants. These plants also make up a big part of the power generation capacity in the north-east (Jilin, Heilongjiang and Liaoning). Because the coal power sector represents a significant part of the economy in these northern provinces, internal negotiation over the past months has focused on how generous the allocation of permits should be for



Difference between average prices in China's pilot ETSs in 2014 and 2016 and expectations in the 2013 and 2015 China Carbon Pricing Surveys respectively. Source of market price data: SinoCarbon



Range of prices in the pilot systems to-date, and estimated prices for the national system by survey respondents

different regions. Administrators must balance avoiding excessive costs for industry, while ensuring that low-cost emissions reduction is adequately incentivised.

#### Room for higher carbon prices

The fact that prices for purchasing additional allowances in the pilot carbon markets are often lower than expected suggests that there is room for more ambition on the part of authorities.

China Carbon Forum conducts a biennial China Carbon Pricing Survey, and we recently published the 2017 instalment, summarising the views from 260 key stakeholders about the future of carbon pricing in China, including consultancies, industry, academia, the finance sector, trading platforms and non-governmental organisations.

Past surveys show that while respondents expected carbon prices to increase from 2014 to 2016 they actually decreased, indicating an overabundance of allowances in the market that pushed prices down.

Nevertheless, the 2017 survey found that respondents still think that prices will go up. On average, they expect that

when the national market starts, prices will be higher than the current average for the seven pilots (38 yuan/tonne, or US\$5.8), rising to 74 yuan/tonne (US\$11) in 2020 and 108 yuan/tonne (US\$16) in 2025.

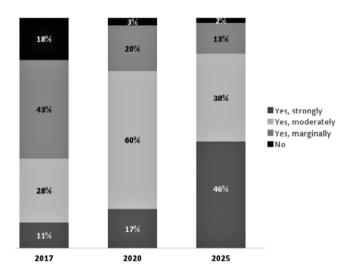
The survey also revealed that industry respondents expect higher prices than non-industry ones. Similar surveys conducted in Europe and Australia tended towards lower carbon price expectations from industry. However, our 2015 survey also showed an industry tendency to expect higher prices in China. This result, again, suggests that the government can be more ambitious in the system's design.

#### Impact on carbon pollution

As the key goal of an ETS is to reduce carbon emissions, the survey provides a source of optimism, as respondents expect trading of carbon emissions to increasingly affect investment decisions in coming years. In 2017, 38% of respondents expect investment decisions to be strongly or moderately affected, and by 2025 this figure rises to 75%.

The responses also show there is uncertainty in the medium-term, with fewer respondents expecting a strong

# Do you expect the ETS in China to affect investment decisions in 2017? 2020? 2025?



impact in 2020 than for the 2015 survey (17%, down from 30%). This can partly be attributed to the lack of clarity that has existed throughout 2017 regarding the precise starting date and legal basis for the system.

However, in the long-term, confidence remains high that the ETS will play an important role in shifting investment towards a low-carbon pattern.

China has committed to peaking its carbon emissions by 2030. Of the survey respondents, 90% expect the target will be achieved, and 55% think it will be met by 2025 or earlier. Interestingly, 8% of respondents estimated that China's carbon emissions had already peaked. Recent data released by the Global Carbon Budget suggest that China's emissions may rise by about 3.5% from last year, but it is

encouraging that an increasing proportion of stakeholders see the peak date coming much earlier than 2030.

#### Power sector reform

While the national carbon trading system will increasingly impact on the economics of power generators, the lack of flexibility in electricity prices in China means there is little incentive for other consumers to save energy.

Several of the pilot regions worked around this by obligating large power consuming institutions to join the carbon market but the national system won't follow this approach. However, recent efforts to reform electricity pricing provide an opportunity for the carbon price to be passed on to other consumers in future. In particular, provinces such as Guangdong and Zhejiang are taking steps to establish the basis for short-term power generation rights trading.

With more flexibility in electricity price setting, there should eventually be space for generation companies to pass the carbon cost on to large electricity consumers. Hopefully these reforms will quickly be taken up by other large power-consuming provinces such as Shandong and Jiangsu. In this way, the implementation of the carbon market and power market reforms can be mutually re-enforcing. ©

Huw Slater is research and projects manager at China Carbon Forum (CCF), a Beijing-based platform that holds events and discussions on specific topics regarding China and climate change.

# "良食"追求的正反面:中产中国的食物足迹

中国人的饮食习惯正在发生什么样的转变?这将对地球带来什么样的影响?

□张春

全 三里屯太古里,这个外国侨民、游客和街拍摄影师扎堆的北京流行地标,2008年开店的连锁餐厅门店"新元素"(Element Fresh)正在面临越来越激烈的竞争。

店长 Kelly He 告诉中外对话,新元素曾经是太古里唯一的一家主打健康低脂食品的西餐厅,但现在仅仅这一个商圈已经有至少四家同类餐厅。她表示,最初客人主要是"海归"和外籍人士,但因为饮食习惯的改变或配合健身的需要,越来越多的人转向此类少脂、少糖、少盐低热量的餐食。

三里屯不是特例。实际上,在北京乃至更多城市中,克制、精致的 饮食正在慢慢取代大鱼大肉的饕餮。

## 猪肉消费或已见顶

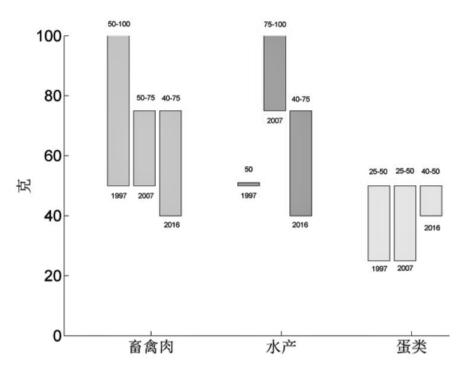
据路透社报道,来自统计监测公司欧睿国际(Euromonitor)的数据显示,中国猪肉销售量在2014年达到4249万吨后就一直在下降,2016年为4085万吨;而湾仔码头、思念等主要速冻水饺品牌的数据则显示,近年来水饺中肉类添加比例减小,反而卖得更好。欧睿的数据还显示,中国2016年的新鲜蔬菜消费增长了4%,总消费量几乎占全球40%。

与此相一致的,在最新的中国 居民膳食指南中,对禽畜肉类的推 荐量相比20年前显著下降,水产品 肉类推荐量相比十年前也下调,总 体更趋于均衡。这份指南出自卫生 部下属的中国营养学会。

膳食指南的改变对应的是中国人健康状况的变迁。从 1997 年第二版膳食指南到 2007 年第三版指南仅十年的时间,全民营养健康调查结果显示,在贫困地区仍然存在营养缺乏问题时,部分人群却因为饮食结构不合理出现了"三高"和肥胖症状。2015 年一份针对中国居民营养状况和慢性病的报告也显示,从2002 年到 2012 年,中国居民超重肥胖率以及各种慢性病在增加。

不少家庭已经开始改变这种膳食结构。在野生救援(Wildaid)2017年8月在北京举办的"蔬食"推广

## 1997年、2007年和2016年中国居民膳食指南中 肉蛋类每日推荐摄入量对比



数据来源:中国营养学会

会上,演员黄轩讲,近年回家与家人团聚,他看到大家吃的蔬菜越来越多。黄轩是西北人,在干旱的甘肃,牛羊肉是常吃的肉菜。"我的家人现在几乎不怎么吃肉,去餐厅很少点肉菜,这是自然而然的转变,"黄轩说。他认为这和大家开始意识到多吃肉会导致高血压、肥胖等健康问题有关系。

# 健康食物,中产食物?

越来越多的年轻人正在向西方 社会的饮食风尚看齐,一种注重品 质、格调和健康的中产阶级的食品 消费模式似乎正在形成。

尽管不同机构对中国的中产阶级 有多大看法不一,但总体而言,这一阶 层的规模是惊人的。据瑞士信贷银行 (Credit Suisse)的 2015年世界财富报告,中国中产阶级人数已达到 1.09亿人,超过美国的 9200万。而据咨询公司麦肯锡的估算,到 2020年中国几乎 4亿人都可算作中产阶级,其中又有超过一半将属于年收入在 10.6万到 22.9万元人民币之间,消费力更强的"上层中产阶级"。

这样的收入状况在食品消费趋势上有明显的体现:人们越来越愿意为健康、精致的食物付出更高的代价。为时令的有机蔬菜和有机产品提供销售平台的"北京有机农夫市集",线下交易的场所便设置在相对高端的消费区域,例如五星级宾馆大堂,精品购物中心等。平均每公斤20元以上的日常蔬菜,240元一公斤的有机樱桃,购买者不在少数。

欧睿的统计显示中国在 2012 到 2016 年间的有机食物消费量维持了两位数的年增长率,绿色蔬菜、生态有机蔬菜的在大中城市的流行也促使越来越多人加入有机农业的生产。过去十年里,北京的周边陆续建立起了诸如小毛驴农场、凤凰有机公社、分享收获农场等提供不使用化肥农药的有机种植农场。

## "良食"更深的内涵

饮食习惯的改变也指向一种更深层面的观念转变。在有机食物消费连年增长的同时,包括素食倡导和食物和环境、食物和人类知识普及等的教育倡导活动也在中国的都市里铺展开来。

野生救援中国的"蔬食"推广, 其实是想同时借此减少肉类消费, 从而减缓禽畜养殖带来的环境和气 候影响。拍摄了《何以为食?》的 独立纪录片导演简艺发起的"良食 大学"网站和全国巡回演讲,是想 要通过普及食物生产和消费的知识, 让大家了解食物背后的真实代价, 目标同样指向了环境健康。

不过很难说,诸如农业的温室 气体排放、工业化养殖的环境影响 等话题,有多少消费者会认真去了 解;这些各式各样的推广和努力因 为对话渠道和消费水平的原因,能 够影响多少人群,也难以估算。事实 上,中国有机耕种面积仅占全部耕 地的 0.9%,并且这些土地上产出的 有机食品,大部分出口到了国外。

但这类倡导行动无疑拓展了中 国关于食物和环境的话语空间的上 限,并且连带着抬升了中国大众对 食物品质的底线。例如,越来越多的 超市菜品现在带上了可追溯标签, 让消费者可以知道自己购买的食物 从何而来。

## "中国胃"的全球影响

当然,中国中产阶级惊人的购 买力同样有着令人担忧的一面。

虽然猪肉消费似乎开始走低,但 中国人的水产和牛肉消费居高不下。 据彭博智库(Bloomberg Intelligence) 数据,从2012到2016年,中国人均 牛肉消费增长了33%; 而中国水产养 殖业产量长期占全球 60% 左右。而从 牛肉、咖啡、稻米到水果,全球贸易 的便捷性令中国人的取食范围遍及世 界的各个角落。

以西餐中的"健康食材"牛油 果为例, 联合国商品贸易统计数据库 数据显示,从 2010 年到 2016 年,七 年间中国牛油果进口量从 1.9 吨飙升 至 2.5 万吨,增长了一万三千多倍。墨 西哥和智利是中国最大的牛油果进口 国, 其出口从 2012 年 154 吨增长到了 2016年的5万吨,中国在其中扮演了 不可替代的作用。中国已经开始有农 民在云南南部等热带地区进入牛油果 种植,但刚刚起步。

前智利驻华大使、Adres Bello 大 学拉美研究中国中心主任 Fernando Reves Matta 告诉中外对话: "(开放 智利和中国牛油果贸易的双边协 定)对智利的种植者而言是个大挑 战,因为他们的出口量已经很大了。 不过他们向往中国市场已久。这将 对智利的农业出口影响深远。"智利 2015年同中国签订了贸易协议后, 很快赶超墨西哥成为中国最大的牛 油果进口国。

但牛油果种植耗水量较大。据 Matta 介绍, 在智利, 牛油果种植与 同样需要抽取地下水的采矿作业出 现了一些水资源张力。

除了对健康的追求,对品质、 口味甚至阶层身份的追求同样塑造 着中国中产阶级的食品消费行为。 而有时候,对奢侈食材的追求不仅 会跨越国界, 也会越过道德甚至法 律的底线。

2017年7月,中国知名电商京 东从澳洲引进被国际自然保护联盟 (IUCN) 列为极危状态的南方蓝鳍 金枪鱼, 在平台高调宣传售卖, 很快 就受到动物保护组织抗议并引发了 激烈的争论。而中国人对鱼翅和花 胶的消费, 也助长了鲨鱼割鳍这样 的残酷捕猎方式, 甚至对世界其他 地区的濒危鱼类造成致命威胁。

从鱼翅海参到普通人的一顿饺 子,中国人的食品消费习惯已经与 这个地球的环境密切相关。中国人 的胃口会造成多大的环境压力? 餐 桌上的中国崛起也许将是未来全球 最重要的话题之一。の





从2010年到2016年、七年间中国牛油果进口量从1.9吨飙升至2.5万吨

# China's middle class gets a taste for healthy eating

Vegetarianism and organic food is on the rise in China's wealthier cities

□ Zhang Chun

China's heavily-laden banquet tables are under threat from changing tastes as the country's growing middle class indulges in lighter, healthier foods.

Element Fresh has been serving dishes in Beijing's Sanlitun district since 2008. The Western restaurant is a landmark in the area, attracting expats, tourists and a fair share of street photographers. But increasingly its menu is facing competition from at least four other healthy eateries nearby.

Restaurant manager Kelly He told *chinadialogue* that changing food habits and health concerns are attracting more Chinese people too, drawn in by the low-sugar, low-salt and low-calorie options.

#### Peak pork?

The nation's health has declined in recent years and is linked to a rapid change in lifestyle including diet. A 2015 report into nutrition and chronic disease found obesity and various chronic diseases worsened between 2002 and 2012 across China. National health and nutrition surveys have

repeatedly linked obesity with health problems in groups with poor diet.

Official nutritional advice from the government recommends eating less red meat, poultry and seafood, and there are signs that consumers are listening.

After peaking at 42 million tonnes in 2014, China's pork consumption dropped slightly to 41 million tonnes in 2016, bucking a rising trend. Leading producers of frozen dumplings, such as Wanchai Pier and Sinian have even reduced the amount of pork in their products in recent months.

People are also eating more fresh fruit and vegetables, according to data from Euromonitor, which recorded an increase of 4% in 2016. China now consumes 40% of the global total.

Health campaigns are also trying to influence people's habits. Environmental group WildAid held an event in Beijing in August 2017 to promote vegetarianism.

The actor Huang Xuan explained that his family is eating more and more vegetables, a change from the traditional diet in his native province of Gansu in China's north-west, which is high in beef and mutton.



The Beijing Farmers' Market is Beijing's longest running market selling organically grown food

"My family eats very little meat now, and rarely orders it when eating out. It's a natural change," said Huang.

He thinks it's because people are more aware of the links between meat-eating, high blood pressure and obesity.

#### Middle class tastes

China's middle class in particular seem to be shifting toward diets that focus more on quality, style and health.

There is no consensus on the size of China's middle class, but everyone agrees that it's huge. Credit Suisse's 2015 report on global wealth put it at 109 million people - larger than in the United States. Consultancy group McKinsey predicts China's middle class will include 400 million people by 2020, with half of these in the "upper middle-class" bracket, earning between 106,000 and 229,000 yuan (US\$ 16,500-35,600) a year.

Growing incomes are having a noticeable effect on food trends, including a greater willingness to pay more for higher quality, healthy foods.

Gu Shaoping, a senior official at the National Certification and Accreditation Administration, told an industry conference that organic food sales in China grew about 18-20% in 2017.

Data from Euromonitor shows double digit percentage growth for consumption of organic foods in China annually between 2012 and 2016, prompting more producers to go organic. While the past ten years have seen numerous organic farms providing products free from fertilizers and pesticides spring up around Beijing, including Little Donkey Farm, Phoenix Commune and Shared Harvest.

#### More than diet

Changes in eating patterns are connected to deeper changes in how people think about food. The growth in organic food is part of a broader promotion of vegetarianism and an understanding of the links between food and the environment, particularly in cities.

WildAid is promoting vegetarianism to cut meat

consumption and so reduce the environmental and climate impacts of livestock farming.

Similarly, Jian Yi, the independent filmmaker behind the What's For Dinner documentary, has started a Good Food Academy website and launched a nationwide lecture tour – hoping to increase awareness of how food is produced and consumed so people will realise the true costs of food, again with the aim of improving the environment and public health.

But it is hard to say to what extent consumers are really interested in issues such as agricultural greenhouse gas emissions and the environmental impact of industrialised farming. Currently, just 0.9% of China's arable land is used for organic farming, and most of what's produced is exported.

But the initiatives are succeeding in creating more space for discussion of these issues, and creating pressure for higher minimum food standards. For example, many supermarket vegetables now have tracking labels, so shoppers know the origin of their food.

#### Global impacts

The enormous purchasing power of China's middle class is a major force affecting global food production.

Pork consumption may have peaked in China, but seafood and beef are still rising. According to Bloomberg Intelligence the amount of beef people eat increased a third between 2012 and 2016. China also accounts for 60% of global aquaculture output.

With readier access to global markets, Chinese people can source their food and drink – be it beef, coffee, rice or fruit – from anywhere in the world.

Take the avocado. UN trade figures show that between 2010 and 2016 China's imports of the fruit rose from 1.9 tonnes to 25,000 tonnes – an 13,000-fold increase. China's main avocado suppliers, Mexico and Chile, saw avocado exports rise from 154 tonnes to 50,000 tonnes over the same period, with China a major contributor to the increase.

Fernando Reyes Matta is a former Chilean ambassador to China and head of the China Studies Centre at Adres Bello University.

Regarding an agreement that allows Chilean avocados to enter the Chinese market he told chinadialogue:

"This represents a big challenge for avocado producers, which already have a lot of capacity to export, but which have a long-held ambition to export to the Chinese market. This will have a very significant impact on Chile's agroindustrial exports."

In 2015 Chile signed an agreement with China on the export of avocados and it soon overtook Mexico to become China's biggest supplier.

Avocados may be healthy but growing them requires huge quantities of water. Matta says growth in the sector has added to conflicts over water between Chile's farmers and the mining industry.

But it isn't just health concerns that are shaping the food habits of China's middle class – quality, taste and status are factors too. This has led food suppliers to make some ethically questionable decisions.

Last July a popular Chinese shopping site, JD.com, announced with great fanfare it would be selling Australian Southern bluefin tuna, a species classed as critically endangered by the IUCN. Criticism from conservation groups was swift and sparked a fierce debate.

China's consumption of shark fin and totoaba maw also encourages cruel practices such as shark finning and even threatens the survival of endangered species elsewhere in the world.

Be it shark fin, sea cucumber, or an ordinary bowl of dumplings – China's changing appetite is already having lasting impacts on the global environment and will continue to for decades to come. ©

Zhang Chun is a senior researcher at chinadialogue.

# 太原:电动车弄潮儿的成功与局限

煤炭城市太原如何跻身全球电动车推广领导者行列?其他城市能够效仿太原经验吗?

□张春

中国的舆论场中, 山西太原是一座不显眼的城市。这座以煤炭发家、以煤老板闻名的北方省会城市, 因为煤炭的没落, 又顶着空气污染和经济下行的压力, 像沉默的煤坑一样, 被人遗忘在脑后。直到, 电动车的到来。

几乎像是不声不响地,太原在2016年一年,把全市所有的出租车全部更换成了纯电动车——8292辆续航400公里的比亚迪E6。一座重度依赖煤炭的工矿城市如何成为了中国纯电动出租车保有量最大的城市?

# 太原奇迹

中国最早于 2009 年在十个城市 推广电动车,太原并不在其中。可以 说在电动车上,太原不仅是后来者 并且是黑马——北方城市冬天温度 低电动车续航会减少,且可能会有 电池充电故障等问题。

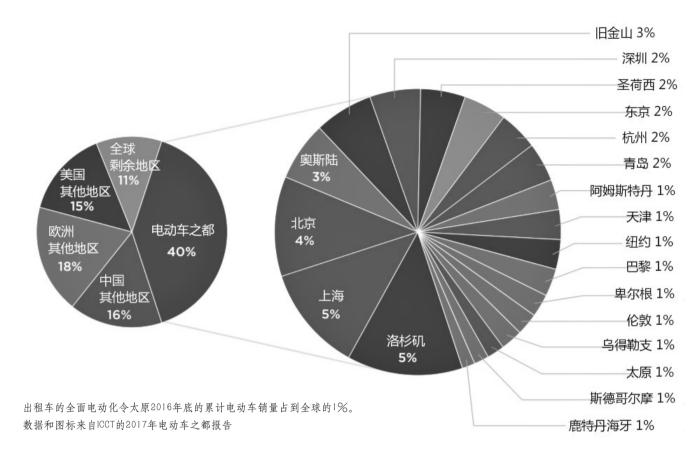
随着煤炭市场不确定性越来越大——2015年山西省煤炭产量停止增长,2016年下降14%,太原把电动汽车产业当做了经济转型的发力点之一。

2016年3月,电动车生产商比亚迪在太原的生产基地开工,现在太原已经有6家电动车企业入驻,其中仅比亚迪基地预计就将创造太原市5%的GDP。而与比亚迪签约

买下 8000 多辆零售价 30 万元的电动车, 亦是太原向电动车行业发出的欢迎信号。

除此之外,按照太原的推广计划,从 2016 到 2018 年,太原还将每年更新纯电动公交车 1000 辆。如果顺利,现有 2650 辆公交车的太原 2018 年之后也可实现公交车全面电动化。

在政策推动下,太原的电动车年销量已经占到整个城市汽车销量的 7%,和全球电动车销量的 1%。今年,太原成为了国际清洁交通委员会(ICCT)全球 20 座电动车之都(EV capitals)之一,被认为是全球电动车推广政策的榜样。太原的多



种刺激政策得到榜单认可:除了购车补贴、优惠的停车费和过路费等手段,政府主导的出租车和公交车的电动化被认为是重要的原因。共有七座中国城市登上这一榜单。

# 电动车组合拳

表面看起来,太原成为出租车全面电动化"第一城",似乎是因为和比亚迪的协议,其实没有这么简单。包括北京(北汽)、深圳市(比亚迪)在内的多个城市拥有自己的地方电动车品牌企业,也仍然没能实现这样的目标。

和太原一样,在电动车推广上 大多数城市面临的难题都是类似的: 如电动汽车续航、充电桩设施布局 和运维、电力供应压力等,以及入 门级的难题——普通人对电动车的 认知没有建立起来。

太原的出租车电动化之所以先于其他城市顺利实施,一个原因是赶上了一个时间点:太原现有出租车大约于2008年全面更新过一次,到2016年正好到了报废年限,只需走报废程序即可更换车辆。

此外,太原政府的强大决心和财力使其推出了高额补贴政策:对乘用车的补贴,通常地方政府是和国家补贴一样,但太原市政府补贴的是国家补贴的两倍,并且出租公司也补贴了一份。最后30万的车,司机只需要花8.75万元就可以拿到。

续航里程和成本问题的解决, 让太原司机很快接纳了新车。"2015 年底,2016年初,很多司机很抵制换 电动车;到了2016年3月,换了车 的都说好:6月以后,换的差不多了, 争议就少了。"在一场太原出租车全 面电动化的经验分享会上,中国清 洁空气联盟主任解洪兴介绍了出租 司机对电动车的态度转变。

由于电动车的使用寿命实际就 是电池的寿命,太原与比亚迪公司 签订了协议,如果电池在出租车运 营年限(8年)内达不到充电标准将 立刻更换,这也在一定程度上解决 了司机对车辆寿命的后顾之忧。

当然,相比北京、上海等一线城市超过5万辆的出租车保有量,城市小、出租车少也是太原的优势:出租车少,政府补贴的财政压力和开局规划都相对可控;城市小,充电设施的布局和调整相对容易。

太原充电桩的初期布置,主要围绕中环路(相当于北京的四环)修

了一圈。用太原环境规划院李德望 的话说,这里是主要的交通通道,同 时兼顾了司机的居住地以及人流量 考量、布置密度等。"基本实现了随 充随走。"他说。

清华大学环境学院副教授吴烨 对太原的成绩是非常赞赏的。他本 人是专门做大气污染控制研究的, 出租车如果不严格执行排放控制政 策, 其污染排放会非常大。"电动车 可以一劳永逸地解决这个问题",他 说。不过他也明确地提醒说:"现在 不能说太原是一个成功的经验。"

## 成功经验的局限性

出租车的电动化,一定程度上 掩盖了太原的私家车主对电动车的 接纳程度依然很低的现实。太原全 市的电动车保有量2万辆左右,电 动出租车和公交车就占了一半。而 太原的机动车数量在2015年底已经 达到 113 万辆。

同时,随着更多电动车的加入, 有序充电就变得更为重要。更多充 电设施的科学布局、合理运维, 充 电信息共享和监管平台的建设,以 及相关管理规范的制定等工作是需 要提前规划的。在吴烨看来:"现在 太原是走出了第一步,后面还有很 长的路要走。"

太原目前计划修建 18 座兼具停 车功能的充电塔楼, 但还没有一座 落实。

更令人担心的是,太原的电并 不清洁。"山西的煤电占80%,风光 水占10%,即便如此还是有弃风, 所以电力系统还可以实现更好的调 度。"发改委能源所可再生能源中心 副主任赵勇强说。

2016 年煤电占中国全国电力生产 的 63%, 山西省的能源结构清洁化水 平远远滞后于中国平均水平。山西生 产了中国四分之一的煤炭, 充沛廉价 的煤电令太原的出租车电动化免除了 能源供给之忧,但也给其电动车的碳 减排效果打上了一个问号。

#### 太原经验能否复制?

把电动车生产和消费绑定在一 起进行规划,并且抓住机会不计代 价强力推进,这样的思路的确在太 原取得了成功。但并非所有的太原 经验都可以被借鉴。

值得注意的是,太原新能源车产 业的强力推进, 与现任市长耿彦波、 BBC 纪录片《中国市长》的主角有密 切的关系。耿彦波不仅在原大同市长 任上大刀阔斧地翻新了大同城区,也 在太原市长位置上毫不犹疑地修路改 路,大大改善了太原的交通状况。此

番太原新能源车推广应用工作领导 组,就由耿彦波牵头。耿是一个极具 争议性的官员, 民众对其雷厉风行的 工作方式褒贬不一。

尽管在一年时间内更换8000多 辆电动出租车堪称奇迹, 但这仅仅 为太原的机动车能源改革开了一个 好彩头。未来电动车产业在太原到 底能够获得多大的发展, 不是当局 者的决心和手腕能够决定的。

出租车的电动化令太原在燃油 车替代大潮中成为弄潮儿。10月23 日, C40 城市气候领导联盟中包括伦 敦、巴黎在内的 12 座城市市长刚刚 宣布将在2025年前停止添置新的燃 油公交车。在此之前,包括德国、英 国在内的一些国家已经公布了燃油 车淘汰计划;中国自身也启动了燃 油车退出时间表的研究。

但要长久留在电动车之都的榜 单上,成为真正的电动车推广领导 者,这座煤城要做的还很多。⑤

张春,中外对话高级研究员

# Coal town switches to EV

The heart of China's coal country has become a global leader in EVs – but is the switch sustainable?

□ Zhang Chun



The city of Taiyuan replaced over 8,000 combustion engine taxis with electric vehicles

Traditionally, Taiyuan has had little to distinguish itself from most other Chinese cities. As the capital city of Shanxi province in the north-east, it is best known as a coal-mining economy and home to many of the industry's wealthy owners.

But recently it has entered the national spotlight. In the

space of a year, Taiyuan has shifted its entire taxi fleet from petrol power to electricity. Thanks to strong support from the local government, electric vehicle (EV) sales in the city accounted for 7% of total car purchases in 2017, compared to 1% globally.

What's happening in Taiyuan serves as an important lesson for other cities as governments struggle to shift economic growth away from heavy industry towards more sustainable models of development.

By reducing the number of petrol cars on the road, the city is tackling its car pollution problem while shoring up China's position as a leader in clean technology.

Taiyuan illustrates how with the right policy support, a town can deliver rapid change. But the city still has plenty of conventional cars on its roads and its experience also shows the risks of moving too quickly.

#### Taiyuan's taxi switch

In 2015, Shanxi's coal output stalled before shrinking by 14% the following year. In need of new sources of economic growth, Taiyuan's government began working hard to court the country's burgeoning electric vehicle sector.

In 2016, and with little fanfare, the city switched its entire taxi fleet to electric cars (excluding the private cars used by services like Didi and Uber). Chinese vehicle manufacturer BYD sold 8,292 E6 vehicles. So how did a city built on coal wealth come to have more electric taxis than any other in China?

China is the world's largest car market. Its leaders have set ambitious medium-term goals for automotive efficiency and climate change, including a cap on carbon emissions by 2030. In September 2017, they went further and announced plans to ban combustion engine cars altogether (though no timeline was announced).

China began promoting EVs in 2009, initially across ten cities. However, Taiyuan was not one of them. In fact, its cold temperatures can limit the effectiveness of the lithiumion batteries used by EVs, potentially reducing the distance vehicles can travel.

Nonetheless, in March 2016 manufacturer BYD set about opening its first factory in Taiyuan. Today, six other EV makers have facilities there. And BYD alone is expected to contribute 5% of the city's GDP.

This is partly due to support from local government, which is working hard to lure carmakers.

Like most of China's city's, Taiyuan has a public taxi fleet owned by several companies. In recent years this has been supplemented by an unofficial taxi sector, which operates in much the same way as Uber, with private drivers offering their services through a mobile application.

Public taxi drivers buy their own vehicles (or lease them from companies). However, it's the local government that decides the type of cars that can operate as public taxis through mandatory purchase requirements.

The contract to buy over 8,000 BYD cars, which retail at 300,000 yuan (US\$46,000) each, was a welcoming signal to the EV sector.

Taiyuan's city planners also promised to replace all public buses (some 2,650) with electric ones, which is expected to complete this year.

In recognition of its EV policies, Taiyuan also made the International Council on Clean Transportation's list of 20 EV Capitals last year – a ranking of cities with the highest EV sales.

#### Making the switch work

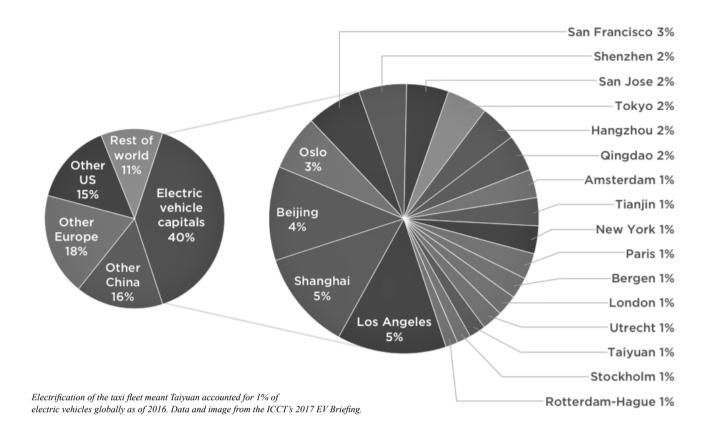
Having a local EV manufacturer has helped Taiyuan to bring electric cars online but without an overhaul of the existing infrastructure, a complete switch would have been impossible.

The provision and maintenance of charging stations, and management of new grid demands are needed, too. As are public awareness campaigns that promote greater understanding around the benefits of EVs.

#### Why Taiyuan has moved ahead

First, the size of Taiyuan's taxi fleet is relatively small (Beijing and Shanghai each have fleets greater than

Taiyuan illustrates how with the right policy support, a town can deliver rapid change.



50,000), which made planning and financing the transport upgrade simpler.

Secondly, charging stations were carefully positioned on the city's ring road, making them easier for drivers to access.

"They can charge and go," said Li Dewang, of the Taiyuan Environmental Planning Institute. Convenience is a factor.

Timing was another. Taiyuan's fleet was due to be replaced in 2016 anyway (in China, municipal governments set limits on how long fleets are allowed in operation before re-registration is needed), so taxi drivers were expecting to buy new vehicles.

Finally, Taiyuan's government had the financing and determination to offer generous consumer subsidies for EV vehicles. (Subsidies offered roughly double the provincial government rate, according to the Economic Observer, which is owned by Chinese state media site, Xinhua). In Tiayuan, drivers can buy a 300,000 yuan (US\$46,000) BYD E6 for 87,500 yuan (US\$14,500).

"In late 2015 and early 2016 many drivers were against

the change," said Xie Hongxing, head of Clean Air Alliance of China, an international environmental non-profit organisation. "But by March 2016 a majority who'd made the switch were happy; by June most had switched and there weren't many objections," he added.

Electric taxis solve the problem [of vehicle pollution]," said Wu Ye, a deputy professor at Tsinghua University's School of the Environment, "but we can't yet say Taiyuan has been successful."

#### A limited success

The city's car owners have been less eager to embrace vehicle electrification. EVs account for 1.8% of all road vehicles in Taiyuan (20,000 EVs out of 1.15 million vehicles). Of this, almost half are designated taxis and buses.

"Taiyuan's taken the first step, but there's a long way to go yet," said Wu Ye.

More charging stations are needed and parking garages. But more worrying is that Taiyuan's electricity is still mostly sourced from polluting coal generation.

"80% of Shanxi's electricity comes from coal, 10% from wind, solar and hydro, and despite this, wind power is still being wasted. So the electricity system could be better managed," so that coal power is displaced by renewables, said Zhao Yongqiang, deputy head of the Renewable Energy Centre at the National Development and Reform Commission's Energy Research Institute.

In China as a whole, coal accounted for 63% of electricity generated in 2016. But Shanxi produces one quarter of the country's coal and its power generation relies on it far more than the national average.

#### Deeper reforms

The plan to build and buy EVs looks to have been successful in Taiyuan. But that doesn't mean that other cities will be able to replicate it.

It is worth noting that the city's promotion of the EV sector is closely associated with the current mayor, Geng Yanbo, who featured in the BBC documentary The Chinese Mayor. Geng is a controversial figure. As mayor of the city of Datong he embarked on wide-ranging plans to improve traffic flow and infrastructure, but was criticised for pushing through changes too quickly and destroying sites of cultural importance.

As mayor of Taiyuan, Geng has rebuilt the city's road network and as the chair of a working group promoting EVs is a strong advocate for the technology. Whilst electrification of the taxi fleet has bolstered the city's low-carbon reputation, it does little to address the city's worsening traffic pollution given that taxis make up only a small proportion of vehicles.

Although replacing 8,000 taxis with EVs within a year is a huge feat, it is only a starting point for the broader transport reforms Taiyuan needs. And these will depend on much more than the determination and capabilities of whoever is in charge.

The electrification of its taxi fleet put Taiyuan at the forefront of cities replacing their fuel-burning vehicles. On October 23, 12 cities in the C40 Cities Climate Leadership Group, including London and Paris, announced they would buy only zero-emission buses from 2025. Previously some countries, including Germany and the UK, announced plans to ban the sale of fuel-burning vehicles. China has also started looking into a timetable for doing this.

But for Taiyuan to remain an EV Capital and become a real leader in promoting a shift to greener transport, this coal city needs to consider deeper reforms. ⑤

Zhang Chun is a senior researcher at chinadialogue.

# 燃烧的"桑吉"轮: 海上碰撞溢油事故何时休

曾深度报道渤海溢油事故的记者冯洁,梳理了东海油轮碰撞事故的已知信息, 并用法规框架和过往经验指出事故处理可能走向。

□冯洁

编者注:

据《中国科学报》报道,2018年1月14日下午5点左右,燃烧了8天的"桑吉"轮沉没。而央视新闻的报道指出,1月15日上午10点左右,"桑吉"轮海面大火熄灭,但沉船后的海面溢油面积较沉船前增加数倍,出现一条长约10海里,宽约1-4海里的油污带。

央视新闻还指出,目前有两艘 中国救援船在进行海面清污工作, 而国家海洋局东海分局正在用雷达 监测和测算具体溢油面积以及影响。

此外,搜救人员已经发现三具 "桑吉"轮船员尸体,还有29人下 落不明。 事发 5 天后, 东海撞船事件终于在芜杂的信息洪流中, 爬到了一个不冷不热的关注位上。

# 发生了什么?

这是一起发生在上海辖区长江口以东约160海里处的交通事故。撞船双方,是伊朗油运公司所属的巴拿马籍油轮"桑吉"(Sanchi)和中国香港籍散货船"长峰水晶"(CFCRYSTAL)。事发前,"桑吉"轮载着13.6万吨(约100万桶)凝析油,由伊朗出发,目的地韩国,"长峰水晶"轮则载着来自美国的粮食。双方于周六(6日)晚间相撞,"桑吉"

轮运载的凝析油及自用燃料油泄露、 燃烧, 撞船原因不明。

"桑吉"轮上有30名伊朗籍船员和2名孟加拉籍船员。由于事故船只仍在燃烧,海上风浪条件不佳,目前仅有一名遇难船员遗体寻获,其余人员下落不明。"长峰水晶"轮上21名中国籍船员已获救。

据交通部最新消息,"桑吉"轮目前已漂移至碰撞位置东南方向约65海里处,船体仍在燃烧,交通部组织的降温灭火与搜救行动仍在进行。"长峰水晶"轮已于9日晚靠泊舟山老塘山码头。由于事发地处于中日之间的中国东海海域,10日日本海警"KOSHIKI"轮抵达现场,

与负责指挥的中方"海巡01"轮建 立联系。

#### 环境影响如何?

目前事故油轮仍在燃烧, 具体 的溢油量、漂油范围还没有确切数 据。负责海洋环境监测和应急处置 的国家海洋局对媒体称,事故船体 右侧有少量疑似溢油。根据目前海 上水文气象条件和事故船只所在位 置,"事故暂不会对近岸海域生态环 境产生影响"。另据烟台溢油应急技 术中心模拟,凝析油泄漏5小时后, 海面残存油量低于1%。

东海撞船事故, 意外普及了一 个石油术语,凝析油(condensates)。

当人们提起原油 (crude oil) 时, 脑海中会自动浮现黑色、深棕色的 粘稠液体画面。凝析油则很不同,它 在高压油气藏中, 是气体, 待开采、 提炼之后才变成液态。凝析油很容 易炼化成高价值的石油产品如汽油、 柴油、航空燃料、加热燃料,又经 常被称为"原油香槟"。

从石油工业的角度,凝析油是 价值更高的原油,但从溢油事故处 置角度,却依然难以处理。尽管凝析 油毒性较低,却比重质原油更易燃, 这也是事故发生几天后, 事故船体 仍在燃烧的原因之一。

溢油对海洋生态环境、海洋动 植物的影响,需要长期监测、评估, 且不仅要考虑溢油量、油品性质, 还要参照海流方向、气候条件和事 故发生水域自然环境等因素。

有一个例子很说明问题。1979 年,超大油轮 Atlantic Empress 在多

巴哥岛附近与另一艘油轮 Aegean Captain 相撞, 后者获救。Atlantic Empress 经历了原油泄露、失火后 最终在海上沉没,以28.8万吨油 量, 创造了世界船舶溢油史上的溢 油量之最。但是,因为原油并未污 染海岸,这次事故的环境影响,不 如 1989 年发生在阿拉斯加的 Exxon Valdez 号溢油事故。尽管后者的溢 油量不如前者大,却因为发生在威 廉王子海峡,污染了上千公里的海 岸线,导致栖息在这一海域的大量 野生动物死亡,后续影响延续数年, 被认为是最严重的人为环境灾难之 一。同属灾难级溢油的,还有发生在 2010年的墨西哥湾"深水地平线" 事故。海上绵延数十公里的油带,沾 满油污的海鸟,岸滩上累积的油块, 这一事故震惊了全世界, 让美国数



渤海溢油事故清理现场

个州进入紧急状态,后续事故处理、 赔偿同样延续多年。

此次东海撞船事故尽管载油量较大,但事故发生在离岸较远的海上,加上凝析油易挥发、微溶于水的特点,对海洋环境和附近渔业资源的影响可能较小。国家海洋局东海分局有关人士11日接受《财新》采访时表示,由相关海警船只发回的最新检测数据显示,距"桑吉"轮1.3至19海里范围内,"未发现油花,油含量较低,水质在国家海洋一类海水水质标准范围内"。空气质量也在海洋部门检测范围内,有关信息一经分析完毕将公布。

值得注意的是海流方向。向南的表层海流,仍存在波及舟山渔场的可能。另外,由于事故船只存在倾覆可能,一旦倾覆,溢油量有可能增加,环境风险也将进一步提高。

# 后续如何处理?

海上溢油很难完全杜绝。只能 通过法律、规制、技术降低事故发 生可能性,并为责任认定提供依据 及善后。

Exxon Valdez 事故发生后次年(1990年),美国国会通过了《石油污染法案》,规定所有用于美国的新建油轮,都必须是双体船,以避免触礁、撞击后溢油。1992年,国际海事组织(IMO)在国际防止船舶造成污染公约(MARPOL)的框架内,设定了所有新造油轮都要是双体

船、已投运油轮要逐步符合双体的标准。MARPOL是保护海洋环境免受船舶污染领域最重要的国际公约。中国是国际海事组织会员国,也是MARPOL缔约国。

美国能源信息署(EIA)在对溢油处置的介绍中提到,1990年代全球来自船舶的溢油总量明显下降,部分归功于这一"双体船"标准。来自国际油轮船东防污染联合会(ITOPF)的数据也显示,1970-2016年间,溢油量大于700吨的大型船舶溢油事故数量呈下降趋势,1990-1999年的十年间,大型船舶溢油年均7.7起,低于1980的9.4起,且在2010年后有了更大幅度的减少。同时,中型溢油量的事故数量也在下降。

但本次发生事故的"桑吉"轮船型、船龄等信息尚不明确,目前难以判断是否符合相关规定,由于溢油量未明,也无法判断属于何种量级的溢油事故。

墨西哥湾溢油事故发生后,美国提升了海洋能源开发的监管力度。同样的情况,也发生在2011年的中国渤海溢油事故后。2015年,国家海洋局发布了海洋石油勘探开发溢油应急预案,对海上石油勘探开发溢造成的溢油,做了事故分级、应急分级和组织机构等详尽规定。

尽管石油勘探开发导致的溢油 事故获得了舆论的高度关注,但在 实际中,其发生率低于海上船舶相 撞造成的原油、燃料油溢出事故。 这也是为什么中国应对海洋石油勘探溢油事故的经验(如渤海溢油),可能无法完全应用到此次事故的处置中。造成这种差异的原因之一,是全球原油贸易高度依赖海上远距离运输,繁忙的航道、数量庞大的油轮、不确定的海上气象条件,让交通事故性质的船舶相撞、触礁难以完全避免。

在此次东海油船碰撞事故之前,发生在中国海域、影响巨大的撞船溢油事故,是2002年天津海域的马耳他籍"塔斯曼海"油轮与中国沿海船舶"顺凯1号"碰撞事故。该事故所引发的后续赔偿诉讼及判例,可能会成为本次事故后续处理的一个参照系。

尽管自 1980 年代以来,全球石油贸易活动持续增长,船舶溢油事故却在持续减少。这虽然是好消息,但必须认清的是,大趋势的减少不代表这类事故的可容忍性。溢油对海洋环境、海洋生物的影响,需要长期、扎实的研究去证实或证伪。而研究机构本身的背景和独立性,也可能影响研究结论,这也是海洋环境损害赔偿中为何需要专门设置研究、修复资金的原因。⑤

冯洁,资深媒体人,《渤海溢油》系列报道作者,中外对话、《卫报》中国最佳环境记者获得者

# What's the impact of the East China Sea oil spill?

The Sanchi has sunk but its cargo could still damage the environment

□ Feng Jie



The Sanchi oil tanker days before it sank

Sanchi, the Panama-registered oil tanker that set fire after colliding with a Hong Kong freighter on January 6, sank at about 5pm on Sunday, according to a report by China Science Daily. CCTV reported that flames at the location where the vessel sank went out the following morning.

Rescuers have retrieved the bodies of three Sanchi crew members but 29 remain unaccounted for. The collision of the Iranian-owned tanker with the Chinese freighter CF Crystal took place 160 nautical miles east of Shanghai.

#### **Environmental impacts**

It's still too early to know how the oil spill will affect wildlife and the marine environment but long-term monitoring will be needed to understand this. The damage from oil spills is difficult to gauge because there are so many factors at play: the type of oil leaked, the direction of ocean currents, weather conditions and the environment where the leak took place are all important.

The Sanchi was transporting 136,000 tonnes of condensate from Iran to South Korea when the collision happened. There is still no firm data on the volume of spilled oil, but the oil slick is reported to be 10 nautical miles long and 1-4 nautical miles wide. Two Chinese vessels are reported to be cleaning up the slick with foam detergents, while the State Oceanic Administration's East China Sea bureau is using radar to measure its extent and impact.

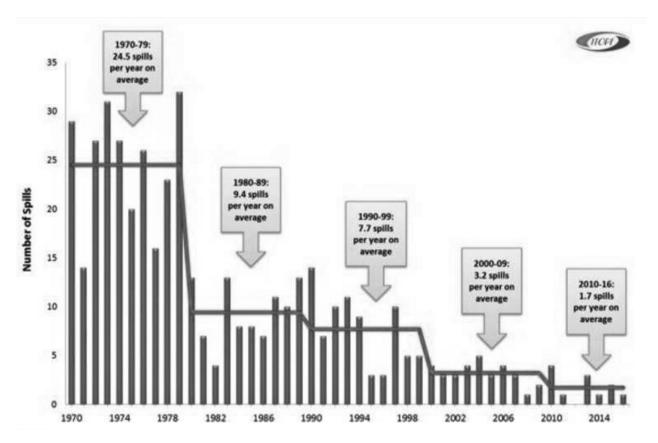
Oil spills are usually associated with crude oil – a sticky black or dark brown liquid – but condensates are quite

different. They exist in gaseous form in high-pressure oil reservoirs but condense into liquids when extracted. Condensates are easily refined into high-value oil products such as petroleum, diesel, aviation fuel and heating fuel, and are referred to as "the champagne of crude oil".

Condensates are less toxic than crude oil and slightly soluble in water. They also evaporate more easily and are more flammable, which explains why the Sanchi burned for several days after the collision.

Because the collision took place over 100 nautical miles offshore, the impact on the marine environment and nearby fisheries may be lessened although south-flowing ocean currents could carry pollution to the Zhoushan fisheries off China's east coast.

An official with the East China Sea office of the State Oceanic Administration, which is responsible for monitoring the marine environment and responding to emergencies, said in an interview with Caixin on January 11 that the latest monitoring data obtained by the coastguard



Number of large and medium-sized oil spills over 700 tonnes, 1970-2016. Source: ITOPF

showed "no oil blooms, low oil concentrations, and water quality within Category I standards" between 1.3 and 19 nautical miles from the Sanchi.

The administration also told media last week that the weather conditions and location of the Sanchi meant, "the accident will not currently have any impact on the coastal environment." Modelling by the Yantai Oil Leak Response Centre suggests that only 1% of condensates remain in the water five hours after a leak.

The distance from shore can make a big difference to the environmental damage from oil spills. For example, when the Atlantic Empress oil tanker sank following a collision in 1979 it spilled 280,000 tonnes of oil – the largest ever release from a tanker. However, the oil did not reach the coast, which lessened the damage. In contrast, the 1989 Exxon Valdez spill in Alaska was smaller but devastated 1,300 miles of coastline in the Prince William Sound, killing much of the local wildlife.

#### Can spills be stopped?

There will always be a risk of marine oil leaks although it is possible to use legal, regulatory and technical measures to reduce their likelihood, ensure responsible parties are held to account, and deal with the consequences.

A year after the Exxon Valdez leak, the United States passed a law requiring new tankers working in US waters be double-hulled so that if a grounding or collision happened a leak would be less likely. In 1992 the International Marine Organisation followed-suit, requiring all new tankers to be double-hulled and for existing tankers to be raised to the same standard. The MARPOL convention is the most important international agreement designed to prevent marine pollution from shipping. China is an IMO member and MARPOL signatory.

The double-hull standards and other changes have helped to reduce spills, which dropped significantly from the 1990s onwards.

A number of details about the Sanchi, such as its age and whether it met safety standards are still unknown. What we do know is that the oil trade relies heavily on huge numbers of tankers travelling long distances through busy shipping lanes in changeable weather. Whilst this is the case, it will be impossible to completely prevent vessels from colliding or running aground.

While the oil trade has expanded since the 1980s, the number of oil spills has decreased. That's good news, but it doesn't mean we can stop worrying: there is still a need for quality, long-term research into the effects of oil spills on the marine environment and wildlife. ©

Feng Jie is a senior reporter and author of Bohai oil spill series.

# 在象山,触摸东海捕捞业的艰涩脉搏

是什么令曾经丰饶的东海"无鱼可捕"?近年的一系列挽救措施是否有效?

□石 毅



成百上千的渔船停靠在象山石浦码头等待开渔

注析 江象山石浦港,码头外的水产品市场人头攒动,成箱的产品市场人头攒动,成箱的海鲜堆满了硕大的交易大厅,空气里都是腥甜的味道。自休渔期结束,石浦的海鲜交易再次活了过来。船老大——当地人口中的船长们到了岸上第一件事就是带着海货奔这里。

工人们来不及闲聊,刚卸下来的货还没放稳当,就要上秤,抬上货车,等着运往全国各地。

他们已经等待了4个半月之久。 按照农业部的新规定,这是东海历时 最长的一次休渔,2017年5月1日起到 9月中。此前,休渔期从6月1日开始。

# 捕空一片海, 只需要 15 年

为给鱼类留下繁衍的时间,中国沿海自 1995 年开始实行伏季休 渔。那时候,近海已经几无大鱼可捕,经历过的渔民都记忆犹新。船老

大沈祥根回忆, 那年他带着19岁的 儿子沈海兵出海,但一网下去,带鱼 只有小指头那么大, 鲳鱼不过硬币 大小,都只能做饲料。"东海没有鱼, 我们只好去南海。"他说。

然而在1960年代,他刚出海的 时候,一网鱼获能有上万斤(一市斤 等于0.5公斤),是90年代的数十 倍之多,不仅如此,鱼的个头也相 当大。

沈家过去居住在与石浦港相望 的小岛上,在沈祥根印象中,1980 年代以前,与码头比邻的山丘上都 是一块块农田, 渔村里捕鱼为生的 只是极少数,"大部分都是农民,种 水稻多。"

转折是伴随着中国政府放开对 经济的计划管制而来。原先渔船归 村集体的公社所有,个人不允许投 资渔船,捕捞的时间和计划,也由公 社统一安排。沈祥根回忆说,是公社 把他招进了捕捞队,那时候用的都 是木船,一个公社也就几艘,跟今天 的海洋捕捞规模不可比。

到了1980年代初,僵硬的制度 被打破。渔民们纷纷个人投资渔船, 组织捕捞队,海上一下子就热闹起 来。"改革开放了,我当时也不知道 怎么办,最擅长的还是打渔。后来十 几个人一拼队,搞了一条船,还是捕 鱼。"沈祥根说。

改革很快改变了象山的模样。 私人渔船挤满了港口,码头一再扩 建,农田转而成为更宽的马路、街 道和楼房。与此同时,本地的人力开 始显得不足,内地来的打工者—— 那些从小没见过海的人都涌到这里, 反倒成了捕鱼的主力。

象山的渔业志记载说,这里的捕 捞业发展至少可以追溯到13世纪,

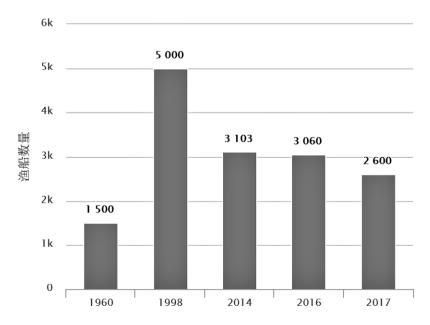
成为知名的渔港也有近百年的历史。 但渔业呈现爆发性的增长, 仅仅是在 过去几十年间。1960年,整个象山县 仅有渔船 1500 余艘, 全年捕捞量不 到 2 万吨。1995 年开始实施伏季休 渔,但直到1998年,这里的渔船数 量才真正见顶。那时,全县捕捞渔船 近5000艘, 当年捕捞量超过40万吨。

但与此同时, 不仅仅是东海, 在 中国沿海各地,渔民们都开始抱怨鱼 获减少, 许多传统的鱼类变得稀少。 "以前什么都有,大黄鱼大概在90年 代后就很少见了, 带鱼在 2000 年后也 比以前少多了。"沈祥根说。而这两种 鱼,都是东海最主要的产出。

象山是整个中国近海渔业的缩



沈海兵和父亲沈祥根在他们的船上



数据来源: 浙江在线、宁波市海洋与渔业局网站

影。根据中国政府每年公布的《中国渔业年鉴》,中国自1995年开始每年的海洋鱼类捕获量都超过1000万吨,多年位居世界首位。农业部的数据显示,2016年中国近海海洋捕捞总产量达1328万吨,远超过渔业专家建议的800万-900万吨的最大可捕量。

在船老大们的眼里,随着体制放开而来的渔船、渔民数量激增,不断改良的渔船装备和渔具也进一步加剧了今天中国近海所面临的渔业危机。

沈祥根说,在他们出海的时候,象山的渔民还没有今天这样先进的装备。他们的船上只有罗盘和收音机,一个用来导航,一个用来接收天气预报,这样的船只能走出去大约8海里,走不出象山。他清楚地记得,

他 18 岁那年出海遇到渔船螺旋桨故障,船上没有报警系统,只好在海上飘了大半天,等到被渔政船发现才获救。

到了他儿子这一辈,船上有全球卫星定位系统,而且为了捕获更多的鱼,船上还装备了利用声波探测鱼群的探鱼器。

当然,这样的后果是,无处可逃 的鱼群,最终越来越少。

# 光禁渔不够, 但不禁就什么都没有

现在,沈祥根已经退休,儿子沈海兵成了这艘渔船的船长。开渔头两个月,台风来得频繁,沈海兵和相熟的船长们在海上互通有无,看谁坚持到最后一刻。他们心里清楚,渔

民一年的收入,就主要看这几个月, 再往后价值高的大鱼越来越少,捕 获的都是幼杂鱼。

象山县渔业捕捞协会的会长黄 根宝说,现在禁渔期长了,头两个月 肯定是好的。他们出去调查,有的渔 船出去一个月就能有近百万的毛收 入,但好景一般只能维持到年底,再 往后,有的渔船就会自行回港休渔, 以免入不敷出。

"光禁渔不够,但不禁就什么都 没有,一定要减少渔船数量。"他说。

沈海兵还是觉得渔民的日子大 不如前。他盘算了一下,如果没有政 府提供的燃油补贴,捕鱼早就无利 可图。

中国政府从 2006 年开始对海洋 捕捞进行燃油补贴,依据的是渔船 的功率大小和燃油使用量,并且在



渔船上的捕捞日志。按照浙江省2016年的新规定,大中型渔船必须记录每日捕捞量

此后的10年里不断提高补贴额度。到了沈海兵这里,最多的时候2014年,他的渔船全年拿到了30余万的补贴。不过,除去渔船维护、船员开支和柴油消耗,他当年的纯收入正好是30万。也就是说,如果没有补贴,他一年的活就白干了。

上海海洋大学海洋文化与法律学院院长唐议说,政府至少在2003年时就公开指出过量捕捞是导致近海渔业资源衰竭的重要原因,在2006年,中国提出要减少捕捞量、缓解当下渔业资源衰退的行动目标。但到了2006年,随着当年对国家对农业等各个民生生产领域开始实行燃油补贴,捕捞业也囊括进来,补贴政策一铺开,原本的目标就遇到很大挫折。

一直到 2015年,背道而驰的政策才被扭转过来。这一年,财政部公开承认,"渔业油价补贴……扭曲了价格信号,与渔民减船转产政策发生'顶托'。"中国政府宣布开始逐年减少燃油补贴,其目标是争取到2019年将补贴降低到高峰2014年的40%,并推动更多的渔民逐步退出捕捞业。

在过去一年,政府已经通过提供一次性财政补贴令不少船老大淘汰老旧的渔船,让一些渔民退出这

个行当。据浙江在线报道,一艘普通 渔船的减产补助金少则近10万元、 多的有400余万元;从2016年11 月开始,象山已有超过500艘渔船 退出渔业并已被拆解。

除了补贴逐渐撤出,省政府对 渔具也管得越来越严。为了保护幼 鱼,浙江省规定渔民使用的渔网网 眼大小不得小于 54 毫米。另外,对 于市面上常见的带鱼、大黄鱼等 6 种鱼类,今年又进一步限定小于一 定重量不得出售。

不过,查获违规捕鱼的消息总是不时见诸媒体,难以杜绝。当地渔政的工作人员抱怨说,他们只有两艘渔政船,出了海就很难管了。

渔民们对此有自己的看法。沈海兵就说,去年按照规定用合乎标准的渔网,结果网上来的带鱼都溜了。"渔民亏死了,"他感叹。

# 下海还是上岸? 这是一个问题

尽管政府已经开始着手削减这 里的捕捞产能,但目前象山县仍然 拥有 2600 艘渔船,船只数量上相当 于上世纪 90 年代初的水平,总功率 还更大。群山三面环抱的石浦港,月 牙形的海湾里,数不清的渔船一条 挨着一条排开,五颜六色的船旗在 海风中呼啦啦地响。

在岸上,宾馆、餐厅和摩登的住宅毗邻,还有不少的高楼正在建设中。当地政府正着力将象山打造为旅游地,他们把原本名不见经传的开渔节办成了当地最为知名的庆典。沈家父子说,原来也有些渔民在船上拿点酒肉祭祀妈祖,祈求丰收和平安,但不成气候。现在政府把渔民组织起来祭祀,搞花船巡游,好不热闹。每到这个时候,象山的宾馆就变得一房难求。

转行的想法也在沈海兵脑海里盘旋了多年,不过他觉得对于 40 岁的他来说并不容易。有个前车之鉴摆在他眼前,他的一位同学曾经上岸经营冷库,不过几年以后做不下去,又重新购置了渔船回到海上。现在,那些真正上岸的大多是临近退休年龄的老渔民。

"渔民上岸不好搞。"他站在甲板上说。等到台风一过,他又得赶在退潮前出海了。只是,要捕到大鱼,他必须比他的父亲走得远得多。⑤

本文图片均由石毅拍摄

石毅, 澎湃新闻记者

# Fishing village in decline

Government action is too slow to stem the decline of fish stocks.

□ Shi Yi

Last year, Xiangshan county's fishermen spent four and a half months stuck in port, a month longer than usual.

Xiangshan, a crab claw-shaped peninsula south of Ningbo, a thriving city in the southeastern province of Zhejiang, has been a well-known fishing region since the 13th century.

The decision to extend the closed season from May to mid-September, instead of June, was taken by the Ministry of Agriculture to give greater protection to fish stocks in the East China Sea.

The fishing season is just beginning in Xiangshan's historic fishing grounds when I visit. Boats are docked in tight rows in Shipu harbour, colourful flags flapping from their masts. Nearby, the huge fish market is piled high with crates of fresh catch. Porters are bustling about, ceaselessly hauling boxes onto weighing machines and loading trucks.

Retired captain Shen Xianggen remembers how depleted the fish stocks were before the closed season was instituted in 1995. He recalls a trip with his son, who was 19 at the time, which netted only thumb-length eels and tiny butterfish, the size of a coin. "There were no fish in the East China Sea, so we had to head to the South China Sea," he says.

#### Industrial fisheries

When the elder Shen started fishing in the 1960s, nets strained under tonnes of fish. But economic reforms in the 1980s changed everything.

Previously, the village commune had owned the fishing fleet, so it wasn't possible to possess your own boat. The commune planned when and how to fish, and assigned workers like Shen to a fishing crew. He recalls working on a small fleet of wooden vessels that was utterly different from the industrial scale vessels of today.

People started to invest in private fishing vessels from the early 1980s, and the seas soon got busier. "After reform and opening up I wasn't sure what to do, but I was best at fishing. So a dozen or so of us got together, got a boat, and just kept fishing," says Shen.

The harbour soon needed expanding, and then several times again. Most locals were rice farmers before the 80s, growing crops on the harbour-side hills. As the industry grew, fields became streets, and workers from inland China that had never even seen the sea flooded in, forming the bulk of the workforce.

#### Shrinking catches

In 1960, there were only 1,500 fishing boats for the county coastline, landing less than 20,000 tonnes of fish a year.

Following unsustainable growth in the 80s, a closed season was introduced in 1995, resulting in a peak in vessels in 1998 at 5,000. By this point the annual catch was more than 400,000 tonnes.

Fishermen all along the China coast were complaining of shrinking catches by then, not just on the East China Sea. "You didn't see yellow croaker so much after the 1990s and eels were much rarer after 2000," Shen remembers. Those species had been the main catch.

Xiangshan's experience is a microcosm of China's coastal fishing industry.

Over 10 million tonnes of fish were caught annually from 1995, according to the government's China Fishing Industry Yearbook. China's coastal catch was 13.28 million tonnes in 2016, according to agriculture ministry data – far outstripping the eight or nine million tonnes that fishing experts estimate is sustainable.

Boats are fitted with GPS systems and sonar to locate fish, meaning shoals have little chance of evading capture. Shen first recalls going to sea with only a compass and a radio to listen to weather forecasts. His generation stayed within eight nautical miles of the shore.

#### Closed season only a start

Shen Xianggen has now retired, and his son Shen Haibing captains their boat.

The younger Shen says fishing crews depend for their entire year's income on the first few months after the closed season. After this period the higher value fish are scarce and the catch is mostly "trash fish", used to produce fish meal.

The first two months fishing are good thanks to the closed season but by winter boats start tying up in port to avoid making a loss, says Huang Genbao, head of the county's fishing industry association.

The association has found that gross income can hit almost one million yuan (US\$158,000) on some boats in the first month of the fishing season, but earnings are not sustained throughout.

"A closed season alone isn't enough, but without it there'd be nothing left. There has to be a reduction in boat numbers," says Huang.

#### Vanishing profits

Shen Haibing says fishermen wouldn't make a profit without government fuel subsidies.

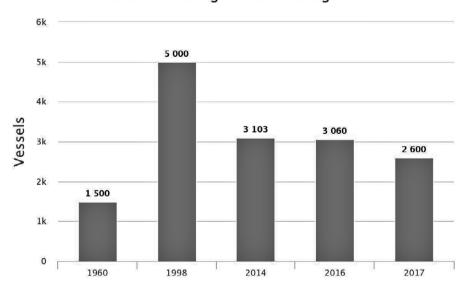
Fishing vessel fuel subsidies began in 2006 and have risen steadily over the past decade. Payments are set

according to a boat's horsepower and fuel consumption.

Shen Haibing found his fuel subsidy was worth over 300,000 yuan (US\$47,500) in 2014. But after maintenance, labour costs and fuel, his net income for the year was also 300,000 yuan – without fuel subsidy, he would have made nothing.

Tang Yi, head of the College of Marine Culture and Law at Shanghai Ocean University, says government fuel subsidies have worked against separate efforts by officials to halt over-fishing.

#### Number of fishing vessels in Xiangshan





Butterfish caught on the first day of the fishing season

In 2006, the government set targets to cut catches and ease the decline of fisheries. In the same year, it initiated fuel subsidies for certain sectors, including agriculture and fishing, despite official concern about overfishing since 2003.

The policy mismatch was not tackled until 2015 when the Ministry of Finance acknowledged that: "fuel subsidies for the fishing industry... have distorted price signals and undercut policies intended to reduce the number of fishing vessels and move fishermen into other sectors."

An annual reduction in the subsidy was announced. By 2019 it will be lowered to the same level as 2014, to encourage more people to leave the industry.

## Scrapping boats

One-off government payments over the last year have also persuaded many captains to scrap older vessels, and some to find other work.

According to Zhejiang Online the catch reduction subsidy can be worth between 100,000 yuan (US\$15,812) and four million yuan (US\$632,000) and over 500 fishing vessels have been scrapped in Xiangshan since November 2016.

The provincial government is also taking a tougher line on net sizes by banning those below 54mm to protect young fish. It's also banned sales of six species of small fish, including the eel and yellow croaker. But illegal fishing is hard to eliminate. With just two patrol boats, local fishery officials complain they cannot control what fishing boats do at sea.

Shen Haibin says complains that "the fishermen are losing out."

#### Go to sea, or go home?

Despite government efforts to reduce catches, Xiangshan is still home to 2,600 fishing vessels – roughly the same as in the early 1990s, only now with greater horsepower.

On shore, there are hotels, restaurants and modern apartment buildings. The local government wants to turn Xiangshan into a tourist destination.

A previously obscure festival to start the fishing season has become famous. In the past, the Shens explained, some fishermen would make a small sacrifice to the sea goddess Mazu in hope of a good catch and safe passage. Now the government has them make mass sacrifices and decorate their boats – and the hotels are always full.

Forty-year old Shen Haibing has been considering a change of career but worries he's too old. A friend of his quit to run a cold storage facility but the venture failed so he bought a new boat and returned to fishing. Most of those leaving the industry are already approaching retirement.

"It's hard for a fisherman to quit," says Shen, standing on the deck of his boat. But it may be harder to remain one. (5)

All photos by Shi Yi

Shi Yi is a reporter at Thepaper.cn.



船员们在甲板上晚餐 Fishermen have dinner on deck



工老船长们作为代表,在开渔节上祭祀妈祖,祈求丰收 The captains represent their crews in a prayer to Mazu, goddess of the seas, for a good catch



工人们在渔船上做准备,检查渔网 The crew of a fishing vessel check their nets



带鱼是这个季节最主要的渔获 Eel are the main catch at this time

# 中外对话解析 2018 中国 大环境议题

WHAT TO LOOK OUT FOR IN 2018

- 环境公平优先 Prioritise environmental justice
- 完善地方治理 Improve local government
- 执法工作要对路 Get business on board
- 完善法律条例 Improve the rule of law
- 遏制煤炭 Curb coal
- 加快绿色投资 Accelerate green investment
- 规范国际项目融资 Regulate international project financing
- 参与全球治理 Engage in global governance

#### 伦敦办公室 / London Office

Suite 306 Grayston Centre, 28 Charles Square, London, N1 6HT, UK

电话/Tel: (+44)(0)2073244767

北京办公室 / Beijing Office

北京市朝阳区建国门外大街26号5号楼1层 云享客长富宫中心

Yun Space, First Floor, Building 5, No.26 Jianguomenwai Street, Chaoyang district, Beijing 电话/Tel: (+86) 010 6241 6774

