Searching for Effective Horizontal Coordination in Cross-Sectoral Climate Change Policy

a Nascent Intra-governmental Mechanism in Chinese Cities

Mai Qianqing
Department of Public and Social Administration
City University of Hong Kong
qianqmai2@student.cityu.edu.hk
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Abstract
In driving climate policy changes within the sub-national level of government, nascent governance arrangements of intra-governmental cooperation are being set up in China, such as the Low Carbon Economy Development Leadership Group established within the Guangzhou Municipal Government in 2011. This leadership group is strategically coordinated by one commission and engages 30 other departments in the transport, building and other sectors related to climate policy. Similar governing arrangements are being established in various parts of China at national, provincial and municipal levels. This kind of intra-governmental governance arrangement is seen effective in overcoming the governing dilemma of the wicked problem of climate change. How do sub-national governments collaborate horizontally with various societal actors through these cooperative mechanisms to reach effective synergy in the context of fragmented policy coordination? This paper analyzes internal coordination capacity and external linkages of the key agency actors involved, as well as their respective coordinative activities in the intra-governmental mechanism in Guangzhou. It finds that although the inter-agency linkages are still fragmented by sectoral functions, an initial framework of intra-governmental coordination has been built up as a platform internal to the municipal government in urban governance for climate change and low carbon development.

Introduction
Climate change is undoubtedly a wicked problem with its trans-boundary and cross sectoral nature. Moreover, it is politically in tension with the status quo regarding the prevailing resistance to socio-cultural and technological transformation. Because of its complexity and uncertainty, even actors in conventionally non-environmental sectors, such as transport and building, are being brought into the policy making and administration process of climate change (Jordan et al., 2010). This has posed new governance challenges to the municipal governments in coordinating policy changes of the different sectors. Problems of horizontal coordination have emerged as the major obstacle to apply science and technology onto the political and social agendas to mitigate and adapt. The selection of policies and administrative tools creates
a “governance dilemma” due, among others, to the wicked nature of climate change where policy options cannot be easily implemented or immediately evaluated (Jordan et al., 2010).

In response to the governance challenges posed by climate change, various types of leadership groups addressing different facets of climate change problems have been established within the Chinese municipal governments to coordinate governing efforts across policy sectors. Energy Conservation and Emission Reduction Leadership Groups have been established respectively in Shanghai and Ningbo since 2007. In Shenzhen, a Leadership Group on Responding to Climate Change cum Energy Conservation and Emission Reduction was formed in 2010. To address the emerging needs of new technology in addressing climate change problems, another leadership group on Novel High-technology Industrial Development has also been established in Shenzhen in 2012. In Guangzhou, the Circular Economy Leadership Group was established in 2007, as a precursor to the Low Carbon Economy Development Leadership Group in 2011. Across the border, similar governing arrangement, the Inter-departmental Working Group on Climate Change, has also been established in Hong Kong.

How these subnational governments collaborate horizontally with various societal actors involved in the climate change solutions through such cooperative mechanisms remains a question unanswered by existing research. This poses an important theoretical and empirical puzzle regarding whether effective coordination through horizontal intra-governmental mechanisms can be the solution to the governance dilemmas in managing the wicked problem of climate change. Consequentially, a question also arises as to how these leadership groups, as an emerging and essential mechanism for intra-governmental communication and coordination, operate so as to overcome functional fragmentation and achieve effective synergy. It is thus pertinent to analyze the specific operation of this prototype intra-governmental mechanism in the governance process geared towards low carbon development as one of the important facets of policy solutions to climate change.

The intra-governmental mechanism in Guangzhou set up in response to climate change challenges – the Low Carbon Economy Development Leadership Group – is the focus of analysis in this paper, with the attempt, first, to fill the empirical gap on how leadership groups in Chinese cities effectively operate to achieve functional synergy, and, second, the theoretical gap on how inter-agency networks are built up as an intra-governmental mechanism.
To analyze these empirical questions, existing literatures of intra-governmental relations and policy coordination are reviewed to render theoretical lens. Empirical studies on intra-governmental management and inter-agency networks are weakly covered in the existing literatures, suggesting a theoretical gap for the study of intra-governmental leadership groups in municipalities. The following section comes with a review of the intra-governmental management and policy coordination literatures, guiding the empirical analysis that follows.

The third and fourth sections analyze how far the intra-governmental leadership group on low carbon economy development in Guangzhou is geared towards effective coordination. The data for this analysis was collected through semi-structured interviews with program specialists in the core government departments participating in the intra-governmental leadership group. Participant observation of events organized by the intra-governmental leadership group was also carried out. To interpret and construct the context of low carbon development in the urban sector, the textual analysis of relevant policy documents was conducted. Core government actors participating in the leadership group are identified and analyzed in relation to their institutional capacity and external linkages in the third section of this paper. In the fourth section, major activities in the coordinative process are identified, to examine the extent of inter-departmental synergy in the intra-governmental management.

**Literature Review: Coordination in Intra-governmental Management**

Intergovernmental management is identified as one of the possible configurations of governance network structure, relative to other configurations including interest group coalitions, regulatory subsystems, grant and contract agreement, and public-private partnerships (Koliba et al., 2010). Despite its various connotations, intergovernmental management is generally defined as “the process of solving intergovernmental problems under conditions of high uncertainty and complexity through the creation and use of governmental and nongovernmental networks” (Wright and Krane, 1998). Intergovernmental management assumes that the larger political systems, social structures, and policies are stable and insulated from short-term change, and thus focus its activities on the “management” dimension, that is, the normative practices and proper way of operation in and by actors involved in the process coping with uncertainty in the managerial environment.

To conduct analysis on intergovernmental managerial networks, it is useful
to find out its defining characteristics as the entry point of study and construct an analytical framework. Wright (1990) set out several distinctive features of intergovernmental management, such as (leading) actors, participating jurisdictions, dominant value, conflict resolution mechanism, and authority relationships. Essentially, intergovernmental management functions within the structures of all governmental entities on all levels of the nation state, and in interaction with an array of public and private actors with membership in the implementation structures of designated policies or service delivery programs (Mandell, 1990, Wright and Krane, 1998).

In this process, the primary participants are the program/policy professionals and the administrative generalists, who are in charge of authority, resources and information. Their decision-making capacities, administrative roles and institutional responsibilities are essential entry points in the analytical framework. In the governance process involving various actors, conflicts in goal orientation and departmental values are inevitable among specialists, generalists, clients and general public. In this sense, conflict resolution and consensus building through active networking as well as “coordination and orchestration of the discordant organization” on the network are major tasks for intergovernmental managers (Mandell, 1990, Wright and Krane, 1998, p.1166).

Conflict resolution mechanisms are conventionally found in bargaining and negotiation, informal personal linkages, joint dialogues, and trust-building platforms. With various actors involved on the same level of playing ground, intergovernmental management is built upon a non-hierarchical network of authority relationship with loosely coupled patterns of influence directed by each actor in interaction (Mandell, 1990, Wright and Krane, 1998). Thus, “institutional power” can be an effective analytical lens to see the influence of managerial authority in coordinating elements in the intergovernmental managerial system (Hays, 1991, p.49).

The subject of analysis in this article is more specifically about intra-governmental management in the governance network structure, which refers to behaviors and interactions of institutions within a single branch of government or on one single tier (Koliba et al., 2010). Also being studied as “interagency networks” and “joined-up government” in the existing literatures, intra-governmental management as well as its coordination and collaboration among network actors and institutions are still leaving a gap for research (6, 2004, Koliba et al., 2010). Although being considered as variations in governance network configuration, intra-governmental relations and
Horizontal coordination in an intra-governmental setting can be defined and analyzed in either a process or an end-state outcome perspective. In the process dimension, coordination in intra-governmental network is an organized “attempt to optimize the coherence and consistency of political decisions and policy implementation” across actors and stakeholders and across sectoral fragmented policies to achieve holistic response to complex problems like climate change mitigation (Wollmann, 2003). It involves government activities of “development of ideas about joint and holistic working, joint information systems, dialogue between agencies, process of planning, and making decision” (6, 2004).

In the outcome perspective, coordination is analyzed as “an end-state in which the government policies are characterized by minimal redundancy, incoherence and lacunae”, which facilitates the evaluation of successful or failing coordination (Peters, 1998, p.296). The end-state perspective of coordination specifies four coordination problems, encompassing 1) redundancy in that more than one actors or institutions perform the same task, 2) lacunae, when no actor performs the core task, 3) overlapping cliental group, when different policies are targeted on or different public services are delivered to the same group of people, and 4) incoherence in goals and requirement of institutions in action (Peters, 1998). Inter-agency coordination problem is also analyzed empirically as a principal-agent problem to be solved by strengthened supply of institutional capacity, where setting up inter-agency coordinating mechanisms can be the solution to enhance the management and enforcement capacities (Li and Chan, 2009).

No matter whether coordination is being analyzed as an end-state outcome or a dynamic process, the focus is to search for resource optimization in institutional interaction to cope with governing complexity and uncertainty. Outcome and process of coordination are in some conditions indivisible in analysis. When evaluating how successful or problematic the pattern of end-state coordination, a retrospective view of the process leading to such pattern is necessary. Alternatively, to analyze how network actors interact in coordination as a process, reasonable prediction on its outcome is to be benchmarked against an evaluation framework to see its successfulness and render further recommendation to modify the process.

Coordination does not only span across agencies on an intra-governmental relation, it is also internal to the structure of a given agency.
The capacity of agency managers to operate collaboratively from within its own organization is reflected as levels of internal coordination and the internal capabilities for forming and sustaining external links in a boundary spanning role (6 et al., 2006, Mcguire and Silvia, 2010). The internal capabilities of a given agency is determined by its internal institutional and power configuration (leadership) and the current trends of institutional and network change in the organization field it is embedded in (6 et al., 2006). Thus, a holistic view of the horizontal intra-governmental coordination is structured with outcome-process dimensions and internal-external agency linkages.

Unpacking the concepts of intra-governmental management and horizontal coordination by reviewing the existing literatures leads the empirical analysis to assess the subnational intra-governmental networks built in subnational China. The following section identifies the core institutional actors in the intra-governmental networks. Then it teases out the process of coordination, to probe into the core question on whether the internal institutional capacity of each agency and the agency linkages externally to other societal actors are sufficient in sustaining effective horizontal coordination.

**Core Institutional Actors in the Intra-governmental Arrangement**

The climate change problem has been translated into different facets of concrete socio-economic or environmental issues of urban governance encountered in the everyday life of citizens, ranging from electricity consumption management to energy saving, air quality and air pollution control measures, as well as waste management options (Kuylenstierna and Hicks, 2008, Smith et al., 2001). In Guangzhou city, low carbon economy is put on the agenda of the municipal government as the major mitigation approach to climate change problem integrated with economic structural transformation to be jointly carried out by the government with other societal actors. Special attention has been attached to Guangdong province and its capital city Guangzhou in low carbon development, with the formal recognition of the province as one of the five national pilot provinces for low carbon development and the city as the provincial pilot municipality in the same transitional process (NDRC, 2010, Chen and Zhe, 2012, GD-DRC, 2012). Furthermore, international attention is conferred on the region highlighted by the signing of Memorandum of Understanding between China and the United Kingdom concerning cooperation on low carbon, in which Guangdong is identified as
one of the three pilots in China with “initial focus on cooperation” (NDRC & DECC, 2011). To attain the transition from production and energy intensive economy into low carbon mode of development, the municipal government has issued low carbon economy related policy documents and set up intra-governmental leadership groups to deal with the collaboration and coordination problems that emerge in the process. This type of institutional innovation in climate governance invites analysis of how to achieve effective horizontal coordination.

The intra-governmental leadership group set up in Guangzhou is to devise strategies for specific plans of energy conservation and low carbon development in accordance to the practical conditions in Guangzhou, as a response to the policy orientation set down by the provincial and national agenda (Guangzhou Municipal Government, 2010). As low carbon economy comprises a broad area in urban governance, more than 20 offices, bureaus and commissions in the municipal government are convened in the leadership group. Nonetheless, 5 core departmental actors participate in this group have key decision-making capacities and institutional responsibilities (Figure 1). The primary one is Municipal Development and Reform Commission, that takes up the role of strategic leadership in low carbon development as the convener and location of secretariat office of the leadership group. Through the intra-governmental platform of the leadership group, the Development and Reform Commission is building up close contact with three sectoral departments depending on functional relevance, encompassing Economy and Trade Commission, Transportation Commission, as well as the Urban-rural Construction Commission. To strengthen financial capacity in sponsoring innovative projects of low carbon development, the convener also works closely with the Finance Bureau, in evaluating and distributing funds.

Key Actor 1: Municipal Development and Reform Commission

In this leadership group, the decision making capacity is collaboratively held by the core departments involved. The administrative roles of its strategic leader, the Development and Reform Commission, are designed to provide an intra-governmental platform in the municipal government to devise policies and specify developmental plans. The officer working in the secretariat office of the low carbon leadership group reflects upon their primary works:

“Actually our department, the Development and Reform Commission, is a comprehensive economic managerial department … our most important tasks are firstly formulating
Figure 1: Intra-governmental Mechanism Governing Low Carbon Development in Guangzhou

- Industrial associations (taxi, parking lot),
- Transportation Groups, Bus Corporations,
- Freight Terminals

Transportation Commission

Development & Reform Commission

Finance Bureau

Economy & Trade Commission

Urban-Rural Construction Commission

Management Office of Building Energy Efficiency & Wall Materials Innovation

- Proprietors, private developers, construction units
  - Industrial associations
  - Expert pool

(Conference working paper – Not for citation)
rules, secondly building up platform, and then mobilizing the initiatives of each department.” (Translated from the transcript of interview with officer in Municipal Development and Reform Commission, 8 February 2012)

By setting down the ground rules and regulations, the Development and Reform Commission plays the role of coordinator of the economic transition process. The Commission believes that formatting rules and specifying plans are necessary before the implementation of specific measures in the transition process. These rules and plans are discussed in the meeting held in the leadership group jointly with all the departments involved. The officer further specifies rule-setting function of its department and how this task is getting done in the leadership group:

“It (the work of leadership group) is mainly work implementation program, planning and drawing up the program. At the moment, our work is mainly in three forms: first of all, meeting; then outline of the plan. These are the two major works. The third that follows is each detailed policy on low carbon industry, technology innovation, manufacturing, industrial park, etc.

(Are these detailed policies supposed to be integrated into the specific concurrent work of Development and Reform Commission?)

No, but these specific operations must be carried out through support of planning policies. There has to be verification policy in place, the policy that has gone through official approval. Besides, there are fiscal and taxation policies. It is the Financial Bureau who approves certain special fund to develop a technology.”

(Translated from the transcript of interview with officer in Municipal Development and Reform Commission, 8 February 2012)

The role of intra-governmental platform is frequently emphasized by the Municipal Development and Reform Commission. First, it serves as a formal communicational platform connecting the essential departments involved in low carbon development. In its coordination, the leadership group hosts cross-departmental meeting in the municipal government, such as the Leadership Conference on Building a Low Carbon City in Guangzhou in February 2011. Even standing on the same rank in hierarchical government structure with other departments involved in the leadership group, the Development and Reform Commission is positioned as the strategic leader in
the governance process, steering the specific implementation of other core sectoral departments involved in the group. The platform is necessary to translate planning on paper into implementation by an array of different sectoral departments. Second, the commission also attempts to stand as a supervision and measurement platform of public sector in the municipality, as reflected by the officer:

“We have another job – energy-saving monitoring on public agencies – to become a monitoring platform. We conduct review, summary and supervision on the energy conservation policies proposed by each public institution, as well as monitoring of public funding. For instance, it is like the carbon sink project done by the Ministry of Forestry, calculating and auditing how much chemical substances each plant species can absorb, and to what extent their carbon sequestration project can reduce carbon and save energy … (As the monitoring platform), each department on our meeting introduces its own sectoral work and we can see how much emission each other can reduce.”

(Translated from the transcript of interview with officer in Municipal Development and Reform Commission, 8 February 2012)

In addition, the commission in the leadership group as a platform also attains to strategic resource distribution. An Energy Conservation Special Fund has been established in Guangzhou city, to sponsor the innovative projects in research and development as well as industries for energy saving. The fund was originally set up to support enterprises in the municipality in 2004, converted towards focusing solely on energy conservation business in 2009 coordinated by the Guangzhou Economy and Trade Commission (Guangzhou Municipal Government, 2004, GZ-ETC, 2009). Since 2011, the fund has been incorporated with low carbon development component and administered by the Development and Reform Commission (GZ-DRC, 2011). Although the fund is not specialized for low carbon development like the provincial fund, the current administration of the fund is extended towards the coverage of application with low carbon concerns. There were 60 to 70 units successfully soliciting the fund in 2011, and around two third of which were on low carbon, according to the officer from Development and Reform Commission. The commission serves as a platform to deliberate the allocation of the fund across sectors, its approval as well as assessment and evaluation. To conduct a more insightful and professional decision-making process, the commission invites other sectoral
commissions to recommend projects of the respective sector and assist in the approval and evaluation procedures.

Key Actor 2: Municipal Economy and Trade Commission

Since the establishment of the intra-governmental leadership group on low carbon development, the power structure among departments in municipal government is altered. The energy conservation work in government was mainly concerned on coercing practices in commercial and industrial sectors. Thus, the core authority lies in the Municipal Economy and Trade Commission to coordinate the government actions in this area. Since the climate change component was added into the national agenda and carried out by the development and reform system in the government functions, the governance complexity is increased and the encompassing area is broadened. Therefore, the administrative roles among departments are changed. The director from Economy and Trade Commission reflects on the shifted administrative division:

“In fact regarding energy conservation, it was our Economy and Trade Commission to firmly grasp municipal-wide coordination in energy saving in the past several years. However since last year, it has been transferred to the (Municipal) Development and Reform Commission, as at the national level it is also the Development and Reform Commission to promulgate strategies on responding to climate change. So now it is the Development and Reform Commission to be responsible for coordinating across the city…and thus each sector has its own sectoral energy conservation manager.” (Translated from the transcript of interview with director of Municipal Economy and Trade Commission, 17 August 2011)

The role of Development and Reform Commission is mirrored by Economy and Trade Commission in the following way:

“The administrative ranks (of Development and Reform Commission and Economy and Trade Commission) are the same, but its (Development and Reform Commission) responsibility is to coordinate among the various roles of government departments, a role of overall management, planning and coordination.” (Translated from the transcript of interview with director of Municipal Economy and Trade Commission, 17 August 2011)

Although the intra-governmental coordination role of Economy and Trade
Commission has been shifted away, its external linkages in the existing organizational field are still strong due to decade of involvement in steering the municipal governance in energy conservation area. The government activities of the commission rely upon various sources of societal forces, as identified by the commission director:

“There should be several forces. On the one hand, it is the institutional units (Shiye Danwei), with managerial responsibilities and channels subject to the government. On the other hand, there are some non-governmental organizations, working on some other tasks. We can also plan some similar activities through enterprises...Our government plays the role of planning and initiating, then let social groups such as Guangzhou Energy Academy to operate specific activities.”

(Translated from the transcript of interview with director of Municipal Economy and Trade Commission, 17 August 2011)

In this sense, as the former administrative leader, the Economy and Trade Commission still maintain consistent institutional power in the coordination process of low carbon solutions to climate change at the municipal level.

Key Actor 3: Municipal Transportation Commission

As the governing activities in low carbon development are broadly and dispersedly carried out by different sectors, the key sectors involved have been assigned their respective sectoral leader to coordinate work within the policy function. In low carbon transport, the Municipal Transport Commission is the sectoral leader:

“We are only a managerial department, only an executive department, one of the component departments in the municipal government. Our function is more about organizing (government-led activities). Regarding the requirements of low carbon transport or low carbon economic development led by the government, we are commissioned to coordinate the work and carry it out. We are to coordinate various enterprises with their relevant associations, as well as research and development institutes, to compose them into a joint force, and carry out the policy work collaboratively.”

(Translated from the transcript of interview with Director in Municipal Transport Commission, 17 Feb 2012)

The establishment of intra-governmental leadership group on low carbon
development enhances the inter-agency communication of coordination in a more institutionalized manner, enabling the participation of each sectoral leader. In the eyes of transport sector coordinator, the leadership group is significant as a mediator and conflict resolution mechanism:

“The leadership group hosts regular meetings. The problems we encountered during the development process, problems requiring coordination, will be put forward in the meeting, through the format of meeting, to coordinate and resolve the problems at a higher level.”

“Now the issue is attached with more significance, the capital investment is greater, and then this group is set up, it is more convenient in the coordination among departments. This leadership group reflects more broadly the inter-sectoral coordination. We, together with Development and Reform Commission, with Financial Bureau, as well as with Environmental Protection Agency, often have conflicts due to the difference in our respective objectives. At this point we need to submit this issue to the leadership group, to mediate and solve this problem in a coordinative manner.”

(Translated from the transcript of interview with Director in Municipal Transport Commission, 17 Feb 2012)

As the sectoral leader, the commission is committed to enhance its internal institutional capacity and sustain the external organization linkages to carry out the governing tasks effectively. The internal institutional capacity is reflected in the intra-sectoral coordination of the commission with industrial participants and associations, as well as technology innovators. The Vehicle Technology Division in Transport Commission organizes various actors in transport system to fulfill the tasks assigned by the municipal government. To keep close track of the work progress of the energy conservation in transport sector, the Division conducts monthly checks on all the subordinate units in transport energy conservation, and carries out seasonal reporting to the higher level coordinator. The commission is also the media of industrial good practices in technology products and methods. For instance, when there is a new way of energy conservation and emission reduction in vehicle being developed in the laboratory of the South China University of Technology, the professor as an established contact of the commission will introduce the innovation to the commission, and then if the commission finds it applicable it will recommend the innovation to industrial participants such as the Guangzhou No.3 Bus
Company. A number of cooperative projects have been initiated in this way. External linkages of the commission are thus being strengthened through these cooperative projects.

Intermediary associations in the transport industry also play important roles in sustaining the external linkages of the commission. They assist the intra-sectoral coordination of the commission in four different aspects: training, synergetic promotion, public-private communication, as well as government-led policy transfer. Industrial associations are an important force in proving training to members of the association in low-carbon practices and awareness. For new technology being developed by research institutes sponsored by government funding, the associations offers a large base of test ground and promotional platform among their member units. Due to the shortage of staffing in transport commission working on low carbon transport, associations are the unified bodies representing the large population of industrial participants involved in transportation for the commission to communicate with. If there are national policies to be implemented across the industry or good experiences in energy conservation and emission reduction to be promoted in enterprises, the associations provides effective channel for communication and government-led policy transfer.

Key Actor 4: Municipal Urban-Rural Construction Commission

The Municipal Construction Commission participates in the Low Carbon intra-governmental leadership as the sectoral administrative coordinator in the construction industry. Subsequent to the establishment of the Low Carbon Leadership Group in November 2010, the Construction Commission established a leadership group on building energy efficiency in April 2011. The secretariat of this Guangzhou Building Energy Efficiency Leadership Group is set in the Municipal Construction Commission, with Deputy Mayor on Construction as the group leader thus standing on a lower administrative level compared to the Low Carbon Leadership Group. Relative to other sectors such as transport and commerce, construction sector has established a more intensive intra-sectoral coordination. To assist the implementation of policy, the Management Office on Building Energy Efficiency and Wall Materials Innovation has been established as a subordinate while independent organization to the Construction Commission. With organizational and policy supports, the Construction Commission delegates authority to the Management Office in monitoring construction projects to reach the energy efficiency or green building standards. The Management Office is an
institutional unit with regular state financial supports and civil service establishments. It also gets involved in the Building Energy Efficiency Leadership Group.

The Management Office as an entity with discretion power serves as a mediator to strengthen internal institutional capacity of the Construction Commission. The officer reflects upon their role in assisting the Construction Commission:

“One is promotion and training, to work with the associations, when it comes to promotion we may also utilize the media. It is all about forming an atmosphere, cultivating the awareness and building up the capacity. Second, it is technology development, to be led and supported by technology. Third, we also have organizational protection in a policy system. Lastly, the most important one is about providing demonstration and guidance”.

(Translated from the transcript of interview with Officer in the Management Office on Building Energy Efficiency and Wall Materials Innovation, 21 Feb 2012)

The role of demonstration and guidance through exemplar projects is a strategy that has been adopted by the Construction Commission to expand the concept of building for energy efficiency and green building in the entire construction industry. The specific administration and monitoring tasks are performed by the Management Office on Building Energy Efficiency.

The Management Office and the Commission together maintain external linkages with non-governmental associations and professional community. Two major associations are Guangzhou Reconnaissance and Design Association and Guangzhou New Technology in Construction Promotion Station. A new association is to be established named Guangzhou Construction in Energy Efficiency Technology Association led by the government requirement specified in the Special Plan for Building Energy Efficiency in the Twelfth-Five Year Plan of Guangzhou (GZ-URCC, 2011). These associations are all established to promote the new technology in building energy efficiency in the industry and they are often government-led although independently registered. To carry out technology development and research activities, the Commission has formed close connection with the professional community. The Management Office will set up a funding project to develop specific technology and invite the research institutes to bid for it. In addition, a Building Energy Efficiency Expert Committee was established recently in March 2012, to gather different social forces to support
technological development in green building sector.

**Activities in the Coordinative Process**

Various activities are involved in the coordinative process among departments for coordinating and implementing the tasks. The coordinative process among departments involves two forms. The primary one is top-down directive issued by the municipal government, and the alternative one is set down by proposals made by each sectoral department. For the top-down directive issued by the municipal government, each sectoral department works out the plan together using the channel of inter-departmental meeting. For proposal raised by each sectoral department, such as the cleaner production initiated by the Economy and Trade Commission, the Commission may call for collaboration from other departments to support their work.

The coordination in leadership group generally takes the forms of inter-agency meetings to share tasks done by the key actors listed out in the last section from different departments in the low carbon development process. The Transportation Commission is working on Bus Rapid Transit, railway transport and green freight, while the Urban-Rural Construction Commission is working on green building and greenway construction, based on the low carbon development plan set down by the municipal government (Guangzhou Municipal Government, 2010).

The policy function attached to each sectoral department is generically distinguished from each other, which poses a challenge to the coordinating department, the Development and Reform Commission, on how to reach effective synergy across the inherently fragmented coordination by sectors. There is boundary of exerting coordination power of the convener department and extending external linkages of each sectoral department. Thus, engagement of peripheral actors into the activities led by sectoral departments makes a difference in the coordination effectiveness.

**Case 1: Special Funding Schemes**

Despite the fact that without any special funding schemes specifically set up for low carbon development, Guangzhou city has established an energy conservation special fund, which also covers applications with low carbon development component (GZ-DRC, 2011). The special fund is attached with prescribed management measures. There are specified rules for funding in each sector, which will only be given to projects with promotional potentials in its sector. The form of the fund is issued to the recipient as rewards rather than
subsidies, which covers part of the project expenses of the successful applicant, if the project is seen as making contributions with promotion values to the energy efficiency in its own sector.

The Development and Reform Commission, working with the Finance Bureau, holds the authority of resource allocation with a holistic view of the applications submitted from each sector of the entire municipality. Nonetheless, the fund allocation capability is shared to the sectoral leading departments such as Transportation Commission and Construction Commission to help make suggestions and decisions on which projects to be allocated to. It is out of the concern that the sectoral leading departments hold more information and expertise in its own field, capable of rendering recommendation to the fund holder. In addition, sectoral commissions are responsible for the management and supervision of whether the fund is being deployed appropriately in each sector. As the monitor of fund consumption directly leads to the amount of fund being allocated to its sector in the next fiscal year, both the transportation and construction commissions devote attention on managing the awarded projects to actively maintain or increase their current fiscal level.

There is another special funding scheme specifically for low carbon development at the provincial level. The provincial level and municipal level funding are divided by levels of applicants. For some applicants who are established at the provincial level and do not fit into any specific cities in the province, they need to apply for it respectively at the provincial level and cannot apply for the municipal funding. Thus, this special funding scheme has divided authority in the levels of finances.

**Case 2: Carbon Emission Trade Market**

Guangdong Province has been selected as one of the 7 places to set up carbon emission trading markets in China. To carry out the preparation work in the Carbon Emission Trading Market, the provincial level Development and Reform Commission has decided to adopt province-city cooperation mode to facilitate the setting up of market mechanism in Guangdong. The initiative of carbon emission trading is new in Guangzhou, which involves a lot of research on the trading mechanism, especially on verification and certification of trades applicable in Chinese context. The Municipal Development and Reform Commission is the principle actor to coordinate tasks on setting up the trading market. In order to get the relevant social actors engaged in the process, the Municipal Development and Reform Commission organized promotional meeting to call for participation from relevant government departments,
associations, and research institutes. In this process, some agencies having participated in the coordination meetings, may consider themselves as peripheral to the core activity. For example, representatives from the Guangzhou Environmental Protection Industry Association participated actively in the coordination meeting organized by the Development and Reform Commission. After going through the briefings of policy program, the association considers itself as being marginalized in the coordination process. Consequently, the association decides to withdraw from the program. Thus, there is an administrative task on the Development and Reform Commission to actively build up connections with relevant social actors through the possible channels in getting the new policy implemented.

**Case 3: Green Truck Pilot and Green Freight**

Green Truck Pilot is a project with experimentation purpose carried out at the municipal level of Guangzhou city. Experiences generated in the pilot project help draft out the framework of the Green Freight Project being expanded to the provincial level. The municipal project in Guangzhou was a successful experience of coordination soliciting supports from different sources. It involved participation of the Municipal Transportation Commission with external financial sponsorship from the World Bank and practical guidelines provided by the Clean Air Initiative of Asia and the American Smart Way Project. Initiated in 2009, the municipal Green Truck Pilot Project has become a working basis for the entire provincial project on green freight.

On the basis of financial and resource support from external sources, in the Green Truck Pilot Project in Guangzhou, partnership is built up with various parties, among government agencies, logistic companies, and expert teams. The pilot project requires coordination of participants in the entire logistic industry. Several designated logistic companies are recognized as demonstrative units in energy efficiency by the municipal government. Specific requirements on energy efficiency are put on the freight stations, the trucks, the supply chain as well as the companies involved. The coordination of emission reduction efforts of each participant and discuss the plan for the activities in Green Truck Pilot, meetings involving all the stakeholders are hosted for updates and communication. Government agencies involved in the Green Truck Pilot are open and actively receiving suggestions and opinions generated by external sponsor and industrial participants. The Transportation Commission is the principle coordinating agency in the Green Truck Pilot Project. To facilitate the coordination of the transportation industry, the
Transportation Commission collaborates with the associations in the transportation industry to encourage the active participation of the various stakeholders in the Green Truck Project.

**Case 4: Green Building**

Green building is currently on top of the agenda of low carbon work carried out by the Urban-Rural Construction Commission with the administrative assistance provided by the Management Office on Building Energy Efficiency and Wall Materials Innovation. Since the promulgation of Notice on Accelerating Green Building Development by Guangzhou Municipal Government in January 2012, all new buildings in construction projects sponsored by state fund, urban renewal projects and development projects of new urban areas must meet the requirements of green building, in line with the national evaluation standard for green building released in 2006 (Municipal Government, 2012, Construction Ministry, 2006). To implement the new policy requirements of green building, the Management Office on Building Energy Efficiency and Wall Materials Innovation is the major entity to provide substantial administrative assistance. It acts as a monitor of the green building construction process: record keeping prior to the launch of construction and regular inspection on the green building construction activities.

A Leadership Group on Building Energy Efficiency is established to provide an inter-agency platform on the implementation of green building which inevitably involves activities of different government departments. This leadership group, led by the Urban-Rural Construction Commission, is a network activity arena alternative to the Leadership Group on Low Carbon Development. Network participants in the Building Energy Efficiency Leadership Group are more coherently connected with each other. The Management Office is one of the major actors in the Building Energy Efficiency Leadership Group while not involved in the intra-governmental leadership group broadly covering the entire low carbon development. The Management Office carries the most hand-on expertise on monitoring the green building projects. With the absence of program specialists from the Management Office, it is difficult for the intra-governmental mechanism on low carbon development to absorb sufficient inputs of knowledge and resources in the coordination process when it attempts to integrate the green building implementation progress of the municipality with the municipal-wide emission reduction activities. The absence of key actors on the discussion table also diminishes the capability of consensus building and conflict resolution during the planning
and development process in the intra-governmental mechanism. It is not difficult to find that the leadership group on low carbon development has not built up overarching institutional power to reach the core activities internal to the building sector.

**Summary of Findings and Conclusion**

This paper has identified the internal institutional power and external agency linkages of the core departments involved in the intra-governmental mechanism of low carbon development in Guangzhou, one of the Chinese cities which have stressed on government-led development for cross-sectoral coordination of climate change. Both the Transportation Commission and the Urban-Rural Construction Commission represent sectoral leadership of their respective sectors. Their external agency linkages are deeply embedded in the organizational field of their own sector. Non-governmental social forces are agglomerating around their sectoral leadership which generates strong institutional power for the two commissions to regulate and steer the sector.

Apart from the sectoral leadership, the administrative role of coordinating participants in the intra-governmental mechanism is performed by the Development and Reform Commission. It manages the sectoral differences in coordinative activities and provides an internal platform for discussion among departments at stake. The Development and Reform Commission has a more holistic view on the progress of low carbon development of the entire municipality and tries to engage relevant agencies into the governance process. Prior to the launch of low carbon development, similar role of coordination was carried out by the Economy and Trade Commission, with a more specific focus on electricity conservation and energy efficiency rather than the broader issue of low carbon development involving different sectors. Although the coordinating role of the Economy and Trade Commission has been shifted to the Development and Reform Commission in coordinating low carbon solutions to climate change at the municipal level, the external agency linkages of the former are still strong especially in the industry and commercial sectors. The external agency linkages are essential resources that the Development and Reform Commission can utilize through the intra-governmental mechanism to develop a network spanning role.

Analysis on key activities led by each of the core department indicates that functional segregation still predominantly exists across departments participating in the intra-governmental mechanism. Departments on the same hierarchical rank are loosely connected on the inter-agency networks. This is
mainly due to the divided functions of each policy sector. Governance efforts of coordination across sectoral functions have been built on annual or semi-annual cross-departmental meetings and exchange of comments and advice on policy proposals submitted by partner departments on the intra-governmental platform. The allocation and evaluation of the Municipal Energy Conservation Special Fund is one of the substantial inter-departmental activities coordinated by the intra-governmental mechanism. Nonetheless, practicing low carbon development is more actively carried out internal to each sector than across sectors, such as the Green Truck Pilot scheme in the transportation sector led by the Transportation Commission involving an array of non-governmental stakeholders, and the green building transformation led by the Urban-Rural Construction Commission. Sectoral fragmentation reduces the intensity of cross-departmental synergy, which may diminish the capability of integrative planning of municipal low carbon development.

The intra-governmental mechanism serves the function of platform internal to the municipal government. Provided that the platform can go beyond cross-departmental meetings towards inter-departmental cooperative practices, the synergy among agencies can be strengthened by cross-sectoral integration rather than segregated by sectoral fragmentation. Given the positive coordinative experience of Green Truck Pilot and Green Freight among municipal government departments and external sponsors, external impetus may make a difference in tightening the inter-agency linkages. In case when such external impetus is targeting the entire intra-governmental mechanism as recipient, coordination among the departments might come together and respond in a more cohesive manner.

The capacity of the intra-governmental mechanism to engage with each key actor with expertise and experience in the low carbon development process is another significant feature the platform should possess. Core actors who are familiar with the specific operation need to be engaged into the mechanism to provide positive input to solve the coordination problems. Conversely, each department has its boundary of engagement given the stretching ability of the agency networks. Peripheral actors might automatically withdraw from the coordination if they identify themselves as not making significant contribution to the process.
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