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European Stakeholders' Willingness to Link the EU ETS and the Guangdong ETS

欧洲利益相关者对于连结欧盟 ETS 和广东 ETS 的意愿

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Abstract

摘要

The EU is in favour of linking carbon markets, recognizing it as a cost effective way to reduce emissions and show political leadership. China is piloting emissions trading with the plan to scale up. Linking the two schemes as an option came on the horizon. We surveyed 13 high-profile stakeholders about their willingness to link the EU ETS and the Guangdong ETS, the largest of the seven pilots. The results vary from different interest groups. Our findings are in line with the European Commission´s position. An immediate linkage is not possible due to current diverging market design features but further robustness studies about future convergence of the two markets would be highly welcome. The stakeholder consultation found that the majority of surveyed stakeholders involved in the EU ETS were sceptical that direct linkage negotiations with the Guangdong ETS could start immediately, but would embrace any suggested options for exploring the robustness of a potential future common market, exchange information and good practices.

对于欧盟愿意碳排链接可以视为一种有成本效益的减排碳排放的方法和显示其政治领导地位。中国计划将进一步扩大碳排放试点。在未来，两个碳排放机制可选择相互链接。我们对于 13 个高度利益相关者对于链接欧盟碳市场与中国七个试点中最大的广东碳市场的意愿做了调研。因为现在两个碳市场设计不同，所以马上直接链接不太可能，但是未来对于两个碳市场的结合是高度欢迎的。对于各高利益相关者的调查中，大部分的欧盟碳市场的利益相关者怀疑与广东碳市场直接链接的协商不能马上开始，但是欢迎任何探索未来稳健性共同市场、交换信息和最佳实践的建议方案。

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Introduction

Attempts to develop a global agreement in response to the risks of climate change have focused on two pathways *(Ranson and Stavins, 2013)*:

1) Extending the Kyoto Protocol commitment period and the Durban Platform for Enhanced Action which aims to develop, by 2015 for implementation from 2020,
2) A new protocol or other legal instrument under the UN Framework Convention on Climate Change *(UNFCCC)* applicable to all Parties *(both developed and developing countries)*.

In theory, it would be economically optimal if a global agreement could be reached which would lead to a global carbon emission cap with all nations participating in a single carbon market. However, the past experiences and lessons of international climate negotiations suggest that reaching a global top-down international agreement to address climate change is extraordinarily difficult and a single global carbon market is an unlikely outcome of the current negotiations.

Challenges to a top-down international climate policy agreement include the fact that each nation applies a portfolio of different emission management approaches, including economy-wide cap and trade ETSs, low-carbon fuel standards, national renewable energy targets or obligations, energy efficiency targets, fuel taxes, carbon taxes, and technology standards. Each approach leads to a different cost of carbon within its targeted sector or country either explicitly through the carbon allowance price or implicitly through the incremental cost of policy requirements. A successful linkage of ETS schemes requires creating a single carbon cost and equitable access to the prevailing low cost abatement opportunities *(WBCSD, 2012)*. These differences in the cost of carbon across even a single economy can lead to inefficiencies in the allocation of capital to reduce emissions, which could be exacerbated by an ETS linkage to another economy with its own unique portfolio of emission management approaches. To be successful, a linkage of ETS schemes should be accompanied by convergence towards a single cost of carbon, and equitable access to the prevailing low cost abatement opportunities.

In November 2011, China commenced seven pilot ETSs, in Beijing, Chongqing,

carbon market in a developing country, , itself covers 388 MtCO2e in 2013, similar to the size of France's emissions in 2012 *(World Bank, 2014: 64)*. The GD ETS became operational on 19 Dec 2013. In 2014, the Chinese government announced a plan to establish a national carbon market in 2016. Setting up a national carbon market may require linking individual carbon markets within China.

At the same time it is clear that linking with other markets will currently only be considered if such markets share similar features with the EU ETS, as has been the case in the linkage of the EU ETS with Iceland, Norway and its forthcoming linkage with Switzerland. The main requirements in regard to market compatibility are the existence of an absolute cap on emissions as well as a limited use (if any) of international carbon offsets *(Carbon Market Watch, 2015; European Commission, 2014c)*.

Although the EU ETS and China's ETS will be the two largest carbon markets, there is still a lack of literature on understanding international stakeholders' views on linking these markets. The study aims to investigate European stakeholders' views on linking the EU ETS with the Guangdong ETS.

前言

制定一项应对气候变化风险的国际条约，有两个主要的途径：

1) 延伸《京都议定书》的承诺时间和旨在发展的德班行动协议，到 2015 年为止，从 2020 年开始执行。

2) 在联合国气候变化框架公约的指导下制定适用于所有的参与者*（所有发达和发展中国家）*的新协议或者其他具有法律效应的文件。

理论上，如果可达成全球协议则应具有最优经济效益，可形成全球碳排放量限制，所有的国家都参与到同一个碳排市场。但是，从以往的经验和教训中可得知，国际气候协商如果用从上到下方法形成全球协议以面对气候变化是极其困难的，从现阶段的协商来看，形成单一的全球碳排市场不太可能。

对于从上到下的国际气候政策条约的达成，存在许多挑战，其中包括每个国家都有不同的一系列节能减排管理方法，如经济上限或碳排交易系统、低碳能源标准、国家可再生能源目标或者义务、能效目标、燃料税、碳税和技术标准。每一种方法会导致其目标行业或者国家或者通过碳补贴价格明确或者通过政策要求增量成本暗示出来的碳排成本的差异。成功的连接碳排系统要求形成统一的碳成本并拥有同样获取流行的低成本减排的机会*（WBCSD，2012）*。即使在单一的经济体中出现的碳成本差异也可能导致减排资本分配低效，这种低效更会因为链接两个拥有完全不同减排管理方法的机制而更显著。如果要成功连接，碳排系统应伴随形成统一的单一碳排市场和拥有同样获取流行的低成本减排的机会。

在 2011 年 11 月，中国开始形成了七个碳排放市场试点，分别在北京、重庆、上海、深圳、天津、湖北和广东*（国家发展与改革委员会，2014a）*。在七个省市中，广东碳排放市场是目前发展中国家最大的碳排市场，在 2013 年，其自身二氧化碳交易量达到 3.88 亿吨， 与法国在 2012 年的排放量水平相似*（世界银行，2014：64）*。广东碳排市场从 2013 年 12 月 19 日开始运行。在 2014 年，中国政府宣布计划在 2016 年创建立全国碳排市场。创建全国碳排市场要求链接中国国内各个碳排市场。

与此同时，欧盟碳排市场目前只考虑与其具有相似特征的碳排市场进行链接，比如像欧盟碳排市场与冰岛、挪威的链接，和即将与瑞士碳排市场的链接。欧盟碳排市场主要要求碳排市场兼容，存在绝对碳排放量和限制国际碳排抵消的使用*（Carbon Market Watch, 2015; 欧盟，2014c）*。

尽管欧盟碳排市场与中国碳排市场将会成为两个最大的碳排市场，对于理解国际利益相关者如何看待链接还是缺乏相关参考文献。这个研究的目的是探索欧盟利益相关者如何看待欧盟碳排系统与广东碳排市场的链接。

Methodology

The current willingness to link the EU ETS and the Guangdong ETS was evaluated by interviewing a broad range of stakeholders, holding key positions on the European side of international carbon market outreach, allowing us to capture complementing perspectives from the European Commission/Parliament, civil society, advocacy groups, academia and business.

A qualitative research methodology was chosen to answer how and why research questions via in-depth analysis of experiences and attitudes *(Dawson, 2009)*. The stakeholder consultation was conducted in the form of semi-structured interviews allowing participants to express their own experiences and ideas without pre-structuring their answers.

In the process we interviewed 13 people from March to June 2015.

The interview sample consisted of:

- 4 members of the European Commission, DG Climate Action
- 3 senior NGO representatives
- 2 senior business representatives from industries directly affected by linkage
- 2 representatives of academia, both being active and knowledgeable carbon market researchers, who worked with and for the DG Climate Action in the past

In addition we actively participated in the Missing Link Forum in Brussels from 5th of May, 2015. Speakers included members of the European Parliament, the European Commission and various NGOs, all representing key actors in past and future carbon market linkage negotiations. The analysis of these discussions and main arguments complemented our findings. We also conducted an extensive analysis of publications of the European Union governmental bodies and a thorough review of existing academic literature on the topic in order to interpret the interview findings in a broader context.

方法学

通过广泛采访在国际碳市场中欧洲碳排市场的关键利益相关者，本文对于目前就链接欧盟碳排市场和广东碳排市场的意愿进行了评估，使我们能够获得来自政界、民间社会、倡导团体、学术界和商界的各种补充看法。

定性研究方法是通过回答如何和为什么的研究问题，以及深入分析经验和态度（道森，2009 年）。对利益相关者采用半结构化访谈的方式进行咨询，允许参与者表达自己的经验和想法，而非预先组织他们的答案。

采访样本包括：

- 四个欧盟委员会气候行动总局的利益相关者
- 三个高级非政府组织代表
- 两个直接受到碳排市场链接影响的行业的高级商业代表
- 两个来自于学术界，是碳排市场资深研究者，曾经为欧盟气候行动组织成员

此外，我们积极参与了 2015 年 5 月 5 日在布鲁塞尔举行的‘缺少链接’论坛。发言者包括欧洲议会、欧洲委员会和各种非政府组织的成员，都是过去和未来的碳市场链接协商中的重要角色。通过讨论和主要观点的分析补充我们的研究。最后，在欧盟的政府机构文献分析以及政府发布的相关文章中，和有关这一主题现有的学术文献的全面阅读后分析文件解释了访谈结果。

Results

Different stakeholder groups had divergent views on their willingness to link. Although business stakeholders seemed keen to embrace a direct near term linkage, NGOs were more cautious and favoured a thorough exploration of the robustness of the two markets first, before considering any kind of formal linkage negotiations.

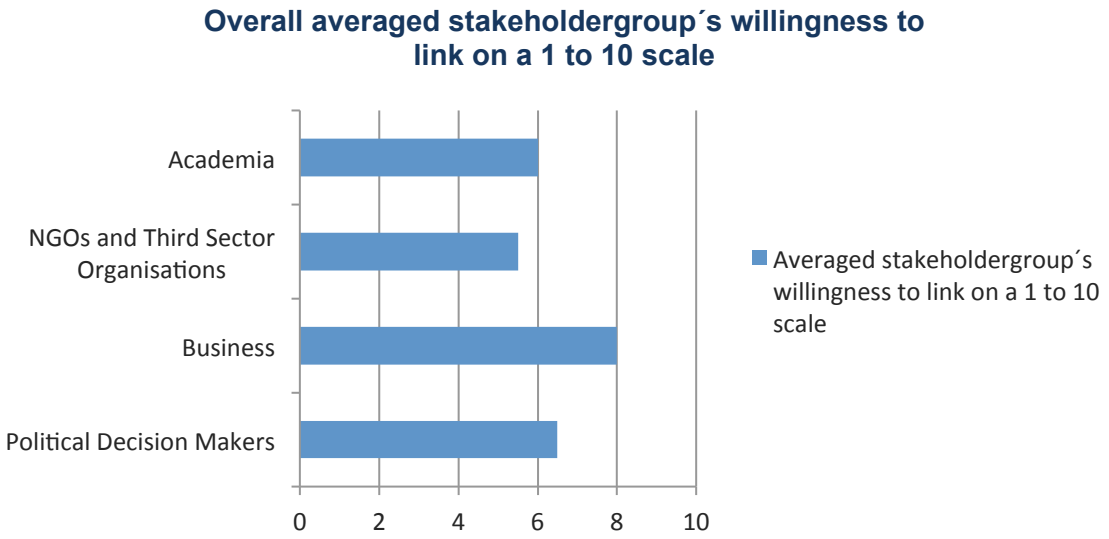


Figure 1: The average willingness to link across stakeholder groups is 6.5; while all participants could see the potential benefits in political leadership and economic gains, the main concerns were the current divergence of market designs and MRV considerations

Business representatives were in general the most pronounced in favouring direct and immediate linkage. Core arguments put forward were the reduction in compliance costs by introducing coherent legislation, minimizing general transaction and operational costs, as well as the avoidance of carbon leakage. The interviewees recognized the difficulties posed by the diverging market designs between the EU and Guangdong schemes and recommended that an analysis be carried out on the possibilities of heterogeneous linkage, building on the current research of the World Bank to overcome these difficulties. One of the key suggestions made in the World Bank´s research papers is to introduce a ratio between different carbon prices, similar to a currency exchange regime *(The World Bank, 2015)*. The respective organizations of the interviewees[1] will highlight the

advantages of linking carbon markets to policy makers before the COP-21 summit in Paris this year, to support the introduction of a global carbon pricing scheme *(Financial Times, 2015)*.

NGOs have shown the strongest scepticism about a common carbon market between Guangdong province and the European Union. Two NGOs which had been consulted in the majority of past decisions about international carbon market linkage, both expressed the view that the EU ETS is currently focused inwards and is trying to stabilize the carbon price by cutting the oversupply of allowances in the market. The introduction of the market stability reserve and back-loading were only made possible by the application of considerable political capital, making various political decision makers adverse to any measures which could introduce volatility into the market in the near term. Interviewees were generally in favour of exploring future linkage options, but emphasized that the EU ETS would first have to consolidate its internal reforms.

Interviewees from **Academia** diverged significantly in their perspective on linkage. While one interviewee raised concerns about a direct linkage, the other favoured an early exploration of options for sectoral linkage. In this context sectoral linkage has been mentioned as an attractive way to achieve efficient emission reductions without a significant impact on the carbon price, reducing the amount of potentially imported systemic instability while increasing overall mitigation in a cost efficient manner.

The most significant concerns related to the integrity of the Guangdong MRV procedures, the current domestic focus of the EU ETS and security issues occurring as a consequence of linkage. One interviewee argued that a problem in one jurisdiction can quickly become a problem for all when carbon markets are linked and security or MRV problems are occurring[2]. The Guangdong ETS would have to mature further – a process in which the EU should support Guangdong strongly – to allow future compatibility between the schemes and ensure that all entry points across future markets will be equally secure. To complement that, it was pointed out by both stakeholders that questions of political accountability cannot be settled by current existing institutions. Questions of political accountability and shared governance mechanisms to address them should be analyzed in future research.

Political decision makers appreciated the opportunity to explore linkage to the Guangdong ETS as a way to foster the leadership and lighthouse role which the

EU ETS enjoys among global carbon markets *(European Commission, 2014)*. In addition, the exploration of the robustness of a potential future common carbon market with Guangdong province was described as an innovative way to learn more about the general development of other pilot schemes in China as well as the future Chinese national ETS. Two core concerns expressed by this stakeholder group related to MRV - such as allocation methods, double counting and the general transparency of the Guangdong ETS - as well as the current EU ETS paramount focus on internal reforms. The commission favoured further robustness studies about the future convergence of the two markets while also exploring ways of transferring good practices.

What are the main barriers to starting immediate direct linkage negotiations?

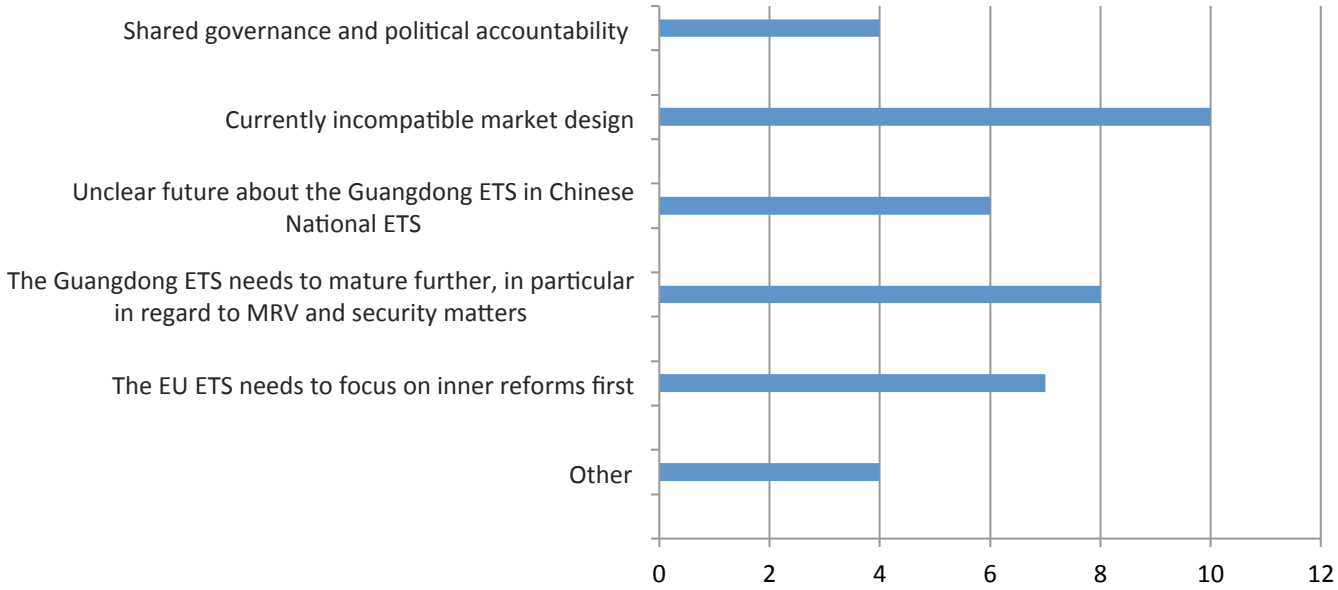


Figure 2: A distribution of the most important barriers in regard to immediate linkage; the three most pronounced answers per interviewee were used to create the graph (n=39)

Furthermore, all but one interviewee were in favour of reducing the information gap about the Guangdong ETS and supporting its development by offering lessons learned and exploring options for mid- to long-term linkage, while conducting further robustness studies on the convergence of the two markets.

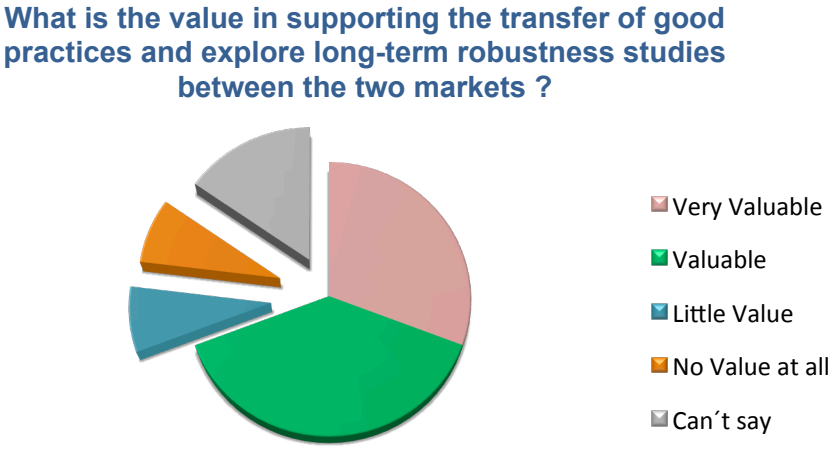


Figure 3: 69% of consulted stakeholders assessed the exploration of future linkage options either as valuable or very valuable - in contrary to 15% who didn't see a value in exploring future linkage possibilities.

In conclusion across all stakeholder groups two main perspectives recurred.

1) A linkage under current conditions is not immediately desirable.
2) The robustness of a future linkage of the two markets should be explored and the exchange of good practices facilitated.

结果

链接意愿的观点在不同的利益相关者群体里是不一样的。商业利益相关者更偏向于短期直接链接，非政府组织机构更谨慎且偏向于在考虑正式链接前，应先彻底的分析两个碳排市场的稳健性。

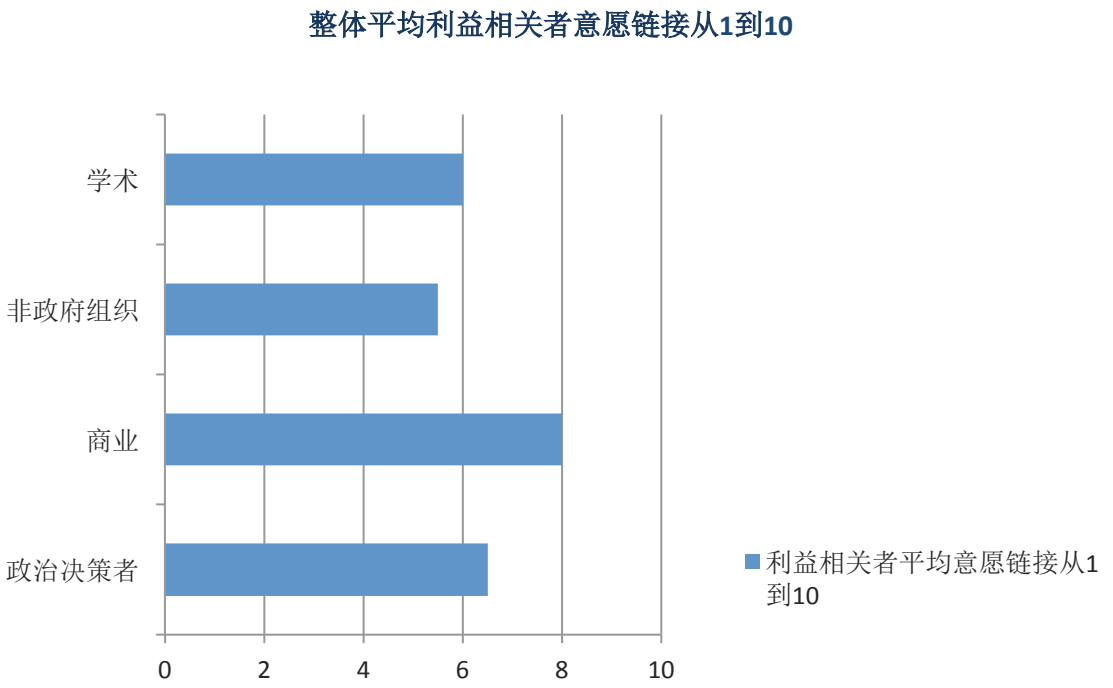


图 1: 利益相关者链接意愿平均分数为 6.5；所有的参与者都可预见链接带来的潜在政治领导利益和经济利益，主要担心的是不同碳排市场的设计和监管机制

企业代表们一般最明显的偏向于直接和即时的链接。核心的论点是通过引入统一的立法降低合规成本，最大限度地减少一般交易和运营的成本，以及避免碳泄漏。受访者承认由欧盟和广东碳排市场之间的设计不同带来的困难，并建议世界银行在现有研究的基础上对多样化链接的可能性进行分析，以克服这些困难。世界银行其中一篇研究论文的主要建议是引入不同的碳价格之间的比率，类似于货币汇率制度（*世界银行，2015*）。这些代表的各自组织将在今年巴黎会议前向决策者提出并强调链接两个碳排市场的好处，用于支持并推动全球统一碳价机制的引入（*金融时报，2015*）。

非政府组织对广东省和欧盟之间建立共同碳市场表示出强烈的怀疑。两个非

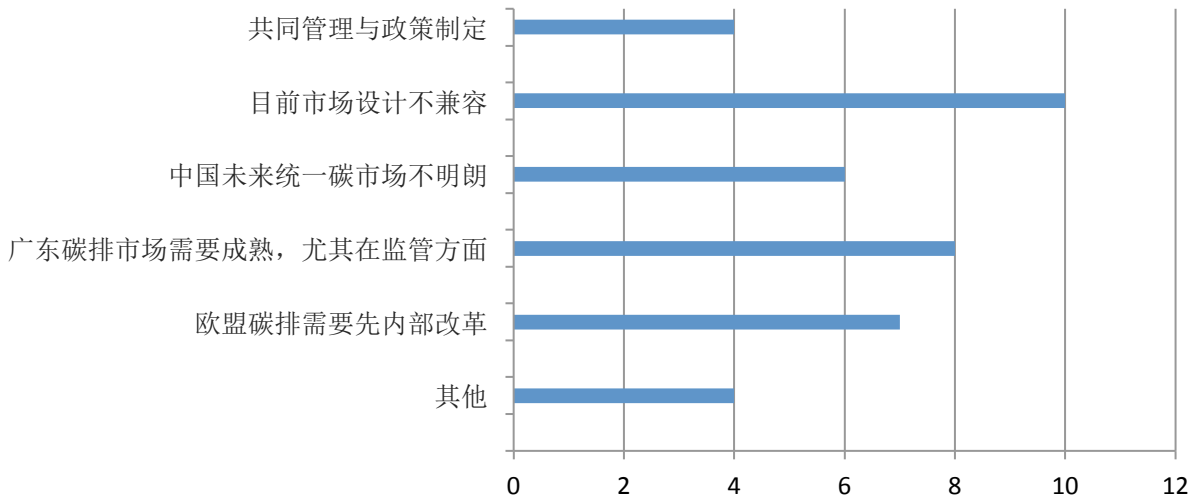
格。‘市场稳定储备’和‘后备政策’的引入只有在应用相当多的政治资本时才有可能，使得不同的政治决策者反对任何可在短期引发碳价格波动的措施。受访者普遍赞成探索未来链接的方案，但强调欧盟碳排系统必须首先巩固其内部改革。

来自**学术界**的受访者对于链接的看法存在分歧。一位受访者提出了直接链接的担忧，其他利益相关者则赞成前期探索行业链接的方案。在此背景下，行业链接作为一种实现高效率的减排而不会对碳价格产生显著的影响的有吸引力的方式，降低了可能引进的系统不稳定性，同时以一种成本有效的方式增加了整体减排量。

链接后最主要的担忧是广东审查、报告和检审过程的完整性，以及目前国内对欧盟碳排体系和安全问题的关注。一位受访者认为，一个司法管辖区的问题，可以很快成为所有链接的碳市场的问题，安全或审查、报告和检审的问题正在发生。广东碳排放系统将不得不进一步成熟 – 欧盟在这一过程中应该强烈支持广东－未来两个机制才能兼容，并能确保未来整个市场所有入口处的安全。要补充的是，双方相关人士认为，政治责任的问题不能由当前的现有机构承担。政治责任和解决这些问题的共同治理机制的问题应在今后的课题研究进行分析。

政治决策者很重视与广东碳排市场链接的机会，这也能巩固欧盟碳排放交易体系在全球碳市场中的领先地位和灯塔作用*（欧洲委员会，2014 年）*。除此之外，对于探索可能未来与广东一起发展的共同碳排市场的稳健性，给中国其他试点碳排市场的一般发展和建立统一的碳排市场提供了一种创新的方法。利益相关者对于测量、报告和审核最关心的两个方面（比如配额分配方法，重复计算和广东碳排系统的透明度问题）以及现有的欧盟碳排系统最主要的关注点在于内部改革。欧盟委员会还主张对两个市场的未来融合的稳健性进行进一步研究，同时也在探索传播好的实践经验。

对于马上直接链接的主要障碍



此外，只有一位受访者认为广东碳排市场应减少信息缺失以及支持广东碳排市场发展并同时学习和探索中长期链接方式，以及实施更多两市场兼容性研究。

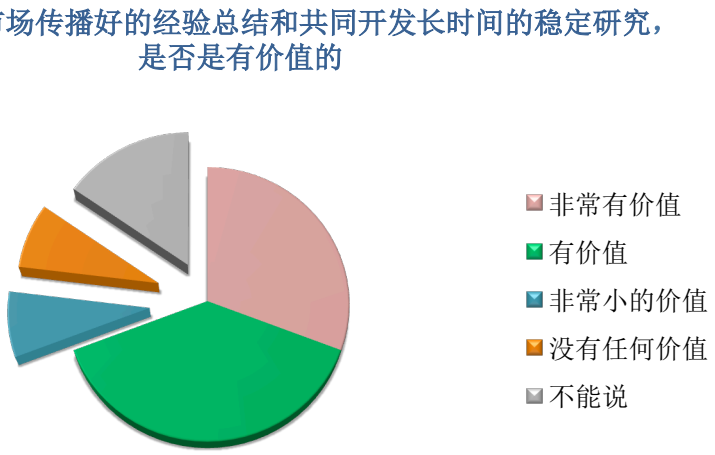


图 3: 69% 的利益相关者认为探索未来的链接有价值或非常有价值-相反，15%的利益相关者对于探索两碳排市场链接并未见到任何价值。

总体看来，所有利益相关者都重复着两个主要的观点

1) 在目前条件下，立即链接不太可能；
2) 未来两个市场稳健的链接应该不断被探索并且传播好的实践经验。

Discussions

The two main recurring answers across all stakeholder groups will be discussed in two parts.

1) Incompatible market design, MRV concerns and the inner reforms of the EU ETS
2) Timing of linkage and facilitating transnational cooperation

Part one will focus on the concerns about immediate linkage of the two markets in their current state. In the second part the importance of the timing of linkage and its equivalent in political theory will be explored.

Incompatible market design

The main and obvious reason preventing a linkage at the moment is the incompatibility of ETS designs in the two jurisdictions. This can be attributed to three diverging design features, which are:

1) The Guangdong carbon market´s emission intensity target which contrasts with the EU ETS absolute cap,
2) The types of offsets which are currently allowed in both jurisdictions and finally
3) The existence of price controls in the Guangdong ETS[3][4].

Security and MRV concerns in regard to the Guangdong pilot scheme

Concerns about security issues were especially pronounced among interviewees from an academic background. The EU ETS has been struggling with security issues since the introduction of the carbon market in 2005. One of its most famous cases was the theft of emission allowances worth $7m from a Czech account in 2011 *(Financial Times, 2011)*. Since June 2012 national registries have been replaced by one Union wide single registry system. The EU has undertaken numerous further improvements to the security of the ETS and is actively addressing constantly emerging risks *(The European Commission, 2015)*. Other

[3] The diverging design features will not be analyzed in depth at this point; for a detailed comparison between the design features compare section 4 of the report

relevant innovations include the replacement of the Community Independent Transaction Log with the European Union Transaction Log and the introduction of a Know your Customer system to further ensure compliance with the EU ETS rules *(The European Commission, 2015)*. According to one interviewee, past security problems and the subsequent considerable effort to eradicate them, might be a considerable barrier and potentially result in a reluctance to any form of a linkage with a less secure system. Linkage would create further access points to the EU ETS providing entry gates for cyber theft and hacking of accounts, thereby undermining stability and the reputation of the EU ETS. This perspective is also reflected in the emphasis that the EU has put on security concerns in past linkage negotiations. Promising solutions to overcome such problems do exist and should be explored collaboratively in the future *(European Commission, 2013b).*

Concerns about less robust MRV had been raised by political decision makers and NGO representatives. These ranged from issues such as double counting and diverging compliance periods, to a general questioning of the MRV integrity measures applied by the Guangdong ETS in its current state. The surveyed stakeholders testified to the importance of these issues, but generally perceived them as solvable. It turned out that the rather sceptical assessments of integrity expressed by interviewees were less based on fact, but rather resulted from knowledge gaps about the Guangdong ETS. This lends another argument to the importance of reducing information asymmetry to build trust between the two markets as will be discussed below.

Inner reforms of the EU ETS

The preoccupation of the European Union on internal reforms was raised across stakeholder groups as one of the key arguments against a near term linkage. The European Union is currently focusing on reforming the EU ETS. All stakeholder groups stated that the introduction of back-loading and the market stability reserve would currently not allow a direct linkage with a large carbon market, since it would have the potential to destabilize the EU ETS by importing systemic risk and price volatility.

On the other hand members of the European Commission welcomed the possibility of maintaining a leadership role for the EU ETS, by creating channels

to transfer knowledge and good practice as well as conducting further robustness studies.

In conclusion, exploring measures to increase the convergence between the two carbon markets was deemed necessary across all stakeholder groups, as long as the timing and the primacy of aligning the design of the markets was kept in mind.

Timing of Linkage

Even though interviewees were sceptical about an immediate direct linkage, all stakeholder groups were in favour of exploring options for linkage over a five to ten year horizon. Current experiences from the Swiss ETS and EU ETS linkage seem to confirm that this is a realistic time frame. In a recent study Carbon Market Watch pointed out that the negotiations for linking the EU ETS and Swiss ETS began as early as 2010, only to be finalized in late 2015 *(Carbon Market Watch, 2015)*.

Starting to explore the robustness of the two systems, while establishing mechanisms for transferring good practices, would be promising ways to build up the necessary political capacity and create an environment in which constructive negotiations could be held over the next couple of years. Consequentially we recommend that the European Union avoid missing optimal entry points for negotiations - resulting in an overall delay of potential linkage and thereby risk losing its global ETS leadership *(Carbon Market Watch, 2015)*. The importance of early dialogue is also consistent with recent findings about China´s future economic development and its implications on carbon market design.

A study conducted by the London School of Economics and published in June 2015 found that emissions in China will peak by 2025 at the latest; as a consequence the introduction of an absolute cap by that time should be much less problematic *(Green et al., 2015)* Guangdong province is one of China´s most advanced economies and, due to its accelerating shift from a high carbon heavy manufacturing towards a low carbon high-tech service sector economy, the province will likely experience its emission peak much earlier than most other parts of China *(Green et al., 2015)*. This has significant implications for the convergence of market design, in particular the feasibility of an absolute market cap in Guangdong, which could be introduced by the turn of the decade.

Further issues brought up by stakeholders include the impact on other design

one interviewee the use of CERs is likely not to pose a barrier for market convergence in the future, as the market will gradually decrease the amount of CERs while at the same time improving their quality. This is reflected in past experiences of the EU ETS which allowed the use of CDM credits in its first trading period but has restricted their use to those from Least Developed Countries under its current regime *(Carbon Market Watch, 2015).*

So how can we solve the puzzle of an obvious unfavourable short-term perspective by key stakeholders on the one hand and the desire to foster cooperation and explore ways to increase the convergence of the two markets in the mid-term on the other hand?

From small scale cooperation to shared governance of carbon markets

Reflecting the consultation findings from a political science perspective, aides contextualize the answer patterns. In particular neo-functionalist theory provides arguments rationalizing the desire to gradually increase cooperation and incremental problem solving in an international area, explaining shifting preferences over time

Neo-functionalist Theory is rooted back to David Mitrany and its ground-breaking work Working Peace System *(Rosamond, 2010).* It provides a theory of regional integration, transnational economic ties, policy spillover and mutual cooperation, which have been embraced by many leading international political economy and international relations scholars *(Rosamond, 2010; Keohane, 2005).* In general the theory focuses on a form follows function policy design. In this theory the creation of transnational institutions such as a common carbon market is a result and not a prerequisite of cooperation *(Katzenstein, 1998; Keohane, 2005).* Such a development is made possible by starting small scale cooperation in a policy niche area and the subsequent reduction of information asymmetry which in turns allows a build-up of trust and political capacity between jurisdiction, supporting ever increasingly complex negotiation processes *(Rosamond, 2000)*

This pattern can also be observed in the EU ETS context. Various national governments, especially carbon-intensive economies, were reluctant to expose their economies to regulation under the EU ETS in the first place. Therefore the market was designed in a way that it could evolve from national caps and

registries in Phase I to a single EU wide cap and a Union wide registry in Phase III *(European Commission, 2015)*. Respecting national sovereignty in key areas - while at the same time building up transnational functional cooperation - increased the convergence and led to the gradual harmonization of the markets.

Our analysis found a comparable structural problem for linking the EU ETS and the Guangdong ETS. ETS linkage affects cross departmental features of an economy, including economic and environmental policies as well as sovereignty and shared governance issues. Reducing uncertainty and building trust between different markets is thereby central for increasing probabilities of a successful long-term linkage.

These arguments are discussed by reference to various real-world ETS examples in a recent study by the Kennedy School of Governance which concluded that the level of information between two carbon markets plays an important role in determining successful linkage *(Ranson, 2015)*. Building on a model of Tinbergen, developed to understand the existence international trade treaties, the study identifies three key factors for successful linkage: geographic proximity, supply in both markets and demand in both markets *(Tinbergen, 1962)*.

In the case of a hypothetical Guangdong ETS and EU ETS linkage, supply and demand can be perceived as given. Guangdong represents the biggest regional carbon market in China while the EU ETS is still the largest carbon market in the world by volume, guaranteeing supply, demand and liquidity in a common carbon market. The lack of geographic proximity between Europe and Guangdong on the other hand is clearly a factor.

Geographic proximity is defined as a function of transportation costs and information about markets *(Ranson, 2015)*. Arguably transportation costs play a negligible role in trading a purely digital, non-material good. This is reflected in the past linkage plans between Australia and the EU ETS. Publicly available documents do not mention geographic distance a single time as a significant barrier for linking the two markets.

The core factor thereby seems to be grounded in the lack of information between the two carbon markets, resulting in high uncertainty and perceived policy risk as expressed by various interviewees. This increases the costs of cooperation, decreases trust between actors and negatively impacts predictability of outcomes which in turn leads to shared concerns about governance and political accountability in case of a market failure as well as generally suboptimal

perspective it becomes clear why the desire to establish learning processes first and gradually build-up informal cooperation to reduce information asymmetry are prerequisites to any formal negotiation processes.

讨论

从受访者反复回答的以上两个方向主要分为两个部分。

1) 市场设计的不兼容，对审查审核程序的担忧和欧盟碳排系统的内部重组
2) 关于链接的时间和促进跨国合作

第一部分主要关注对在现有条件下即刻链接两个碳排市场的担忧。第二部分关注链接时间的重要性和相关的政治理论。

市场设计不兼容性

目前链接主要和显著的障碍就是两个地区市场在碳排放交易体系设计上的不兼容。这个可归结于三个设计特点：

1) 广东的碳排市场所采用的相对碳排目标和欧盟的绝对碳排目标，
2) 抵消政策
3) 广东碳排市场现存的碳价控制制度。

关于广东碳排市场安全性和审核审查制度

学术界受访者对安全问题的考虑尤为显著。欧盟 ETS 自 2005 年引入碳市场就一直被安全问题困扰。最著名的案例之一是， 2011 年捷克的一个帐户被盗窃价值 7 百万美元的排放津贴*（金融时报，2011）*。2012 年 6 月以来，国家注册系统被一个工会宽单注册系统所取代。欧盟已经采取诸多措施许多进一步提高 ETS 的安全性，并积极应对不断涌现的风险*（欧盟委员会，2015 年）*。其他相关的创新包括，用 欧盟交易日志替代社区独立的交易日志和引入“了解你的客户” 系统，进而进一步确保符合欧盟 ETS 规则*（欧盟委员会，2015 年）*。据一位受访者称，过去存在的安全问题后续需要付出相当大的努力来解决，可能是一个相当大的障碍并导致不愿意与较不安全的系统进行任何形式的链接。链接将进一步创建欧盟 ETS 的接入点，这给网络盗窃和黑客对账户的入侵提供机会，从而破坏欧盟 ETS 的稳定性和名声。这个观点也反映在欧盟过去在链接时对安全问题的重视上。有潜力克服这样的问题的解决方案确实存在，应在未来合作进行开发 *（欧洲委员会，2013 b）*。

审核审查的担忧已经被政治决策者和非政府组织的代表所提出。这些担忧的范围从重复计算等问题，到履约期间的不同，到对广东碳排系统在其当前状态下应用的审核审查完整性措施的一般质疑。受访的利益相关者证实了这些问题的重要性，但通常认为它们是可以解决的。结果显示，原来对完整性评估有怀疑的受访者不基于事实基础，而是基于广东碳排系统知识缺口。这引起了对另一个参数即减少两个

欧洲碳排市场内部改革

第三，欧盟内部改革的整合是在利益相关者团体短期反链接的一个关键参数。欧盟目前专注于改革欧盟碳排系统。所有利益相关者团体表示，后备的引入和市场稳定储备政策目前不允许直接链接大型碳市场，因为这有可能通过导入系统性风险和价格波动，从而破坏欧盟碳排系统。

另一方面，欧盟委员会成员表示希望通过创造知识和良好实践转移，以及渠道进行进一步的稳健性研究来保持欧盟碳排放的领导地位。

总的来说，探索增加两者之间的融合碳市场的措施，被认为有必要贯穿于所有的利益相关者群体，并且时机和调整市场的设计是重中之重。

链接的时间

大量的受访者对于直接链接持怀疑态度，所有的利益相关者群体支持探索选择链接的时间段稳定在五到十年的时间。当前经验的过程中，瑞士碳排系统和欧盟碳排系统链接，隐约证实了所需时间上的预测。在最近的一项碳市场观察研究中指出，欧盟碳排系统和瑞士碳排系统的链接谈判，早在 2010 年就开始，并且预计在 2015 年末完成（*Carbon Market Watch, 2015*）。

开始探索这两个系统的稳健性，同时建立转移机制良好的实践是一种很有前途的方法，目的是建立必要的政治能力，以及创建一个有建设性的谈判环境，并使其稳固存在多年。必然地结果是，欧盟避免错过最佳入口点和整体谈判结果推迟链接而导致失去全球碳排系统的领导地位。时机的重要性毋庸置疑，这也是符合最近的研究，对中国的未来经济发展及其对碳市场的影响设计。

根据 2015 年 6 月发表的由伦敦经济学院发起的一项研究最新结果，中国碳排放量将在 2025 年达到顶峰，结果导致使绝对上限的介绍和更少的问题*(绿色 et al .,2015)*。广东省是中国最发达的经济体之一，其加速从高碳重工业转向低碳高科技服务业经济省，所以相比中国其他大部分地区，广东省有可能会更早到达顶峰*(绿色 et al .,2015)*。这对市场设计的收敛性有着重要的影响，特别是可能在本十年末引入的广东绝对市场上限的可行性。

进一步的问题，发生在广东与成熟的碳交易市场由利益相关者包括对其他设计特性的影响。据一位被采访者表示，抵消配额的使用可能不会对将来市场的融合构成障碍,这是由于，将来随着市场将逐渐减少的抵消配额的数量和质量的提高。这反映在过去的经验中，欧盟碳排系统允许在第一次交易周期使用 CDM 信用额度，

但对于欠发达国家在其当前制度下限制其对 CDM 信用额度的使用（*Carbon Market Watch, 2015*）。

因此，如何才能解决一方面明显的不利于短期关键利益相关者角度促进合作的欲望，另一方面探索加强在中期两个市场的链接的难题？

从小型合作到共同管理碳市场

从政治学的角度反思咨询结果，助手将答案模式放入情景下研究。特别是新功能主义理论提供了参数合理化的倾向，在国际上逐渐增加合作和解决增量问题，解释偏好随时间转移。

新功能主义理论源于 David Mitrany 及其突破性的作品《和平工作系统》（*罗莎蒙德，2010*）。它提供了一个区域一体化、跨国经济关系、政策溢出效应和相互合作的理论，这被许多领先的国际政治经济与国际关系学者所接受（*Rosamond，2010年；Keohane, 2005*）。一般来说，该理论侧重于一种形式服从功能的政策设计。在这一理论中，共同碳市场等跨国体系的建立是合作的结果，而不是先决条件（*Katzenstein，1998 年；Keohane，2005*）。这种发展可以从政策利基区域内的小范围合作开始，后期减少信息的不对称性，反过来建立两个地区之间的信任和政治能力，支持越来越复杂的协商过程（*Rosamond，2000*）。

这种模式也可以在欧盟碳排放交易体系中观察到。在一开始，许多国家的政府，尤其是碳排量大的政府，非常不情愿把他们的经济与欧盟碳排相关联。所以市场的设计从各个国家的碳排量发展成了欧盟统一的碳排量，从各个国家注册系统发展成了欧盟统一的注册系统。相对各个国家在重要的方面同时发展和合作，逐渐提高了市场的融合性。

我们发现通过对于链接欧盟碳排市场和广东碳排市场的利益相关者链接意愿的调查，存在着类似的结构性问题。碳排市场链接是跨地区和部门对于经济，包括经济和环境政策以及政府相互分享合作而产生影响。减少不确定性对于两个不同市场而建设的信息是将来可能成功长期链接的关键。

通过参考许多相关的真实世界发生的碳排市场链接案例来讨论这些建议，肯尼迪管理学院近期的研究总结出信息透明的程度对于两个碳排市场的参与者和能否成功链接起到重要作用（*Ranson，2015*）。根据模型到了解目前的国际交易壁垒，研究发现了三个影响链接的重要因素：地理接近性、两个市场的供给和两个市场的需求（*Tinbergen，1962*）。

对于假设的广东碳排市场与欧盟碳排市场的链接，供需可以给出。广东碳排市

量的市场，对于共同市场保证了供给、需求和市场流动性。另一方面，欧洲和广东缺乏地理接近性也是一个明确的因素。

地理接近性定义为两个市场的交通运输费用和信息。对于纯电子的、非物质的货物，交通运输费用在交易中可忽略不计。这个可以在过去的澳大利亚与欧盟链接计划中体现出来。已出版的文献没有一次提出地理距离是阻碍两方市场链接的因素。

所以重要的因素是两个市场缺少信息，从而导致了不确定性和以前利益相关者采访中所提到的政策风险。增加合作成本，减少相互信任对于连放市场有着消极的影响，从而影响到了政策相同和可能的政策考虑的市场失败的结果。从利益相关者的调研中，可以清晰的分析为什么认为应该先进行学习然后逐渐建立正式合作从而减少信息不对称的风险。

Conclusion

The current gridlock of international climate change negotiations prevents effective top down legislation including the introduction of a global carbon price or any other form of a binding emission reduction framework. Consequentially bottom-up approaches in the form of regional carbon markets are mushrooming around the globe. The interest in linking markets to increase liquidity and economic efficiency is increasing (Ranson, 2015). Nonetheless carbon market linkage faces many political barriers, from system incompatibility to lack of political capacity to handle shared governance issues. The EU ETS is championing the further linkage of carbon markets, as was shown by the recent integration of Iceland and Norway into the linked market and the introduction of a Swiss EU ETS linkage by the end of the year.

The survey of EU ETS key stakeholders found that an immediate linkage between the Guangdong ETS and the EU ETS is not possible at the moment. The main arguments raised by interviewees were the incompatibility of market designs, MRV concerns and the current focus of the EU on domestic reforms of its ETS. As the Guangdong ETS gradually matures - while reaching its emission peak in the next decade - the convergence of the markets will be much more robust in the long-term. The majority of interviewed stakeholders therefore expressed the desire to conduct further robustness studies to reduce the information asymmetry between the two markets, transfer good practices and build up political capacity for long-term linkage. This assessment of linking the two markets finds its equivalent in current academic literature, historic examples and political theory.

总结

现在的国际气候协商僵局阻止了有效的从上而下的立法机制，包含全球统一的碳价格和任何形式的联合减排框架。所以自下而上的方法比如地方碳排市场在全球正逐渐增多。链接可以增加市场的流动性和经济有效性。尽管如此，链接两个碳排市场仍面对政治障碍、系统不兼容从而缺少对于共享政府问题的政治能力。欧盟碳排市场对于未来碳市场链接的积极性可表现为冰岛和挪威的链接，和瑞士与欧盟碳排今年年底的链接。

对于欧盟碳排放利益相关者的调研可以得出对于目前，广东碳排放和欧盟碳排放立即链接是不可能的。主要的观点是由于受访者认为两个市场设计不兼容，审核和报告过程还应需注意，以及目前欧盟碳排市场关注于内部碳排市场重组。 因为广东碳排市场会逐渐成熟并在下十年达到减排高峰，两个市场的链接将会以长期稳健的方式链接。所以大部分的受访者表示应对于稳健创立链接市场，减少信息不对称和传播好的实践经验作出相关研究。这个关于两个市场链接的检验可以从相关的学术研究文献，历史的例子和政治理论中得出。

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