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SUMMARY

We do not intend to introduce or explain China's environmental law or EIA regulations. Many books have done an excellent job on this subject. Rather, we aim to recognize the possibilities and opportunities of greener and better development modes of infrastructure projects—a project development model that not only mitigates environmental negative impacts, but more importantly, promotes nature preservation and improves the living environment. Ultimately, we hope to assist in China's orderly transition to sustainable development and a truly harmonious society. The report is arranged as follows.

In Chapter 1, we set out the background of the study, outlining the pressing environmental issues related to development projects that motivate the study. We briefly introduce Environmental Impact Assessment and its development before we elaborate the persistent issues related to EIA in China. According to this, we explain the purpose and approach of the study, including why we adopt an institutional perspective and how we determine the scope and focus of the study.

In Chapter 2, we firstly develop a governance framework with institutions categorized into three distinct but intertwined layers: regulatory, normative, and cultural-cognitive institutions (Scott, 2008a). Particularly, we draw on recent theories of environmental governance, policy implementation, project governance, and organizational institutionalism in order to address the interdisciplinary nature of the research topic. This helps to develop a more comprehensive understanding of how to effectively integrate environmental management into every phase of project lifecycle, including development, implementation, and operation.

Building on the groundwork laid by Chapter 2, Chapter 3 begins the empirical study from the regulatory aspect of EIA by examining components and mechanisms of EIA-related regulations in China and to what degree they promote sustainability. By using longitudinal archival analysis, interview data, and a theoretical framework of decoupling, Chapter 3 captures the diffusion and evolution of the Chinese EIA, as well as the tension between economic development and environmental conservation. It argues that, the degree to which EIA ensures sustainable principles are incorporated into development projects is a question of localization. Key decision-makers' issue interpretations determine which international EIA components are appropriate, feasible, and necessary. Thus, they filter the EIA components imported. Quick diffusion and acceptance of key concepts such as "sustainable development", "public participation", and "citizens' environmental rights" signifies positive international influence, while inconsistencies in regulations and policies reveal tensions between entrenched domestic institutional systems and internationally imported institutional elements. Decoupling strategies, such as the control of information and the setup of separate systems to respond to international pressure, help diffuse sustainable principles and EIA and maintain stability during institutional change. However, it has also led to the government's unresponsiveness to the demand of the public and ineffectiveness in implementing sustainable principles in EIA. To continue along the path of institutional change toward sustainable development, it is important to deliberately bring in different and independent perspectives into the government's decision-making.

Chapter 4 focuses on public participation, a core governance mechanism of EIA (Noble, 2009) that is critical to projects' success and sustainability (World Bank, 2006b). This chapter reports the result of an empirical study examining citizens' attitudes toward, and the capacity of, public participation in a case study of the Wu-Guang HSR. The respondents to our questionnaires and interviews had limited knowledge about EIA, citizens' roles and rights under the EIA framework, and the impacts and scope of the impact caused by the project. They

were passive with regard to voicing their concerns and did not believe their opinions would be taken seriously. Barriers to participation that significantly affected residents' attitudes toward participation included the lack of channels for public participation, lack of EIA-related information availability for the public, and the lack of proper, early, and continuous communication with residents who were directly affected. Low levels of capacity and a passive attitude greatly hinder public participation from generating positive and desired results, and therefore require immediate attention from policy-makers. Fortunately, more than 60% of respondents expressed willingness to participate if they were invited to in the future. Respondents with higher education showed stronger willingness to participate and tendency of using the internet to access information.

Chapter 5 presents a special effort to fill the void of limited academic attention paid to gender and development in the discourse of public participation (Cornwall, 2003). Women's public participation is an indicator of overall citizenship rights and equity. Under the principle of inclusive participation, gender and development has been recognized as an important field for research due to women's potential contributions to balancing preferences in agenda setting or implementation as well as closing the gap of social inequality[1]. China's Agenda 21 white paper published in 1994 explicitly acknowledges the importance of reducing gender inequality to China's sustainable development. Through an institutional lens, Chapter 5 explores the current issues of gender inequality in China by using a semi-structured interview design. Positive changes were observed by analyzing and contrasting fifty-five interviews in rural and urban areas. Higher education and internet access were found to importantly enable individuals (both men and women) to develop independent thinking and be exposed to contemporary discourse that includes greater gender equality and mutual respect between men and women.

Chapter 6 takes the analysis further to connect the theoretical framework with the empirical studies of the EIA system and public participation. This chapter reports the outcome of an international workshop held on 26 March 2012. The workshop aimed to explore and discuss effective governance systems with respect to different policy approaches and institutional mechanisms to managing the environmental, economic, and social impacts related to infrastructure development and delivery. Ten industrial and academic experts hailing from the U.S., Finland, and China attended the workshop to discuss and compare cases of the California High-Speed Railway, Finland nuclear power plants, and our Wu-Guang HSR. The workshop was recorded and transcribed as the building block of the final chapter.

The five interrelated chapters are presented in the format of stand-alone papers, each of which contains individual abstracts, introductions, methodologies, discussions, and conclusions. A combined bibliography section is placed at the end of the report.

[1] The point has been made in many international reports including "United Nations Secretary-General's High-level Panel on Global Sustainability", 2012, and "China 2030" by the World Bank co-authored with the Development Research Centre (DRC) of the State Council, 2012.

《基础建设之环境治理研究》执行概要

"*The challenges of fulfilling a vision of green development in China are monumental, requiring a complex orchestration of policies and activities at a scale of operation the world has never seen. There is commitment, and there is awareness but still the right choices have to be made to achieve green development*."

中国实现绿色发展的目标将会遇到极大的挑战，需要一整套政策和实践相配合，其规模之宏大，程度之复杂在人类历史上前所未有。虽然有了明确的承诺和清醒的意识，但在实现绿色发展的道路上，还需要做出正确的选择。

UN 2002 China Human Development Report, p. iii

联合国 2002 中国人类发展报告

中国过去三十年在基础设施建设方面取得的重大成就举世瞩目。亚洲开发银行的调查研究指出，中国的基础设施建设投资已经位列世界第一。

近五年来，中国基础设施不断发展，建设了大量技术复杂型的基础设施，如高速铁路、核能电厂、及各种新能源。中央政府于 2009 年和 2010 年在基础设施方面分别投入了 2151 亿元和 2597 亿元，高达当年公共投资额的 23%以上[2]。而其快速发展的趋势预计还将持续，以推动全国各地区经济发展和城市化进程，促进各地资源的优化配置，提供社会服务，提升生活水平。但同时，大量的基础设施建设往往对社会及自然环境造成重大影响，如劳民伤财的"形象工程"和威胁安全的"豆腐渣"工程等现象；加上环境资源紧张，污染事件频发、征地拆迁矛盾突出[3]，已成为群体性事件的导火索。此外，各国专家估计中国自 1980 年代以来，因环境污染及生态破坏造成的经济损失占国内生产总值（GDP）的比例高达 7.5%-15.6%。如何在巨大环境压力下发展基础设施，进而改善自然环境，促进社会和谐，是当前十分紧迫的课题。

中国的绿色发展不能只依靠新兴产业，传统产业的转型扮演了重要角色 (胡鞍钢, 2012)。例如建筑行业消耗约 1/3 的全球物质资源。因此，建筑行业的绿化，可对节能减排有巨大贡献。并且基础设施是国家发展不可分割的一部分，积极促进此领域的可持续发展，是为国家发展打下稳定坚固的根基。基础设施的环境治理制度，应该整合于国家政策及规划程序之中。中国致力于发展环境保护体系，引进环境影响评价制度，并建立许多相应的组织；然而多年之后，环境影响评价和公众参与等治理机制在基础设施产业中没有得到落实。许多大型项目开工时依然没有适当的、通过审核的环评报告。基于此背景，对基础设施环境治理的研究与讨论具有紧迫的现实意义。

[2] 数据来源：中国财政年鉴 2010， 2009，中央政府公共投资支出及安排情况。

[3]我国工程建设领域存在的许多问题，见：中共中央办公厅、国务院办公厅印发《关于开展工程建设领域突出问题专项治理工作的意见》的通知（中办发[2009]27 号）。2010 年，《国务院办公厅转发发展改革委监察部等部门关于解决当前政府投资工程建设中带有普遍性问题意见的通知》（国办发〔2010〕41 号）又提出政府投资工程严重违规问题。

问题识别

近年来出现了大量关注中国整体环境治理的研究工作，如中国环境与发展国际合作委员会的环境治理任务小组提出的重要报告，指出朝向可持续性发展所需的制度变革 (Xue et al., 2007)。CIDEG（产业发展与环境治理研究中心）于 2005-2008 年间考察了中国的环境监管体系，对中国环境治理体制中存在的问题进行系统的梳理及探讨(Qi, 2008)。此研究指出，地方政府环境监管中面临“三无力”的困境（无动力、无能力、无压力），其主要原因是体制中的激励机制仍偏重于经济建设与发展，并缺乏公众对政府施加压力的渠道。此外，我国的正式制度规则中还有部分是不发挥作用的，导致“有法不依、执法不严”的现象。

这个框架为改善我国环境治理制度提供了重要基础，同时也指出继续深入探讨的必要性，以便发展出具有可实施性的制度。目前虽然有大量关注中国环境治理的研究，但对**基础设施环境治理**的关注还相当缺乏，较深入的讨论多采用“法规及政策”与“组织及体制”分析的两种视角。

法规及政策分析的观点，认为环保法规体系虽然大幅扩展，但法规的机制一直不完备。例如，历经争议终在 2002 年通过的《环境影响评价法》，是我国环保制度建设的重大里程碑，但核心的制度设计如社会影响评价、评估可选择方案及公开环境影响评价文件并未纳入。另外，允许环评开工后限期补交，使环评制度轻易沦为形式，等同于鼓励违法(Moore and Warren, 2006; 汪劲, 2012)。企业违法成本低，受到法律追究的机率也低，往往造成环境污染或不遵守环境影响评价法的行为 (齐晔 and 董红卫, 2010)。

政府组织与治理体制的观点，认为干部政绩考核过分强调 GDP，导致地方干部为树立“政绩”，片面强调经济发展，忽略环境治理。我国法律中缺乏监管机制 (王曦 、 罗文君, 2010)，政府运作不透明，政策缺乏一致性，部门间缺乏合作机制 (Qi, 2008)。对环保及政府行政机关的问责机制薄弱，执法不严；政府对 “边建设边环评”、“先建设后环评”视而不见 (何燕, 2010)。“有法不依”、“执法不严”和“违法不究”等长期问题，严重损害环境法的信用，进一步阻碍了环境法的落实 (刘长秋, 2009)。此外，我国治理体制将“治官权”与“治民权”分划给中央与地方政府，让地方政府面对群体性事件如征地拆迁冲突的压力，而中央政府得以维持稳定的权威治理 (曹正汉, 2011)；但大型公共项目常常是中央政府规划和建设，其社会环境影响的治理却分割给地方政府，权威与责任的破碎化，常常致使各种利益诉求得以在项目实施过程中协商共谋，忽视环境与社会诉求。

总体来说，这些研究工作将各产业不同领域的环境治理问题一概而谈，而且较少建立在已有的研究基础上，也没有明晰的分析框架或理论概念。因此，知识的系统性累积和对一系列问题的深入探讨甚为困难。此外，专注于问题现象的思路，很容易限制整体变革创新路径的思考，忽略了促进中国可持续发展的契机。

环境保护与管理的相关领域发展多年后，我们已经认识到，要建立环境友好行为及环境保护的社会秩序，需要的不仅仅是细致的环境法规和标准 (May et al., 1996)。环境问题往往具有复杂性，其问题的本质、影响范围、问题的源头、问题发生的因果关系、检测预估的技术等，皆具有高度的模糊性及跨领域的交叉性，导致治理的不确定性及正式法规系统的局限性。而且，强调法规政策奖惩，往往无法及时制止对环境的破坏。因此，决策者需要一个整合性的框架，对环境治理制度进行全面性、系统性的探讨和建立。

研究设计

本研究聚焦在基础建设项目领域，关注政府主导、投资、运营、管理的公共项目如何实现环境“良治”。此领域与私营企业建设项目的性质不同，是以提供社会服务为目标的建设项目，具有公益性，因此利益难以量化。其特点是实施周期长，需大量资源及投资，对社会经济影响范围广大，因此政府的角色特别突出，与公众的关系比较复杂；公共项目建设过程中，政府同时是投资者、建设者、监督者、管理者、和社会福利的提供者。公众是基础设施的使用者和付费者，但有些公众在建设过程中成为牺牲者。在环境法规框架下，公众还应该是监督者。这些角色充满矛盾，显示了中国转型时的压力，新旧制度的冲突。同时，其相关的环境问题知识含量高，技术性强，专业精神（professionalism）与知识是有效治理的核心，专家及企业的角色十分重要。

本研究范围针对环境影响评价（环评）的制度设计、变化、和实施。环评被认为是建设环境治理的核心机制，而且中国在 1970 年代末期引进了环评的概念，但至今的实施成效仍远远不如预期(汪劲, 2012)。前述的研究对此均有评论，但较缺乏对产业特性更细致、系统性的探讨。另外，我们选择了武广高铁项目进行个案研究，主要因为高速铁路建设是国家投资的重点。目前中国对交通基础建设的投资，在 2009 与 2010 年均高达两千多亿元。自 2007-2009 年来开工的大型项目中，有 56%为交通项目，高达 41%为铁道部的项目。

表 1 中国新开工大型项目基本情况统计

中国新开工大型项目基本情况统计　　单位: 亿元

Year	项目总投资	交通项目	铁道部
2007年新开工大型项目	4194.0	2796.9	1795.4
		67%	*43%*
2008年新开工大型项目	10163.8	6833.4	5534.3
		67%	*54%*
2009年新开工大型项目	7050.4	2309.8	1425.3
		33%	*20%*
TOTAL	**21408.3**	**11940.0**	**8755.0**
		56%	***41%***

Data source: 中国统计年鉴 2008， 2009 and 2010

本研究期更深入探索问题背后深层的机制，通过我国环评体系的梳理，武广高铁的个案研究，和跨国案例比较，并针对基础设施领域的特性，提出环境治理的制度发展框架。

概念框架

本研究概念框架的发展，是基于 Richard Scott 制度理论的“三支柱”（three pillar）框架(2008)，和 Andrew Hoffman (1999) 将其在环境领域的应用。本研究的概念框架对目前偏重法规政策制度和政府角色的探讨加以扩展，加入了专业规范与文化认知的制度层面，以弥补博弈理论的局限性。Scott (2002) 分析中国国有企业的组织变革，认为中国的制度变迁，不仅引进了西方经济发展管理模式并于以修改，而且在所引进模式的根本认知与诠释上有所区分；现行治理结构下出现的违法、寻租行为，不能单以缺乏监

督、监管机制来解释。因为行动者的行动选择并不是仅依据理性计算制度惩罚与奖赏。尤其在复杂性、模糊性高的环境和基础设施领域，博弈规则往往不清晰，更不完整，各行动者常常需要自行寻找适宜的行为反应，因此对规则产生不同理解，赋予不同意义。此外，本框架从不同制度安排的角度入手，可探讨政府和其他行动者的互动关系，并揭示动员政府、企业和公众共同解决环境问题的契机。

报告章节概要

本报告的要旨在于识别基础设施领域的绿色发展契机和可能的转变模式，共由六个相互关联又独立的章节组成。第一章为整个研究的介绍和报告导读。第二到第六章均有个别的研究设计、分析方法和结论。最后一章（第六章），以加州高速铁路、芬兰核电站与我国武广高铁三个案例比较，及为期一天的国际专家讨论会的总结，以环境治理制度框架进行分析，为全报告提供一个整合性的结论。

以下为第二到第六章重点和结论的概要。

第二章 基础设施环境治理：理论框架

本章节发展了基础设施环境治理的理论框架，结合各相关学术领域的研究成果，主要为：环境治理（environmental governance），政策实行（policy implementation），项目治理（project governance），及组织制度理论（organizational institutionalism）。

环境治理的目的是建立治理体系（包括机制、流程、组织）来保障社会和环境服务的有效提供，管理国家经济、社会和自然资源，包括应对环境问题如全球暖化、资源稀缺等。传统定义的治理体系中，政府是唯一行动者，行使专有的权力，担负所有的责任。但近年来在环境领域中，治理的定义已经扩大到包含非政府的行动者，如公众和企业。环境治理，因为其特性，必须因地制宜，才能有效解决地方上的环境问题。同时，由于环境问题的地方特殊性、难以回复性、和紧迫性，专家学者常常提出需要以创新性的制度变革和发展模式为解决方案，但理论和实证研究均指出政治制度具有路径依赖性和制度惯性(Pierson, 2000)，根本性的变革非常罕见 (Campbell, 2004)。环境治理不论从理论上或实践上均充满挑战和矛盾。

政策实行可从“执行过程是组织决策过程的延续”的命题来思考 (March, 1988)。这一思路将政策决策过程和执行过程视为一个整体加以分析讨论。从这个角度看，环境治理问题是环境政策设计、制定和执行的动态实践过程，是一个国家、产业、公司组织和民众多方参与其中的系统工程。其具有由多重决策串连起来的特点。政策实践的模式会因为政策设计及其目的的特点而有所不同。当政策内容充满原则性文字，实践便由执行者阐释及发挥。Huber 与 Shipan (2002) 认为这种模糊定义有时是政策制定者刻意授权给执行者（政府官僚）的结果。但若政策制定者与执行者没有共识，这样的设计便会纵容执行者的照旧习行事。基于这样的概念，核心议题即为，政策设计的初衷与目标是什么，政策是如何执行的，政策执行的效果如何，又带来什么社会后果？

项目治理近年来也转向制度理论寻求理论扩展。这主要是受到国际化进程中，建设项目面临的重要挑战，从技术与财务挑战转变到政治、管理、与制度方面所致。尤其是近年来西方项目管理经历了许多争议与诉讼纠纷，项目成本大幅增加。学者认为基础设施项目的高度不确定性，使法规政策无法有效规制投机行为，因此转向其他非正式机制的研究(Henisz et al., 2012)。而我国的项目治理制度发展过程有所

不同。制度历史所形成的特殊中央政府−国企关系，有力地动员了项目所需的人力物力，并有效地应对项目规划建设过程中的诸多不确定性与新挑战。但这也使得这些企业维持合法性与生存资源来源的关键受众 （key audience）(Pfeffer and Salancik, 1978) 只有政府，而非他们所应服务的公众，因而形成互补利益（complementary stakes）的横向协调、内部协商模式（青木昌彦与杰弗里•罗思韦尔 2012）。环评风暴、云南怒江水电站、温州动车事件及缅甸水电站中止等事件，都凸显出缺乏法规监管机制约束以及缺乏保障百姓生活安全意识的严重后果。这些研究均指出，有效的治理需要多层次、多行动者的框架。

组织制度理论起源于 1977 年，一群社会学者将制度理论应用到理解与描述组织行为中(Greenwood et al., 2008)。制度可分为三个紧密相连但又以不同机制塑造社会秩序的层面：法规政策制度（regulatory institutions）、专业规范制度（normative institutions）、和文化认知制度（cultural-cognitive institutions）(Scott, 2008)。

法规政策制度为政府所主导，运用权威强制的法令控制机制及奖赏或惩罚等政策工具，对破坏环境的行为进行约束与监督，或对环境友好行为进行鼓励。我国环境法制的积极扩展和广泛研究讨论，为法规政策制度的建立打下良好基础。法规与政策制度常被赋予刚性强制的形象，但其尚有软性授权的一面(Scott, 2008; Suchman and Edelman, 1996)，较少被国内学者讨论。我国环境保护单位的建立、环境保护标准的订立、以及多种资格认证制度的建立，都是藉由政府授权，推动科学化及理性发展的例子。但政府授权不等同具有独立性的专业规范制度。

专业规范制度包含了社会规范、期望、角色或道德体系，主要行动者为企业及专家组织（如学校）；公共项目环境治理领域中，国际环境影响评价协会、国际环保非政府组织及世界开发银行等专家团体有关键性的影响力。他们拥有高度专业化所衍生出的理性与科学权威，可用以定义社会规范和行为标准。专业规范制度的约束力来自社会和专业道德要求，及同行团体或同事的评价压力；这些专业组织或个人的主要实践动力是寻求正当性与合法性，提升市场形象或同行间的地位，增加获取资源（如优惠信贷和保险政策）的机会；自愿性认证如 ISO14000 环境管理体系认证即为一例。

文化认知制度根植于历史之中，包含社会对现实环境的阐释和赋予的意义，反映在意识形态、生活模式及文字语言符号中，是这三种制度中内化程度最深的一层。因此，在这层次上的环境保护行为是自发的，被视为理所当然的。文化认知制度对环境治理的实施至为关键，使变革更为深刻，具有持续性。价值观的转变将使环境及资源被视为生活不可或缺的基础，组织或团体将积极寻求创新，解决环境问题。地方自治和自主治理即为一例，可减少政府制度供给的成本(Ostrom, 1990)。不同于激励政策，虽然可以短期间见效，但是有时弱化而非加强了参与者对环境的重视与投入的承诺程度。

为了分析之便，笔者将这三种制度分开陈述，但实际上它们是紧密互动交叠的。另外需要加以重视的是，整个制度体系建立所需的共同基础，即“能力”的建设；亦即知识、技术和信息的积累和精进。这点有可能成为对发展快速的发展中国家的制约因素，所以需要有意识的培养，不可坐观其变。

结合上述理论，本章节发展了理论框架如下图所示。组织制度理论框架有效的将环境治理、政策实行、项目治理中多重决策者和行动者的特性连结起来，并展开了不同层次制度的不同运作模式及其关联性。组织制度理论提出，文化认知制度扮演着核心的角色；透过赋予事物意义，使行动者能对其进行阐释与理解。所以单单改变文化认知就可以改变个人和组织的行为。同时，组织中存在着很强的结构惯

性，组织变革需要经历内部基本规范和价值体系的改变（Scott 2008）。这一论点为环境治理中的矛盾指明了实行变革的契机和途径。

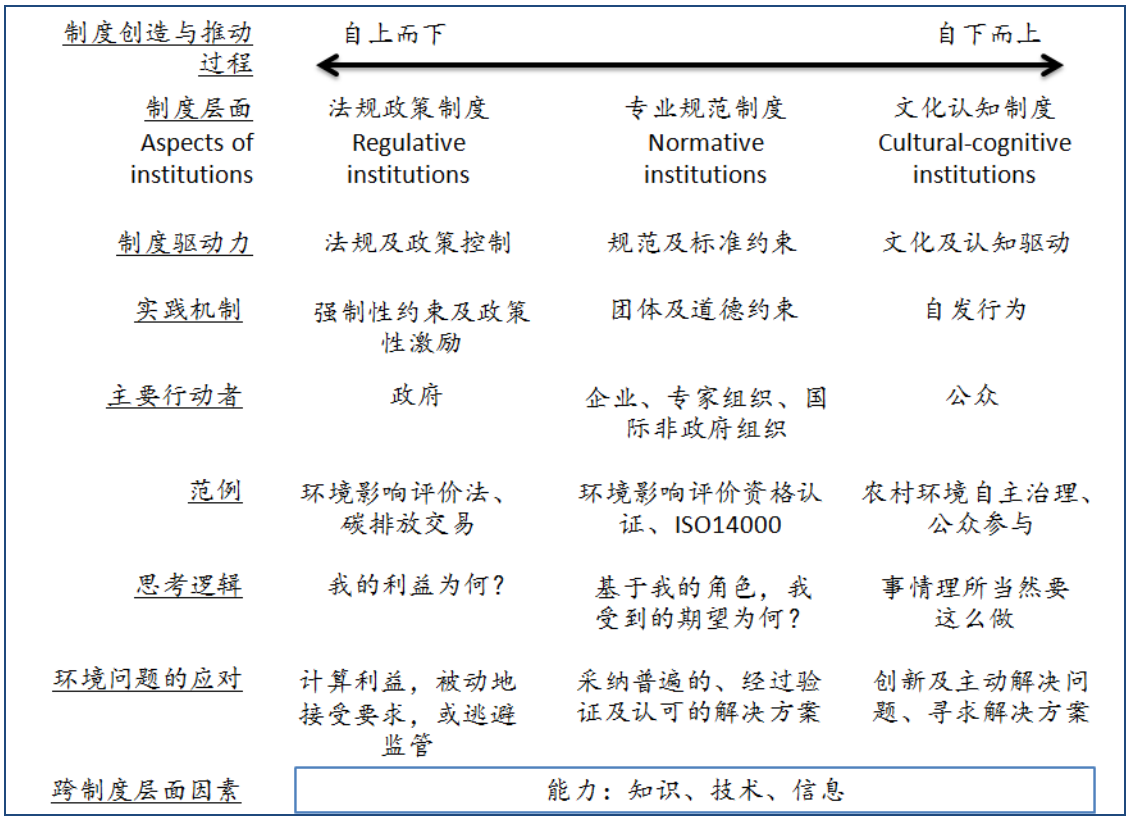

图 1 公共项目环境治理的制度框架

第三章 促进可持续发展：中国环评体系

环境影响评价，又称为环境影响评估，是美国在 60 年代末创立的制度，现在被超过 100 个国家采纳和仿效，并在 1990 年代被引进国际环境法领域，被重要国际组织纳为标准制度 (Wang, 2006)。这套体系原本关注于单一项目的环境影响，发展到现在，更关注整体规划与政策层面的环境影响评价；换句话说，从以前单一关注“把事做对”，演变成更关注“做对的事”，并被视为促进可持续发展的主要决策工具 (Ahmed and Triana, 2008; Noble, 2000)。但发展中国家采纳环评体系后的效果却远远不如发达国家(Wood, 2003)。本文以中国的环评体系为例，从引进到立法的动态过程，探讨发展中国家实行环评体系的挑战，认为一个国家引进及采纳未来的制度系统，在“地方化”（localization）的过程中，反映了更多地方既有制度工具、对事物解读视角、和决策者的引进目的，而非此制度系统原来的设计和用意。

另外，我们应用了组织制度理论框架 Decoupling 的概念，描述我国政府应对国际及社会压力的策略。此理论框架使政策研究得以跳脱对政策体系过度简化的分析，仅仅以成功或失败二元法对功能性或

程序性目标评论。它正面看待于制度发展必然的动态过程，进一步探讨政府行为对社会的影响，不同阶段需要的不同应对，以便对环评体系较长期的发展提出建议。

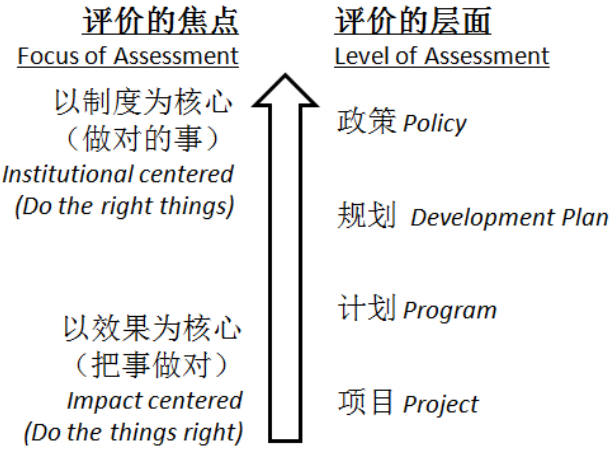

图 2 环境影响评价的焦点和层面

我们使用的研究方法为文件研究法（Archival research method）。主要数据来自政府法规、官方网站公布的信息、统计年鉴、和知名学者的研究报告。另外，访谈了七位环评领域的学者及业界专家，了解环评体系实践的现况与不足，并与两位政府官员非正式沟通，征询对环评体系发展的看法。我们于 2011 年 9 月以关键字“环境评价”和“环境评估”在北大法宝搜寻相关政府法规，共有 1100 篇法律（27）、行政法规（108）、部门规章（955）和其他。数据分析方法包括基本统计和使用质性分析软件 Nvivo 进行文件内容分析。

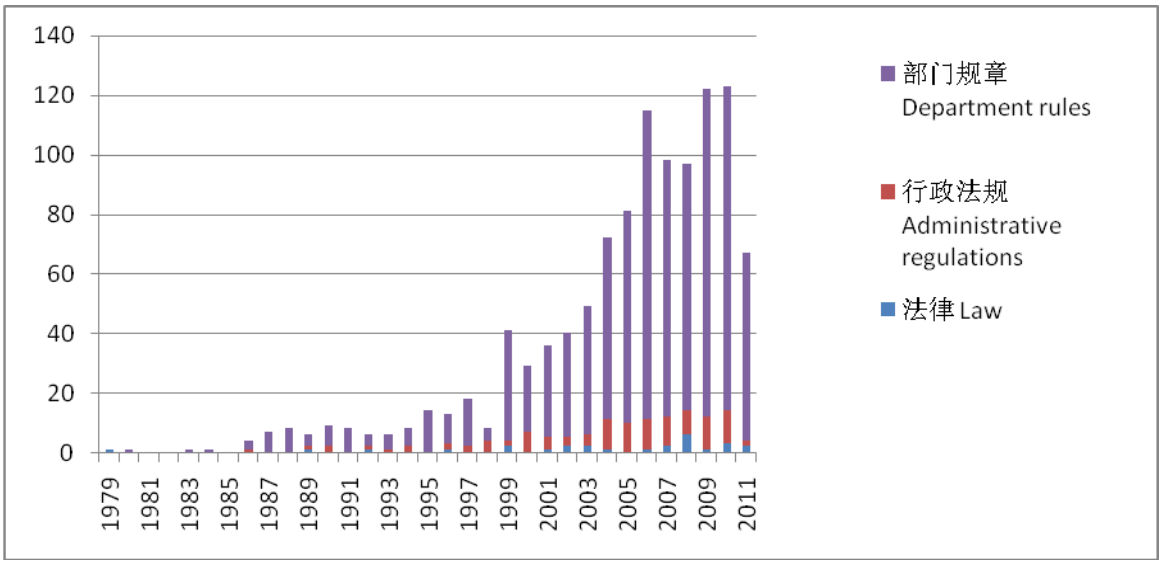

图 3 关键字“环境评价”和“环境评估”之相关政府法规

主要结论

采纳发展较完整的制度体系需要有一个地方化的过程，以便使此制度体系更符合地方的条件和需求。同时，这样的体系有助于促进新概念的接受、思考和扩散。

以北大法宝划分的法律类别和法律发布的年度来观察环评体系扩散的模式，可观察到环评已被应用在 51 个法律领域，包括用以限制行业进入，借以调整产业结构。环评体系渐渐结合了我国的制度创新。例如，早期的“三同时”，绿色信贷，还有环境审计。由图 4 可以看出，最近三年，审计也开始关注了环评，例如在汶川地震灾后恢复重建项目跟踪审计时，对环评未获批准先行建设，未组织环评、未取得规划许可证和施工许可证就开工建设的项目也会纠举上报。

法律类别	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011/8
审计	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
咨询	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
民族事务	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
工商管理	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	
宪法	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	
行政诉讼	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
牧业	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	
教育	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	
渔业	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0	
邮政电讯	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	
银行	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	
体育	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
公安	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	
旅游	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	0	2	1	
对外经贸	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	0	1	0	
港澳事务	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	
质量管理与监督	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	
文物文史	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	
科技	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	2	2	0	1	1	
农业	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	1	3	3	2
商贸物质	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	5	0	0
计划	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	2	1	2
国有资产	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0
外汇	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
民政	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0
水利	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	4	2	2	2	0	7	4
资源	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	2	5	2	5	3	6	8	7	4	6	3
法治工作	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	2	1	1	2	0	4	4
林业	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	1	0	1	0	0	1	4	2	4	0
标准化管理与认证认可	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	3	7	3	5	6	3
企业	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	2	0	1	0	1	0
土地	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0
气象	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	1	1	0	2	1	0	0
人事	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	1	0	0	5	1	1	2	1	1	0
贷款	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	0	0
税收征管	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0
开发区	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0
统计	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
能源	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	2	3	1
卫生	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	2	0	0	1
军事	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
价格	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	4	1	0	1	0
劳动工会	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
交通运输	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	1	1	1	1	2	3	1	2	2	1	2	5	3	4	3	4
机关工作	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	3	4	3	5	2
地质矿产	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	2	2	0	0	3	1	1
工业开发	0	0	0	0	0	0	0	0	3	2	1	0	0	0	1	0	4	2	2	0	1	0	0	0	4	3	6	11	7	8	8	9	5
改革开放	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	2	2	1	1	1	1
财政财务	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	2	4	2	3
建设业	0	1	0	0	0	0	0	2	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	1	3	1	2	5	2	5	5	1
环境保护	1	0	0	0	1	0	0	1	3	1	2	7	4	3	3	7	6	6	13	3	27	14	25	19	34	38	40	61	38	36	55	52	24

当年度制定的法规数

图 4 环评体系扩散模式，不同法规领域中发布的法规数，1979-2011 年八月

Note: 以专业软件 Nvivo 编码的法规数= 1100

同时，可持续发展的目标也明确地注明在环评法及其他相关法规中。早在 1992 年联合国环境与发展大会后，中国就在 21 世纪白皮书中将可持续性发展列为国家发展目标。《中华人民共和国环境影响评

价法》也明确指出该法目的是“为了实施可持续发展战略，预防因规划和建设项目实施后对环境造成不良影响，促进经济、社会和环境的协调发展”（第一条）。另外一个重要的、朝向可持续性发展的里程碑，是法律上承认了个人的环境权益，为日后公民受到环境问题导致的侵害时建立维护权益的正当性给予合法基础。

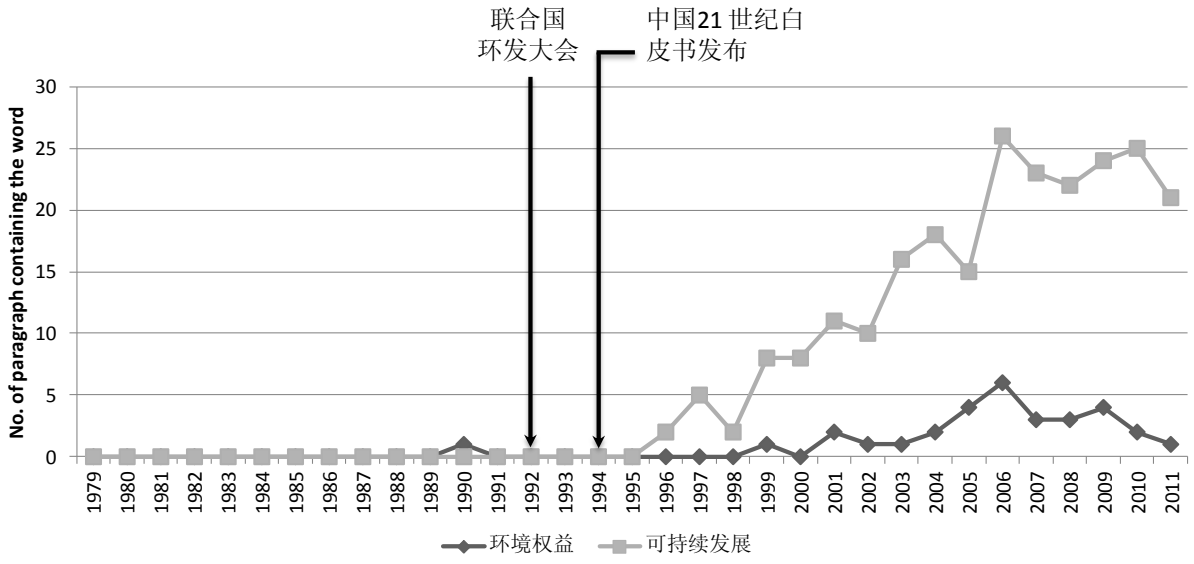

图 5 环评法规编码：含“环境权益”和“可持续发展”的章节数

Note:

1. 以专业软件 Nvivo 编码的法规数= 1100
2. 1990 年，环境权益第一次出现于中国法规中，用以指出当国外技术和工厂设备进口是，国家的环境权益应受到保护和尊敬。直到 1999 年，环境权益才用以指称民众的保护其生活环境的权益。

然而，发展较完整的制度体系无可避免地会与既有制度和需求冲突。此时，政府决策者如何反应，关键性地决定了此制度体系发展的方向。本章节应用 Jane Dutton and Susan Jackson (1987) 提出对议题的“语言标签”（linguistic labeling）[4]，分析汪劲教授记录的环评法争议过程，将环评体系机制分为三类：非合理可行、合理但需协商、合理性受争议。这个分析方法有两个主要优点。中国的立法和政策决策过程为协商制，因此一个制度体系中主要行动者都有机会在过程中表达自己的看法，为自己的立场辩护，为观察这些行动者对新制度的解读和反应提供了机会。从这里还可以观察到被视为非合理可行的议题甚至没有机会进入议程进行讨论；相对的，也可以辨认出引发新旧观念冲突的议题，指出产生变革的机会。

中国在建立环境影响评价法时，初稿完全取自国际标准。经历了全国人大常委会三读三审，三年多的争议过程中，环评体系设计中的替代方案评估、社会影响评价、在项目可行性报告开始便组织环评等机制，在审阅讨论的初期就因为被认为不可行而删除。公众参与的必要性获得一致认同，但该如何进行有许多讨论协商，最终在环评信息公开及环评过程参与的时间方面限制了公众的参与。此外，当时还是

[4]Linguistic Labeling 的理论认为，决策者对议题的认知和阐释，会反应在谈论此议题的语言上，并影响他们对相关资讯的处理及行为动机。例如，决策者如认为环境保护是他事业的威胁，还是他所认为的事业机会，后续对环境保护资讯的反应、搜集、处理会有很大的不同。

新概念的战略环评受到很多争议；是否该直接写入法律？该如何进行？最后只确定了规划层面的战略环评以及项目层面项目环评的法律地位。这样的结果固然很实际地考虑到了中国国情与实施的可行性，但也使得后来环评体系失去预防环境破坏和积极环境复原的作用。

最后，本章节以 Decoupling 的概念来描述我国政府对国际和社会压力的应对，讨论其较长期的影响。Decoupling 是组织应对外部环境中相互冲突的要求常用的策略，反映在以下几种组织行为中：设定模糊的目标、形式化的检查和评量、依赖人际关系来以非正式的方式组织活动。在我国环评体系中观察到的，包含政府控制主要信息，尤其项目环评不公开、项目实施结果常常无从得知，以及国际贷款项目的环评设定另外的程序来进行等，均显示 Decoupling。但 Decoupling 的意涵为何？环境政策研究指出 Decoupling 可促进新概念的扩散 (Hironaka and Schofer, 2002)，我们在法规分析中已经证实这点。组织研究中观察到 Decoupling 策略导致四个结果，我们以下一一讨论。

1. 持续（persistence）：Decoupling 使组织保有自主性，减少外部受众（audience）的影响，因此原有的制度可以持续。目前政府掌握几乎所有资源、信息和权力，包括发放环评执照，订立环评标准等，使政府较少受到关键受众的监督，但同时也使政府所担负的社会责任没有受到实质上的评估。

2. 缓冲（buffering）：政府掌握资源、信息和权力，可以减少信息引起的负面影响，如错误阐释和夸大渲染造成的慌乱。这点对发展中国家有重要的作用，因为公众的教育程度普遍较低，容易受到蓄意影响和煽动。但长期来说，随着信息的普遍性和教育程度提高，政府的过度管控可能引起反面效果；温州高铁事件中，铁道部的处置引起的社会情绪反应就是一例。

3. 适应（adaptability）：制度的建立和维持必须要符合国情、满足国家需求，才会有好的成果；此过程需要对现实情况有深入理解，同时不能受到太多外界的牵制和影响。中国的渐进式改革，被称为中国特色的经济改革，创造了骄人的成就。这种“摸着石头过河”的策略，和执行策略的效率，绝大部分是因为在 Decoupling 的环境中保存了政府的高度自主性才能实现。但是在这样相对较独立、掌握权力的环境中，要保持对现实情况的理解，需要有意维持组织学习，使组织具有兼容多元的观点和创新精神，避免既得利益者垄断内部的对话。

4. 满足（satisfaction）：Decoupling 的结果，与“适应”密切相关的为组织内部成员的满足。一般而言，满足的组织成员倾向于维持现状，停止学习。因为可避免随时的监督评量，组织成员不需面对受罚的压力，而产生满足感。我国政府为推动改革，调动所有政府单位，在中国特色的改革中尽量让大家都从中获益。但是长期以来，养成了许多既得利益团体，渐渐难以维持“适应”所需的多元观点和创新精神。

上述讨论提出 Decoupling 策略的主要结果，显示其对短期变革作用和对长期发展局限性。例如，环评法争议过程中，没有人讨论环评重要的预防环境破坏功能和如何用以达到可持续发展的目标。相对的，否决“环评在项目建议书阶段组织进行”和“提出可供选择方案”的审议意见，仅仅为“不妥”、“不可行”（《环境影响评价法（草案一次审议稿）》审议意见），另还提出环评法要与国家基本建设项目审批程序相衔接（《环境影响评价法（草案二次审议稿）》审议意见），使得“先批后审”的机制

仍主导，导致有学者评论环评法未能改善项目环评的程序和要求 (Wang et al., 2003)。这是既有利益团体维护现有制度，导致政策路径依赖的明显案例。

显而易见，以历史观点来观察环评体系的演变过程，经过阐释、协商后的地方化环评体系已经不同于国际标准的制度设计，实施后的效果当然也会不同。制度地方化是推动观念改变，制度创新和符合地方需求的必要过程。但重点是要不停根据现实问题状况来对制度做修正。我国环评流程失去原设计功能和与社会利益相关者互动的机制后，也流于形式，用以支持已定的项目决策；其中一个主要原因就是对项目造成的环境破坏现况没有清楚的理解或监测，对问题的规模和紧迫性没有感受。Decoupling 策略对发展中国家在面对多重相互矛盾的制度要求时，找到自己变革道路有重要作用。但是我国的 Decoupling 策略，已经面临如何建立政策反馈、社会学习机制的挑战。

第四章 公共项目[5]中的公众参与

公众参与是环评的重要机制。世界银行总结其 20 年发展基础设施项目的经验，肯定公众参与对项目的成功和可持续性起了重要作用。本章的目的在于了解民众对于环境影响评价的认识，公众参与经验、参与意愿以及实际受到建设项目影响的情形。借此希望真实反映社会文化层面对环评制度的理解和态度，并探索有效公众参与的阻碍因素。目前国内外对公众参与的研究大部分聚焦于促进有效参与的流程和形式，但对公众能力和态度的探讨比较少，对参与意愿低的案例讨论更为有限。

作为公众参与中的关键主体，公众的能力和态度理所当然与公众参与的成效息息相关；能力和态度决定了他们参与的动机，以及是否能有效地沟通和行为，并考虑到公共利益。而且，即使法规已经给予公众参与环境决策的合法权力，不能假设所需的公众能力和态度就会自然形成。因为环评体系在发达国家经历了较长的发展过程。在此过程中，政府和社会公众、企业共同经过互动、沟通、学习，而在建立环境保护法规体系时，也一步步塑造着相应的社会价值与文化。引进国外制度系统的发展中国家，往往缺乏这样的共同演进过程，需要特别注意培养政府、社会、企业对新制度的共识，以确保制度的落实。因此，理解公众目前的能力和态度，辨认参与的障碍，提供反馈促进政策学习，是完善法规政策机制的重要基础。

本研究选择 2005 年开工，2009 年底运营的武广高铁为案例。高速铁路近年来发展迅速，为我国绿色发展提供支持。其覆盖区域广的特性，使我们可以探讨不同地区和不同类型的公众是否有不同的参与环评的意愿和能力。因此，我们选择武广高铁沿途经过的武汉、长沙、广州三个省会城市以及咸宁、衡阳、清远三个二线旅游城市作为具体调研地点，于 2011 年 10 月 20 日至 30 日，对铁路沿线的公众进行问卷调研，共回收有效样本 361 个，38 个深入访谈。问卷共设 18 个问题，是根据文献、预调研经验[6]、及

[5] 国内有些文献将公共项目（public projects）定义为政府投资的项目。本研究认为公共项目的定义为提供社会公共服务，提升生活品质的建设项目，如学校、医院、监狱、公路、铁路、和机场。此定义强调了这些项目的本质，如涉及公共利益和公众生活质量。此公共性或准公共性不会因为投资者为私人单位而消失，所以，政府仍需担负监督和社会责任，因为是奠基于其保护公众利益的根本职责。

[6] 初步设计调研问卷后，于 2011 年 10 月 11 日在北京南站附近进行了预调研。所选择的社区距离铁路非常近，最近的几幢楼距离铁路只有 10 米左右，大部分居民从 1995 年左右便开始在此居住，并曾因噪音和震动问题与铁路单位抗争，获取赔偿。

专家的修改意见后确定了最终版本。因考虑到有些受访者可能不识字，采用与受访者面对面直接访谈的形式进行调研，并由地方知名大学的学生协助，俩人一组进行访谈，克服地方语言沟通上的困难，并确保访谈记录的完整性和客观性。

表 2 调研城市和基本数据统计

途经省份	调研城市	2010 年人均 GDP[a] (元)	常住人口 [a](万人)	城市化水平 [a] (%)	有效问卷数 (%)	性别 (%)
湖北省	武汉市	58961	978	N/A	83 (23.0)	
	咸宁市	21129	245	N/A	54 (15.0)	男性
湖南省	长沙市	66464	704	62.6	40 (11.1)	191(52.9)
	衡阳市	20419	715	43.1	56 (15.5)	女性
广东省	广州市	87458	1270	82.5	68 (18.8)	170(47.1)
	清远市	29487	370	34.9	60 (16.6)	
			有效样本数		361 (100)	

[a]数据来源：湖北省、湖南省、广东统计年鉴 2011

主要结果

态度：超过半数的受访者（53%）对武广高铁项目的建设表示支持，因为可以带动经济，提供便利。三分之一（32.1%）表示无所谓，因为他们的态度对政府政策没有影响。大部分受访者（66.8%）认为公众应该要参与环评，而且 66.2%的受访者表示如果未来有项目建设的环评程序，他们愿意参与。但是，60.7%的受访者认为公众参与的最大障碍在于公众的意见得不到重视，没有办法起作用；23.5%表示不知道如何参与。大约十位受访者选了“其他”的选项，表示他们不要参与，也没想过参与；有些人认为他们没有足够的知识和能力参与。

能力：目前，参与环评的能力应该如何量测和具体化，仍是需要研究的课题。本研究以与环境影响和环评相关的“知识”为指标。知道项目会引起哪些自然和社会环境影响、影响范围多大，才能在公众参与过程提出讨论的主题；知道环评政策，才能理解自己在公众参与过程中扮演的角色。

受访者有高达 81.2% 没有听过“环境影响评价”这个词或相关概念[7]。对于建设单位是否实施了规定中的环境保护措施，32.8%的受访者表示不知道，16.4%的人表示有环保措施，但进一步询问是否采取了基本措施如施工时洒水抑尘、篷布覆盖、设置围防护栏等措施，受访者表示没有；有一地区受访者表示经过抗议争取后才有洒水抑尘。当询问三项高铁主要环境影响：噪音、震动、和电磁，大部分受访者认为噪音影响很显著，31.1%指出影响到日常生活，28.6%认为还可以忍受。同时，大部分受访者不了解电磁影响；有些人指出电视和手机使用受干扰，但不清楚原因为何。77 位受访者指出其他的影响，排名前四位的影响为：拆迁赔偿、建筑固体废弃物、空气和扬尘、建设造成的房屋损坏。

[7] 对于“环境影响评价”一词表示没听过的受访者，我们均加以解释，但受访者仍表示不知道这个政策。

较为出乎意料的是，当我们询问受访者如果有意见会通过何种渠道反映，高达 46%表示他们不要反映，或说他们没想过反映自己的意见。这个问题本意是要量测公众对反映意见渠道的知识，但事实上反映的是公众的态度；显示了态度和能力的关联性。不想反映意见的人自然不会去注意有哪些反映意见的渠道，甚至相关的政策法规。另外，高达 21.1%的受访者表示“不知道”。

经验：受访者在武广项目规划、建设、运营过程中的经验，是形成目前态度的重要因素。51.2%受访者在项目开工建设了，才知道要建设武广高铁；有 33%的受访者在规划阶段得知。59.1%的受访者亲眼见到测量人员或直到看见项目建设才得知该项目；31.1%的受访者在项目建设前通过他人听说该项目；10.1%的受访者通过新闻媒体听说该项目。

公众参与方式偏好：43.1%的受访者希望通过座谈会、论证会或听证会的形式进行公众参与；32.6%的受访者希望以问卷或面对面访谈的方式进行； 14.5%的受访者认为告知项目基本信息即可；另外 14.5%的受访者希望相关部门能够提供反映意见的渠道。大部分受访者表示希望可以匿名参与，并可随时澄清疑虑。

主要结论

公众参与在项目进行的不同阶段有不同作用。规划初期的公众参与可帮助设定环评范围，将有限的精力和资源有效用于大家共同关注的环境影响上。规划设计阶段，公众参与可协助选择可接受的防护措施和补偿方案。项目施工阶段，公众可应用前期参与获得的知识，来协助监督落实环境保护措施和拆迁补偿方案。最后，公众因为参与环评过程而获得自治环境的自觉和能力，可减少政府监督治理的成本。

但是这些环评体系设计的良好机制，没有公众正面积极的参与便无法运作。我们的调研显示公众对环评政策的知识不足，遑论对公众在环评中应扮演的角色有所了解。他们对项目引起的环境影响只依赖亲身体验而非有知识基础的观察。他们对公众参与保持较消极的态度，相当一部分的公众放弃自己的意见，认为国家政策推动的事和自己没有关系；大部分受访者认为公众意见“没有用”，不会被纳入政府决策考量，显示公众对环评程序的缺乏信心，无法感到自己可以“有所作用”。加上许多公众拒绝我们的访谈，或在保证匿名才接受的情形，显示公众仍不太愿意公开谈论公共项目，无法“坦言无虑”。同时，他们在武广高铁建设过程中没有被妥当地通知、沟通，有些人的拆迁、补偿、房屋损坏、和受到威胁等问题还未解决，显示环评公众参与没有落实，对社会影响的处理没有透明化和制度化。

态度在一定程度上影响着能力。不想反映意见或认为于己无关的公众，自然不会主动去了解政府的新政策和项目的环境影响。但是不具备这些知识的人，也不会主动参与。所幸在我们调研中，多数受访者对基础建设表示支持；尤其年轻人的教育程度普遍较高（年龄和教育 Pearson 相关系数 -0.530, $p<.01$, $N=358$），往往通过网络得到信息，表达出较强的参与意愿，可以预期未来政府将面对公众更高的参与期望和要求。因此我们建议利用多种信息传播渠道，加强环评相关教育和宣传，塑造政府、企业、公众对环评公众参与的作用和大家的角色形成共识。

同时，本研究辨识了两个公众参与的障碍：缺乏“坦言无虑”和“有所作用”的环境。因此，政府需要展示可信的承诺，例如公平透明的环评程序、政府和公众间有效的双向沟通，以建立公众对环评程序的信任，激励公众参与的正面合作态度。并且，虽然项目的征地拆迁交由地方政府处理有种种良好意图 (曹正汉, 2011)，但是**对项目负责的主体**不能因此免除对公众担负的社会责任。因此，项目负责单位对后续

的项目评估跟踪必须包含社会影响的层面，以激励其在规划阶段即思考减轻负面影响或创造正面社会影响，例如减贫、环境修复、或培养社区环境自治能力。

第五章 探索中国转型过程中的性别平等：基于多制度层次框架的研究

女性参与公众会议是平等公民权益的重要体现，也是社会公平的指标。在以人为本的社会价值中，男女是平等的。在中国历史中，早在 19 世纪末的维新运动就倡导女性教育，到毛泽东时代强调“女性担起半边天”，兼负社会和国家责任。《中华人民共和国宪法》、《中华人民共和国劳动法》、《中华人民共和国妇女权益保障法》对保障妇女权利均有规定。消除性别歧视、促进两性平等，已为我国基本国策。但近年来快速的经济增长和工业发展似乎扩大了两性间的不平等。改革开放前，平均女性薪资为男性的 83% (Razavi 2007)；2010 年第三期中国妇女社会地位调查数据显示，在城市中，平均女性薪资为男性的 67.3%，在乡镇地区为 56%。同时，经济增长和工业发展在城市开创了许多工作机会，大量的农村劳动力转移到城市，其中大多数人为男性。而女性大多留在乡镇，照顾家庭或农田里的工作[8]。

传统妇女的社会责任，常常包括养老抚育、家庭照料、卫生维护、废弃物处置等。在经济发展快速的今天，妇女渐渐加入经济和社会生产活动，成为职业女性，但社会并没有降低对女性作为家庭照料者角色的期望。而她们参与环境议题讨论会议的机会却是不成比例的少(Murthy 2010)。目前，虽然国际倡导的绿色经济提出女性代表对良治的重要，但女性在全世界的立法代表席位中仅占约 18%。而中国女性参政的比例较低，近年来还呈现女性参与比例下降的趋势 (于芳, 2009)；全国女人大代表比例在 90 年代一直在 21%左右；中共中央委员会的女性代表比例更少，缺位情形较突出。

女性在家庭的主要地位和角色，使得女性站在绝佳的位置，学习环境知识，塑造环境友好的生活模式，教育良好环保意识的下一代。并且，女性在农村与环境紧密互动的生活经验，可为环境决策提供宝贵信息。因此，鼓励女性参与环境决策，通过公众参与促进社会学习，对中国可持续发展有关键意义。如 1994 年，国务院第 16 次常务会议讨论通过了《中国 21 世纪议程》，其中第 20 章指出妇女参与可持续发展的障碍和必要性：

> ***20.7*** *囿于中国传统文化中男尊女卑、重男轻女意识形态的束缚，同时受到中国经济发展水平的制约，中国妇女参与可持续发展的状况，尚不能适应国家经济与社会发展对妇女的要求和妇女自身解放的要求：*
>
> *(a) 社会仍存在着对妇女的歧视和偏见：女性就业难、男女就业机会不均等、妇女就业结构不合理、妇女遭受暴力侵害等现象在一定程度上存在；*

[8] 《第三期中国妇女社会地位调查》指出，农村在业女性从事劳动工作的比例高达 75%，男性仅为 63%。其在人民网的专题网页：http://acwf.people.com.cn/GB/99061/233094/，其中对男女两性劳动收入差距有较深入的讨论：http://acwf.people.com.cn/GB/16030323.html。

(b)中国妇女，尤其是农村妇女，承担着社会生产和人类自身生产的双重任务，但妇女参与可持续发展受到家务负担的拖累；妇女病未得到经常性的普遍检查，少数妇女还没完全解决温饱问题；

(c)中国妇女受教育的权利未能全部实现，这影响了妇女自身素质的提高。

***20.8** 中国有5亿多妇女，其中有5600万女职工。她们在环境和发展领域发挥着重要作用。与妇女在人类两种生产中的作用相比，中国妇女在环境与发展领域的决策、参与人员比例过低。中国妇女在环境与发展中许多亟待解决的特殊问题尚未列入国家研究和解决的议程，转变这种状况势在必行。在环境与发展领域，需要建立和完善全面系统的促进妇女参与的政策、法规机制，促进中国妇女参与可持续发展，可以更充分地激励她们的主人翁责任感，从而推动环境保护工作的发展，推动社会的发展。*

基于此，本章以制度理论视角梳理相关政策法规，通过调研访谈，探索中国女性社会角色的转变情形和公众参与情况。制度理论指出，文化和社会期望深刻地影响和制约着人的行为，提供了人与人互动的规则，定义了社会义务和责任。一旦违反此文化社会规范，就会被视为“不应该、不合宜”(inappropriate)，而被社会团体排斥 (Scott, 2008)。这种根植于文化中的信念和角色期望往往很难改变；而我国法规的制定常常与国际观念接轨，走在前沿。这些法规对推动社会文化转变起到了什么作用呢？要探讨这个问题，必须先将不同制度层次的互动关系，以清晰的概念化 (conceptualization)包含在研究分析中。

社会对两性角色的定义，建立在两性的生理差异上，并呈现两极分化（如男主外女主内、男性较理性，女性较情绪化）(James 1997)。每个人都生活在多重社会领域中（如家庭、企业、政府）而需扮演多重角色，两性角色是诸多社会角色之一，受到其他社会角色的紧密影响。Kabeer (1994) 提出的**社会关系框架** (Social Relations Framework) 描述不平等关系，如何透过不同机制，在家庭、社群、市场、和政府四个制度层面自我维持和强化。基于此，我们提出本研究的分析框架如表 3 所示。

表 3 中国性别不平等的制度层面和指标

社会关系框架 **制度层面** SRF* Levels Institutional	**指标** Indicators	**指标定义和范例** Definition or examples of indicator
政府 **State**	政策规章和法律 Regulations and Laws	1) 一胎政策 2)《中华人民共和国婚姻法》(1950); 2011 年 8 月 12 日，最高人民法院发布婚姻法最新司法解释离婚时夫妻的财产分割。 3) 中华人民共和国劳动法

社会关系框架 制度层面 SRF* Institutional Levels	指标 Indicators	指标定义和范例 Definition or examples of indicator
市场 **Market**	不平等就业机会和工资 Discriminatory hiring and payment practices	女性雇佣率；女职工在孕期、产期和哺乳期以及在工作场所受到的对待；与男性同工的报酬
社群 **Community**	1) 婚后自主程度 Autonomy after marriage	1) 是否有朋友；是否有时间和朋友互动
	2) 公众参与 Public Participation	2) 家庭中谁参加社区会议
家庭 **Family and Kinship**	1) 婚姻财务自主 Financial autonomy in marriage	1) 已婚女性是否能支配自己的收入；已婚女性的收入是否为家庭收入的一部分
	2) 婚后决策权力 Reported sharing of decision-making	2) 是否平等决策
	3) 婚后家务分配 Reported sharing of household responsibilities	3) 是否平等分担
	4) 贬低女性价值Devaluation of women	4) 家庭暴力事件

*Social Relations Framework

本研究分两阶段搜集访谈数据。第一阶段与第四章的田野调查一并进行，于 2011 年 10 月 20 日至 30 日，对武广高铁沿线乡镇地区的公众，进行了 30 个深度访谈；由地方上大学生协助，俩人一组进行访谈，克服地方语言沟通上的困难，并在访谈当天晚上讨论和完成访谈记录，以确保记录的完整性和客观性。访谈记录根据上述社会关系制度框架，以编码软件 Nvivo 分析，并于 2012 年 3 月经过专家座谈，对访谈内容的阐释获得建议和反馈。之后，根据建议，另外在一线大城市北京进行了 25 个深度访谈，进行比对，并测试我们对访谈结果的阐释。

以下为我们摘录的访谈结果：

访谈结果反映了明显的乡镇-城市差距。如表 4 所示，大多数乡镇受访者表示婚后收入是“理所当然”要合并的。他们大部分和父母同住，婚后夫妻俩一起照顾。而部分城市受访者表示他们工作的单位发放薪资时便给了他们个人的户头，有 20%的人婚后便维持分开的户头，16%的人又开了一个共同户头。有 12%的未婚受访者表示不确定未来要怎么做，但也不认为合并是唯一的选择。这显示城市的现代化企业经营模式带给家庭财务管理新的选择和自主的概念。

另外，城市受访者表示了较平等的婚后决策和家务分配模式，和乡镇受访者 70%为女性负担家务形成对比。有几位乡镇受访者描述他们遵循着“男主外，女主内”的传统观念。这呼应了 2010 年第三期中国妇女社会地位调查结果：62%的男性和 55%女性相信“男主外，女主内”，比 2009 年的调查结果增加了 7.7%和 4.4%。

表 4 主要指标的描述性统计

指 标	操作性定义	受访者 乡镇	%	城市	%
婚姻财务自主	**收入是否合并？**	(N=26)*		(N=25)	
	合并	22	*85*	13	*52*
	分开	4	*15*	5	*20*
	分开但有一个共同户头	0	*0*	4	*16*
	无法预见	0	*0*	3	*12*
婚后决策权力	**是否平等决策？**				
	共同决策	9	*35*	23	*92*
	丈夫决策	9	*35*	2	*8*
	妻子决策	5	*19*	0	*0*
	其他人决策	3	*12*	0	*0*
婚后家务分配	**是否平等分配家务？**				
	女性主要负担家务	18	*70*	6	*24*
	平等分担家务	8	*30*	14	*56*
	男性主要负担家务	0	*0*	4	*16*
	其他	0	*0*	1	*4*
贬低女性价值	**是否有家庭暴力事件？** (男性对女性或婆婆对媳妇)				
	是	5	*N/A*	N/A	*N/A*

* Married informants only

观念的变化与差距不仅仅呈现在乡镇-城市之间，还表现在不同年龄层之间。下图显示北京访谈者的家务分配方面在不同年龄段有显著的差距。例如，一位北京的退休受访者表示，他太太承担家务劳动，而他负责所有主要决策，因为他认为女性同志对社会事务经历不足，没有潜力处理复杂事务。而相对的，一位北京的年轻工作女性受访者表示，她的母亲认为她应该承担家务劳动，但她认为家务应该俩人共同分担，并认为这对维持两性关系非常重要。

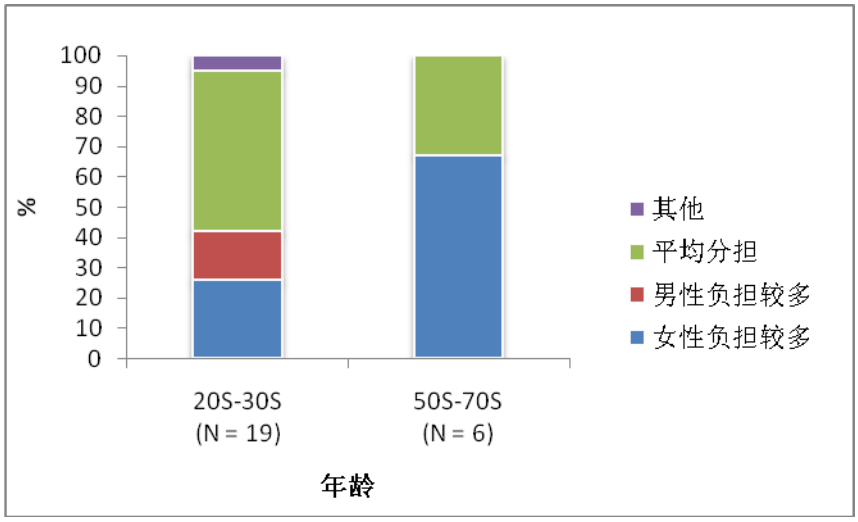

图 6 北京受访者的家务分担情况

讨论和结论

我国政府通过积极的法规政策，明确地表示了促进妇女发展、保护妇女权益的决心；我国女性就业和受教育的比率也不断增长。但法规政策中往往缺乏控制和监督机制，并且有时出现矛盾。例如，国家法规表示要保护妇女享有与男子平等的劳动权利，消除就业性别歧视，但妇女的退休年龄为 50 到 55 岁，与男性 60 岁退休年龄相比较低。退休后的妇女往往返回家庭成为照料者的角色，难以像同样退休的男性一样获得其他工作机会[9]。

在市场制度层面，虽然法规试图消除就业性别歧视，实行男女同工同酬，改善女性就业环境，但在 2004 年，全国妇联指出企业对妇女就业的歧视行为仍很普遍[10]。我们的访谈发现职场上的社会性别阶级受到传统文化支持。传统观念影响了大家认为女性和男性适合的工作类别。不论男女受访者都认为工作的本质使男性较女性拥有优势。其中多位受访者强烈认为男性较理性，生理上较强壮，在许多类型的工作中，需要出差、加班或应酬都比较能胜任，而且方便安全。但同样需要体力、面对压力的“护士”工作，却难以找到男性职工；因为“照顾他人”的工作被认为是适合妇女的工作[11]。此外，在这样对女性职工的工作贡献缺乏重视，同时加以照顾家庭的责任期望的社会价值体系中，法规要求的经期、孕期和产期的休假，常常被企业认为是成本和工作安排上的负担，使得准备生育的女性就业机会降低；有些企业根本不考虑女性求职者。不过，职场女性的角色一定程度上加强了女性自主权力；我们的城市受访者指出，女性大多拥有自己的薪资户头和朋友同事网络。

在社群制度层面，女性参与公共事务讨论和社区会议（如环境影响评价会议）的机会和比率很低。受访者认为女性没有能力、见识不足或缺乏理性思考来妥善处理复杂事务，有一位受访者特地以“政治领导人物很少为女性”为例，支持他的看法。同时，因为妇女需要承担较多的家务劳动、养老抚育工作，乡镇地区女性受访者大多表示她们没有时间参与社区会议。但是年轻一代的观念有很明显的不同。和我们一起进行访谈的学生助理们大多数为女性，她们在学习方面表现优异，也对自己未来发展有较高的期许，显示中国提高女性受教育比率的成效。不过，有些受访者指出她们在教育体系中不停被灌输男尊女卑、贬低女性能力的价值观，压抑了女性才能发挥。

在家庭制度层面，计划生育政策似乎产生了两极化的影响。虽然有些家庭明显反应重男轻女的观念，但有些家庭反而对唯一（或仅有）的女儿疼爱有加，使这些女性没有传统男尊女卑的心态，也没有承担家务劳动的经验。此外，有些受访者表示，传统文化要求男方买房为双方结婚的首要条件，在日益高涨的房价压力之下，家中有女似乎负担比较轻。也有受访者表示，因为就业市场偏好男性，所以有儿子较不必为未来担忧。

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[9] 根据 2001 年第二期中国妇女社会地位调查，女性在业率降低，近 50%的人认为自己再就业时受到年龄和性别歧视。

[10]详细内容请参考 2004 年 3 月 9 日，莫文秀委员在全国政协十届二次会议上代表全国妇联所作的，题为《当前妇女就业面临的主要问题及建议》的发言。http://www.people.com.cn/GB/shizheng/1026/2381459.html (Last visit: 30 Sept 2012).

[11] China Daily 在 2012 年五月 3 日的一篇报导，访问了北京大学第一医院的邓护士长。在欧美国家，男护士的比率约为 10%，而在中国只有 1%。邓护士长指出社会普遍认为“护士”是没有技术含量的女性工作，社会地位也低，男性护士往往承受认知冲突。

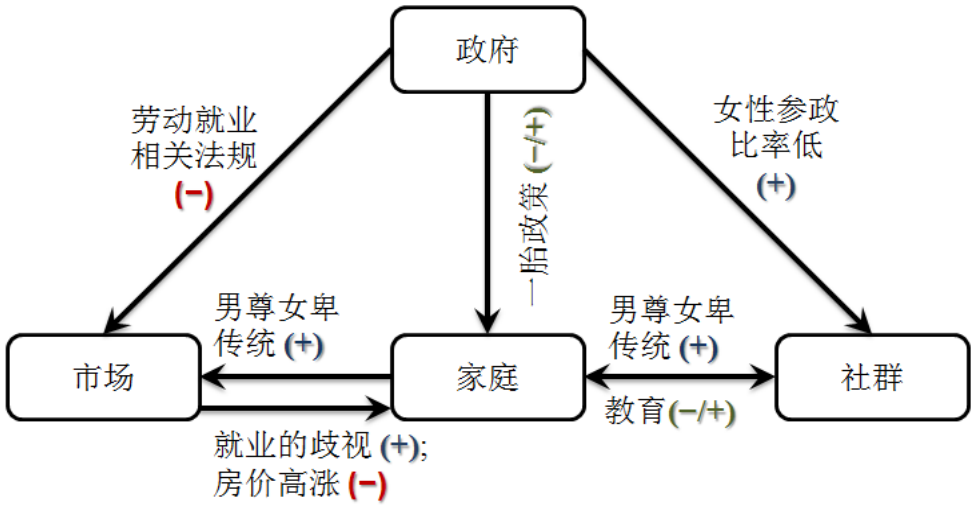

图 7 制度层面互动机制

我们将调研的分析结果总结为图 7。由于我国的转型和经济发展，许多不同的制度压力交错作用，赋予两性多重（有时矛盾）的角色期望，共同影响着传统文化中的性别阶级（即男尊女卑、重男轻女的观念）。我们辨识出矛盾中的传统观念，使其能被重新检视，并开启了继续推进改革的机会。近年来政府投入改进教育系统、网络信息系统的资源庞大，产生了显著的成效，使新一代的青年接触新的概念，培养了思考能力，并有不同渠道可以参与社群互动。他们的才能发挥和对未来的期许，得以建立在不分男女的、更为平等宽阔的平台上。

但同时，国民基本教育尚未改革完全，性别阶级概念仍在持续传播，形成女性学生对未来发挥的心理障碍。因此，国民教育体系的完善建设必须加速，让教育者和教育管理者受到男女平等概念的训练。教育体系是塑造社会价值体系的重要机制。有了健康的社会价值体系，政府的良好法规政策才能被妥善解读、落实。市场机制方面，可以加强落实政府劳动相关法规政策，改变企业行为。同时可建立家务劳动的市场机制，给职场女性更多时间发挥自己。我们的北京受访者指出这样的需求，但缺乏可靠有保障的渠道和市场机制。女性获得更多平等机会参与社会事务，对于自己在社会、职场、家庭的多重角色必须重新定义，才能取得平衡。这过程中，不止是女性角色产生转变和多元化，紧密不可分的男性角色也会经历转变。这将给中国转型为更和谐、平衡社会带来更多人才资源和动力。

第六章 案例比较

本章节比较了加州高速铁路、芬兰核电站与我国武广高铁三个案例，应用第二章发展出的制度理论框架进行分析，进而对基础设施环境治理的制度建设进行探讨。武广高铁及我国环评制度的数据来自第三章、第四章、及第五章的研究分析；加州高速铁路案例的数据来自项目网站上的项目文件，并于 2011-2012 年访谈三位参与项目的专家，包括项目经理；芬兰项目的数据来自项目和政府网站、相关研究文献、及一位专家访谈。同时于 2012 年 3 月 26 日进行了为期一天的国际专家讨论会，共十一位国内外专家参与，包含国内项目管理、法律、环境管理、铁路产业专家、政策分析专家，及加州高铁和芬兰核电项目的专家各一位出席。会议中对三个案例讨论并对中国制度提出改善建议。会议全程录音、抄写为文件档，并反复阅读，进行分析。

从立项到运营，武广高铁费时 5 年。广东台山核电站建设 1、2 号机组，同样采用阿海珐公司第三代核电技术，自 2007 年中广核与法国电力集团签订合作协议，2008 年开始动工，预期约 2013 年底 1 号机组可开始运营。相对于耗时 16 年尚未开工的加州高铁，以及耗时 14 年才接近完工的 Olkiluoto 3 号核电站，我国大型复杂公共项目的建设能力令人难以望其项背。但从环境治理的角度来说，我国公共项目领域的制度还需多层面地加强。

法规的限制性与政府的协调角色至关重要。美国依赖自上而下、庞杂强硬的法规制度来强制环境保护行为，约束政治利益团体和企业的自利行为。因此，法规程序中对公共项目主要行为者，包括政府相关单位，有清晰责任界定，监督机制，以相互制衡。但公共项目的技术任务常常环环相扣，高度相互依存，主要行为者如何互相协调，却缺乏关注。美国制度安排将公共项目程序切割后并不会改变公共项目技术任务的本质，对环境问题的模糊性也没有帮助，问题发生时的根源仍难以辨识。但是，僵化复杂的程序和规定，反而增多行为者的工作界面，对沟通协调增加许多困难，更助长了纠纷诉讼的滋生和蔓延。例如，负责环评调研的单位不能涉及日后的项目建设或运营，虽可减少隐藏环评负面结果的动机，但也造成规划者、实际实行者与运营者的知识和责任断层，对复杂公共项目的知识累积与责任追溯，无疑是很不利的。并且，强制性法规无法避免自利心态的个体或组织，也无法强迫合作，使项目难以实现社会利益的最大化。

反观芬兰法规体系，电力公司为私有企业，同时负责环评和建设运营，恰恰形成鲜明对比。Olkiluoto 3 号核电站的环评程序事实上只花费一年；项目的延迟主因在于施工技术和管理层面。芬兰环境治理的核心机制是什么呢？法规体系仍占关键地位。芬兰专家指出，芬兰的核电相关法规可称为全世界最严格者。但是法规体系中定义的政府角色责任与政府-企业关系，不止是监督，还有合作和授权。例如，环评程序中邀请的利益相关者范围比美国环评规定还要广泛，包含了其他国家，但会议数目却少了许多。主要因为核电站建设直接影响的地理区域不如高铁项目广泛，但其中不可忽略的因素是，荷兰就业和经济部和环境部担负了统一协调组织的责任，避免企业费时跟繁多政府部门一一打交道。此外，政府单位 STUK 被赋予的专业独立性，同时对企业监督和指导，对建立公众信任扮演了重要角色。

我国公共项目的环境信息公开程度低，环评信息难以获得，均使得社会公众专家监督、反馈、制度学习和环评技术改进无法实现。此外，环评的品质与可信度没有保障、环境影响防范机制不全、未顾及项目全生命周期和社会影响、环境成本没有内部化，政府专业单位是否具有独立性及公正性等问题依旧存在。我国近年来在大型基础设施项目的环境治理方面有许多制度创新，例如环境审计和绿色信贷，为

环评提供了监督与反馈机制；但仍面临类似的制度实行问题。这些现象都反映了法规政策制度对治理环境问题的局限性，其他非正式制度需要积极发展。

非正式制度在公共项目的环境治理中是至关重要的。在技术复杂性高的公共项目领域，专业道德和能力是关键基础。在专业规范制度层面，包括学校在内的专家组织是重要推动者，承担提倡环境友好行为规范的责任，进而塑造未来的道德体系。美国高铁管理局将教育民众高铁的环境贡献视为工作之一，把教育信息也公布于网站上。企图进入国际市场的企业，自愿接受 ISO14000 环境管理体系认证，就是国际标准和规范起了很大影响力的例子。具备专业道德与环境价值观的人才，不论进入政府或企业，均可大幅增加环境治理效率，降低监督成本，因为专业道德即是专业工作（如环评）在品质和安全方面最根本的保障。此外，这里指的专业，并非单指工程技术能力，还包括多领域合作，及其他软性管理能力的培养，以便成为连接政府与公众的最佳沟通桥梁。这种中间协调（intermediary or facilitator）的角色需具备很好的沟通领导能力，能获得民众信任，在国外公共项目领域很常见，例如在公私合作关系（PPP，public-private partnership）中，由专业顾问公司担任政府和企业协调沟通的第三方。

在文化认知层面，美国和芬兰的案例都有严格的法规制度，但芬兰的制度体系还具备合作、信任的文化，使其效率更高。2011 年，芬兰的腐败印象指数（Corruption Perceptions Index）为世界第二，美国和中国排名各为第 24 与 75。芬兰的透明和专业独立的执政，使民众高度信任政府；加上教育水平高[12]的芬兰公民，了解建设核电站的重要，因此在核电案例公众参与中体现出公民态度的作用。缺乏信任或对个人环境责任的认知，公众参与难破坚冰。而公民态度的培养需要教育，也需要政府的行为与承诺，从实际互动经验中建立对制度体系的信任。以上的讨论总结于表 5 中。

表 5 制度框架下的案例比较分析

制度层面 Aspects of Institutions	文化认知制度 Cultural-cognitive Institutions	专业规范制度 Normative Institutions	法规政策制度 Regulative Institutions	能力（知识、技术、信息） Capacity
加州高铁案例	民众对公民权力认知高，但对共同社会福利与环境保护的责任意识较低。对政府信任度不高。	专业道德和专业组织影响力高，团队的组织依靠专业领域口碑与推荐，而非政府认证。	法规规定严密，但政府角色薄弱，缺乏协调。	信息公开
芬兰核电站案例	民众对公民权力认知、社会福利、环境保护的责任意识高，对政府信任度高。	专业道德和专业组织影响力高，团队的组织依靠专业领域口碑与推荐，而非政府认证。	法规规定严密，政府协调角色突出，与企业具备合作与监督的关系。	信息公开
我国武广高铁案例	民众对公民权力认知、社会福利、环境保护的责任意识低。认为公共项目是政府的事，与公民无关。	专业道德尚未形成。环评专业组织依靠政府训练、认证与监督。常面临人力不足的困境。	法规尚在完善中。政府的角色与责任尚在转变，不明确。	信息不公开

[12] 芬兰的教育体系为世界顶尖，实行九年义务教育的体制，实现了人人有免费接受教育的平等机会。

本文提出了公共项目环境治理的制度框架，并比较分析了加州高铁、芬兰核电案例以及我国类似规模的武广高铁，揭示了公共项目领域中制度变革的契机，在于加快建立非正式法规政策制度。

（1） 完善我国环境法规机制需针对环境治理特性。强制性法规制度虽可短期见效，但必须认识到其环境治理的局限性。如同美国法规制度过度强调防治违法的分化结果，对环境问题的模糊性、环境治理的不确定性、公共项目的任务复杂依赖性，不但没有帮助，还降低公共项目规划建设的效率。法规的专业授权、增加透明公信度等机制，可促进建立专业规范制度及文化认知制度。这两个制度层面是法规政策制度的重要补充，可对环境友善合作行为起积极引导作用，这也正是我国目前环境治理领域的薄弱环节。

（2） 专业规范制度的发展需要培养多种专业能力。需要加强公共项目领域的专业精神和能力，包括软性管理能力和沟通领导能力，以便赢得信任，成为连接政府与社会民众的最佳沟通桥梁。培养中间协调人才，可促进分化部门与组织间的协调合作，对项目全生命周期过程中共同解决环境及复杂项目问题，是不可或缺的。

（3） 文化认知制度的发展需要改变政府和公众的认知和价值观。培养公民态度，对环境保护的重视，和公民责任的认知，需要相应的教育体系改革，及政府行为的透明度与建立可信的承诺。环境治理体系需要民众的信任，及对环境问题的理解，才能动员社会最大力量，共同积极参与。此外，企业也需从专业教育或政府宣传中建立环境价值观，认知到提高克服生态及社会环境挑战的能力，不但是企业社会责任，还是企业的国际竞争优势。

（4） 制度体系的关键基础为全方面能力的建设。能力的培养不仅为专业技术的精进，还包括知识、信息的分享公开，实现开启民智、凝聚社会共识的理想。

研究报告总结

基础设施对经济发展和生活便利性有巨大的贡献。但是其建设、运营、和废弃，都会对环境和社会带来一些负面影响。常见的包括建筑施工工程产生的扬尘、噪音、废土、污水和建筑垃圾，均为环境污染来源；而一些大型的爆破、机械设备的震动，不但往往对民房造成破坏，还对生活环境造成威胁。基础设施经常对原来环境造成巨大改变，如农地和树木的减少、水流改道、鱼群等生物的减量等，对居民的生活环境和模式有不可恢复的影响。直接的社会影响有征地拆迁后，居民失去工作、房屋、及社会归属感。

更重要而常常被忽视的是，这些影响，如果处置妥当，也会产生长久性的正面结果。例如居民在重建的社区中获得新的工作机会，脱离贫困。如果公众参与能发挥社会学习的效果，居民将获得环境自治的能力和动力。因此，环境的治理机制并非仅仅专注于环境影响的防范，还同时认识到（1）环境影响的不可避免性，因而需注重环境影响的管理和处置，（2）环境影响的积极性，因而注重建设所提供的环境保护、复原、脱困和学习机会。

本研究采用制度主义框架，并以案例研究方法比较欧美基础设施环境治理的实行，与既有的环境治理、环境法规、或环境管理研究相比，更聚焦于一个产业领域，得以反映产业特性；同时又扩展了理论框架，不单单探讨法规政策制度层面，还检视了专业规范和文化认知层面，因此得以观察不同制度层面

相互影响的紧密关系，期能指出加强建设环境治理制度的契机，不仅在于加强法规的落实和监督；专业道德和公民文化的塑造需要较长的时间，但却是环境治理体系长期有效低成本运行的基础。

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CONTENTS

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CHAPTER 1: ENVIRONMENTAL GOVERNANCE FOR INFRASTRUCTURE IN CHINA

China's rapid infrastructure development is characterized by advanced technology and a large scale and quantity in the recent five years (e.g., high-speed railway networks, hydropower grids). This trend is expected to continue, according to China's twelfth-five-year plan. Building technically-complex infrastructure at such scale requires close attentions to be focused on not only one project in isolation, but also on a portfolio of projects—a program[13] as a whole. While a single project's environmental impact may be tolerable, multiple large projects being built at the same period can have systematic complications (Arce & Gullon, 2000) that exceed the natural environment's capacity to bear.

In addition, infrastructure (roads, railways, electrical systems, water supply and treatment, telecommunication, and public hospitals and schools, etc.) is an integral part of national, regional, or sectoral development and aims to provide social services. Different but supplemental infrastructure systems need to be taken into consideration collectively at the level of policy-making and planning in order to address longer-term natural resource use (Ahmed & Triana, 2008), ensure that "right types and right amounts" of infrastructure is being built (Smil, 2004), and secure long-term national development and welfare (Rong, 2010). Therefore, we must build environmental governance for infrastructure development into the policy and planning processes.

After decades long efforts of environmental preservation and protection, we have known that it involves more than detailed procedures and standards to gain compliance with environmental regulations and implementation of good environmental practices (Ma & Ortolano, 2000; May et al., 1996). We have also learned that environmental problems are complex issues that call for more than technical and economical solutions. We therefore propose a social-political approach using the analytical lens of institutional theory to examine environmental governance of infrastructure development, focusing on China's railway sector.

[13] Program is a portfolio of projects that collectively realize a national, regional, or sectoral development plan.

Challenges

China is facing enormous challenges in balancing its needs for national development to establish decent living conditions for more than 1.3 billion population (about 20% of world population) on one hand and its limited natural resources on the other. China's serious environmental degradation and pollution have drawn intensive attention from scientists, engineers, and legal and political experts worldwide (e.g., Ma & Ortolano, 2000; Smil, 2004; Stockholm Environment Institute, 2002). Particularly, environmental impacts resulting from infrastructure and construction projects have come to people's acute awareness after three decades of rapid development with an impressive number of large projects.

Environmental impacts of large infrastructure projects

Hydropower sector

Infrastructure projects can impact the natural environment over their entire lifecycle even when they also generate environmental benefits. For example, since the 1940s, China has invested heavily in hydropower projects that generate "clean" electricity, which contribute greatly in China's economic development. However, many serious environmental consequences resulting from the hydropower projects have become apparent. Four dams in China (i.e., the Gezhouba Dam, Xinanjiang Dam, Funchunjiang Dam, and Danjiangkou Dam) were found to cause the reduction of fish populations and species and extinction of a few rare ones (Zhong & Power, 1996). Moreover, the Huai River's more than a hundred dams and 4,000 reservoirs compromised the river's ability to dilute the pollutants and thus worsened the pollution of the river and agricultural lands along the river (Economy, 2004).

In addition, the construction of a hydropower project invariably involves a complex set of interdependent activities and gathers a large numbers of project participants and machines working on the site. This generates noise, waste, and pollution, changing natural environment and landscape significantly. Serious geological change can destabilize the adjacent slope, and contribute to geological hazards such as earthquakes and landslides (Xu, 2005). A recent devastating landslide in Zhouqu county, Gansu province is illustrative. Since the 1970s, about one thousand hydropower stations have been built on a major river in this area, the Bailong River, which is 600 kilometers long[14]. This greatly contributes to the area's vulnerability. More importantly, the quality and safety of the construction is highly relevant to the social and natural environment. In 1981, a domestic report in China analyzed 86,852 dams and found that 775 of them collapsed due to poor construction quality (Zou, 2006: 2). This means not only great economic and social losses directly caused by the collapse, but also the delay of social services these dams aimed to deliver and the wastes they generated—the building materials that take energy and natural resources to produce becoming wastes.

The railway sector

An express rail link connects Guangzhou-Shenzhen-Hong Kong approved in 2009 aroused "Anti-High Speed Rail Movement" from Hong Kong residents. Protesters suggest that many questions are neglected in the project's environmental impact assessment. For instance, how will villagers be affected? How will this project sustain local development in the long run? Whether this rail line produces overlapping benefits with other

[14] Jiang Gaoming (2011) "Human error," Chinadialogue, 07 January 2011, http://www.chinadialogue.net/article/show/single/en/4040-Human-error, last accessed: 08 March 2011. Jiang Gaoming is chief researcher at the Chinese Academy of Sciences' Institute of Botany.

railways? They also argue that the underground line cuts across important agriculture lands and thus will cause significant change of hydrologic conditions and loss of clean underground water[15]. They ask who is supervising the environmental impact assessment and why it fails to involve affected communities.

In the recent five years, China has invested about $395 billion US dollars in building nearly 8,100 miles of high-speed railways (HSRs). The construction of HSRs incurs experts' worries regarding safety, quality, planning (if the speed is necessary), and route and site selection. Doubt has been cast on safety and quality issues but scant information is available from the Ministry of Railways or from the government-controlled railway news media. However, the viewpoint of Yoshiyuki Kasai, the chairman of the Central Japan Railway Company operating Japan's high speed trains, sheds some light on the MOR's emphasis of speed over safety. He told the media that China's high-speed trains based on Japan's designs were operating at speeds 25 percent faster. In his words,

> I don't think they are paying the same attention to safety that we are. . . . Pushing it that close to the limit is something we would absolutely never do.[16]

In a similar vein, China's transportation expert, Rong Chaohe, questions whether building a large high-speed railway network with a speed above 350 km/hr can truly solve the nation's transportation problems[17]. He points out that current pattern of railway development fails to make economic sense, let alone to consider sustainable development. For example, few considerations are given to interconnections among rail lines and to connections with other transportation systems, and in some regions with limited demand for high speed and high cost transportation, multiple HSRs are being built. Therefore, a group of scholars from China's prestigious universities in the field of transportation led by the Peking Jiaotong University (i.e., Peking transportation university) calls for urgent reform of the institutional systems in the transportation sector, especially at the level of policy-making and planning in order to utilize China's limited natural resources efficiently and responsibly (Rong, 2010).

As an initial response to this call, we select China's railway sector as our research focus to examine environmental governance for infrastructure development.

Environmental Impact Assessment Systems

China introduced principles of environmental impact assessment (EIA) in the late 1970s in attempts to mitigate environmental problems. In 1978, the central government issued policies indicating that EIA should be an integral part of project design, and that EIA should delineate the following: environmental conditions before the construction begins, approaches of environmental protection, predicted environmental conditions after the construction is complete, and the setup of an environmental management unit in the owner's organization (Wang,

[15] Opposition group website: "oppose Government's construction of high speed rail—civil organizations' statement" http://www.expressrailtruth.com/article17.html, last accessed: 10 March 2011. Details are available on Wikipedia, "Opposition to the Guangzhou-Hong Kong Express Rail Link" at http://en.wikipedia.org/wiki/Opposition_to_the_Guangzhou-Hong_Kong_Express_Rail_Link.

[16] Wines, M. and K. Bradsher (2011), "China Rail Chief's Firing Hints at Trouble," New York Times, Published: 17 February 2011, http://www.nytimes.com/2011/02/18/world/asia/18rail.html, last accessed: 10 March 2011.

[17] Sun, Chunfang (2011), "The sustainable development of the Railway sector—separation of business and politics—interview with Professor Rong Chaohe," 21 century Media, 28 February 2011, http://www.21cbh.com/HTML/2011-3-1/4MMDAwMDIyMzA4Mw.html, last accessed: 10 March 2011.

2006). A trial version of the PRC Environmental Protection Law based on the policies was promulgated in 1979. Since then, the government has established over a hundred environmental regulations and a large array of environmental agencies, bureaus, and departments. At the same time, the government has developed useful tools and skills by investing in studies of evaluation models and indexes for EIA (Wu, Zhang, & Chen, 2005; Zhang, Wu, Yang, & Zhu, 2006) as well as regulations and procedures (Bao & Lu, 2004; Wang, 2006).

In 2002, the "Law of Environmental Impact Assessment" (hereafter EIA Law) was approved and went into effect in September 2003. It mandates EIA to be incorporated into the development of *projects*, *plans*, and *programs*. This signals the establishment of strong legal framework for EIA enforcement and intention to implement "strategic environmental assessment (SEA)." As shown in Figure 1, SEA aims to extend EIA principles from the project level to the program, planning, and policy levels in order to consider national environmental capacities as a whole (Ahmed & Triana, 2008; Noble, 2000). It is expected to create an integrated decision-making process that solves problems such as wasteful use of resources resulting from isolated and sometimes conflicting development of each individual infrastructure system. But in China, there is a long, ongoing debate over how to implement SEA at the these higher levels (Wang, 2006).

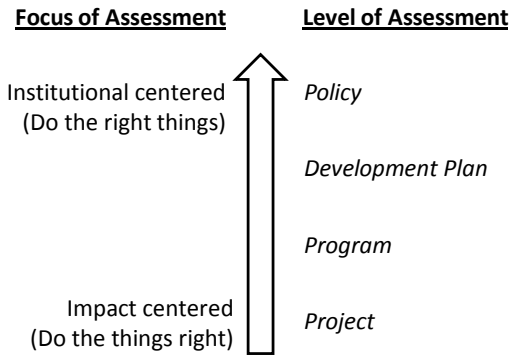

Figure 1 Levels and Focus of Environmental Impact Assessment

Persistent problems

However, despite the central government's determination and efforts, serious violations of EIA Law in the infrastructure sector are uncovered by several large-scale, legal enforcement actions carried out by the Ministry of Environmental Protection of the People's Republic of China (hereafter MEP). In December 2004, the MEP disclosed and suspended the construction of thirty large projects—most of them are hydro- or thermal power plants—that failed to provide an EIA as required in the EIA Law[18]. Again, in 2007, the MEP examined 20 large petrochemical projects and found that these projects were located in vulnerable water areas and failed to conduct a thorough EIA and protection mechanisms[19]. These high profile, legal actions, called "environmental impact assessment storms (EIA storms)" by the media, aroused enthusiastic discussions with a mixture of support and doubt. According to Professor Wang Jin in the Peking University, an established scholar in the field of

[18] Gu, Lin (2005), "China Improves Enforcement of Environmental Laws," China Features, 29 September 2005, http://www.chinese-embassy.org.uk/eng/zt/Features/t214565.htm, last accessed: 7 March 2011.
[19] Xinhua News (2006), " 'Environmental Impact Assessment Storm' swap 20 petrochemical projects (in Chinese)", 06 April 2006, http://news.xinhuanet.com/newscenter/2006-04/06/content_4389958.htm, last accessed: 7 March 2011.

environmental law, about half of the EIAs were done after the construction of projects began, and these ex post EIAs were normally easier to get approved[20].

This raises a pressing question: when EIA and SEA systems are being developed rapidly and comprehensively, why have violations and the lack of environmental considerations continued to prevail in the infrastructure sector?

Research framework

We propose to answer this question by examining current environmental governance in China's railway sector to capture its underlying mechanisms of noncompliance and ineffectiveness. In doing this, institutional theory provides a useful framework that highlights both formal and informal sources of social order and addresses the intertwined relations between institutions and actors' actions (Scott, 2008a). Institutional theory suggests that individuals are embedded in a web of institutions including values, norms, logics, scripts, and assumptions as their guides of action. In particular, cultural and normative institutions "provide patterns of thinking, feeling, and acting" and "define legitimate means to pursue valued ends" (Scott 2008: 55-57). They thus largely decide actors' interpretations of issues and their subsequent responses. From the institutional perspective, infrastructure projects can be seen as loosely-coupled organizations comprised of multiple networks that act upon different sets of institutions, because these projects involve actors from various social sectors (e.g., government, industry, and communities). Based on this viewpoint, we expect important governance mechanisms to differ at different institutional layers.

Scope

Infrastructure projects involve large investments and are expected to provide social services for a long life. In addition, some kinds of infrastructure such as roads, water supply sanitation are often prohibitively expensive to duplicate, and thus constitute natural monopolies. They are normally subject to direct control of governments and strict regulatory requirements because they have the quality of public goods and concern national development. Because of this nature, decision-making over infrastructure development is inextricably bound into political decision-making. This quality of political monopoly is especially salient in the Chinese railway sector due to its long history of significance in national security.

EIA and SEA systems are key elements of environmental governance for infrastructure development. Therefore, in this study, we view the transparent and equitable implementation of EIA and SEA, including honestly performing the assessment and implementing the planned actions of environmental protection and mitigation of hazard and social impact as successful environmental governance of infrastructure development. In other words, all major actors in the process do what they are supposed to do and they agree to do. The difficulties in environmental governance lie in the fact that environmental decision-making involves weighting between conflicting and trade-off situations, which is therefore a social practice rather than merely an application of methods (Bengtsson, 2000).

[20] Wang, Jin (2010), "Review the environmental law in the past 30 years—why it fails? (in Chinese)," Tencent News, 18 August 2010, http://news.qq.com/a/20100818/001246.htm, last accessed: 7 March 2011.

Given these qualities of the field, we place the regulatory framework and political decision-making process in this field at the center of analysis and specifically concentrate on EIA and SEA. In addition, we select Wu-Guang High Speed Railway (Wu-Guang HSR) as our case study to provide an in-depth understanding of current state.

Plan of the report

We do not intend to introduce or explain China's environmental law or EIA regulations. Many books have done an excellent job on this subject. Rather, we aim to recognize the possibilities and opportunities of greener and better development modes of infrastructure projects—a project development model that not only mitigates environmental negative impacts, but more importantly, promotes nature preservation and improves the living environment. Ultimately, we hope to assist in China's orderly transition to sustainable development and a truly harmonious society. The report is arranged as follows.

In Chapter 2, we firstly develop a governance framework with institutions categorized into three distinct but intertwined layers: regulatory, normative, and cultural-cognitive institutions (Scott, 2008a). Particularly, we draw on recent theories of environmental governance, policy implementation, project governance, and organizational institutionalism in order to address the interdisciplinary nature of the research topic. This helps to develop a more comprehensive understanding of how to effectively integrate environmental management into every phase of project lifecycle, including development, implementation, and operation.

Building on the groundwork laid by Chapter 2, Chapter 3 begins the empirical study from the regulatory aspect of EIA by examining components and mechanisms of EIA-related regulations in China and to what degree they promote sustainability. By using longitudinal archival analysis, interview data, and a theoretical framework of decoupling, Chapter 3 captures the diffusion and evolution of the Chinese EIA, as well as the tension between economic development and environmental conservation. It argues that, the degree to which EIA ensures sustainable principles are incorporated into development projects is a question of localization. Key decision-makers' issue interpretations determine which international EIA components are appropriate, feasible, and necessary. Thus, they filter the EIA components imported. Quick diffusion and acceptance of key concepts such as "sustainable development", "public participation", and "citizens' environmental rights" signifies positive international influence, while inconsistencies in regulations and policies reveal tensions between entrenched domestic institutional systems and internationally imported institutional elements. Decoupling strategies, such as the control of information and the setup of separate systems to respond to international pressure, help diffuse sustainable principles and EIA and maintain stability during institutional change. However, it has also led to the government's unresponsiveness to the demand of the public and ineffectiveness in implementing sustainable principles in EIA. To continue along the path of institutional change toward sustainable development, it is important to deliberately bring in different and independent perspectives into the government's decision-making.

Chapter 4 focuses on public participation, a core governance mechanism of EIA (Noble, 2009) that is critical to projects' success and sustainability (World Bank, 2006b). This chapter reports the result of an empirical study examining citizens' attitudes toward, and the capacity of, public participation in a case study of the Wu-Guang HSR. The respondents to our questionnaires and interviews had limited knowledge about EIA, citizens' roles and rights under the EIA framework, and the impacts and scope of the impact caused by the project. They were passive with regard to voicing their concerns and did not believe their opinions would be taken seriously.

Barriers to participation that significantly affected residents' attitudes toward participation included the lack of channels for public participation, lack of EIA-related information availability for the public, and the lack of proper, early, and continuous communication with residents who were directly affected. Low levels of capacity and a passive attitude greatly hinder public participation from generating positive and desired results, and therefore require immediate attention from policy-makers. Fortunately, more than 60% of respondents expressed willingness to participate if they were invited to in the future. Respondents with higher education showed stronger willingness to participate and tendency of using the internet to access information.

Chapter 5 presents a special effort to fill the void of limited academic attention paid to gender and development in the discourse of public participation (Cornwall, 2003). Women's public participation is an indicator of overall citizenship rights and equity. Under the principle of inclusive participation, gender and development has been recognized as an important field for research due to women's potential contributions to balancing preferences in agenda setting or implementation as well as closing the gap of social inequality[21]. China's Agenda 21 white paper published in 1994 explicitly acknowledges the importance of reducing gender inequality to China's sustainable development. Through an institutional lens, Chapter 5 explores the current issues of gender inequality in China by using a semi-structured interview design. Positive changes were observed by analyzing and contrasting fifty-five interviews in rural and urban areas. Higher education and internet access were found to importantly enable individuals (both men and women) to develop independent thinking and be exposed to contemporary discourse that includes greater gender equality and mutual respect between men and women.

Chapter 6 takes the analysis further to connect the theoretical framework with the empirical studies of the EIA system and public participation. This chapter reports the outcome of an international workshop held on 26 March 2012. The workshop aimed to explore and discuss effective governance systems with respect to different policy approaches and institutional mechanisms to managing the environmental, economic, and social impacts related to infrastructure development and delivery. Ten industrial and academic experts hailing from the U.S., Finland, and China attended the workshop to discuss and compare cases of the California High-Speed Railway, Finland nuclear power plants, and our Wu-Guang HSR. The workshop was recorded and transcribed as the building block of the final chapter.

The five interrelated chapters are presented in the format of stand-alone papers, each of which contains individual abstracts, introductions, methodologies, discussions, and conclusions. A combined bibliography section is placed at the end of the report.

[21] The point has been made in many international reports including "United Nations Secretary-General's High-level Panel on Global Sustainability", 2012, and "China 2030" by the World Bank co-authored with the Development Research Centre (DRC) of the State Council, 2012.

CHAPTER 2: INSTITUTIONAL FRAMEWORK OF ENVIRONMENTAL GOVERNANCE

In this chapter, we offer a governance framework for the environmental management of the infrastructure sector by drawing insights from environmental governance, policy implementation, project governance, and organizational institutionalism.

Environmental governance is a multidisciplinary and complex subject that concerns human development and welfare. With the relentless effort of a wide range of scholars, it has gradually become a distinct discipline, which lays the groundwork for this study. In addition, due to the severe environmental challenges and implementation issues currently facing China (Bao, 2006), we address the implementation and execution aspect of environmental protection by combing insights from *policy implementation* and *organizational institutionalism*. The latter was developed to address how organizations respond to environmental pressure from different institutional systems, and with what consequences (Greenwood, Oliver, Sahlin, & Suddaby, 2008; Scott, 2008a). It sheds lights on how organizational compliance, both coerced and voluntary, takes place. It also provides important implications to policy fields because organizational institutionalism emphasizes how forces surrounding organizations affect organizational behaviors, which is crucial knowledge for policy-makers. Finally, in order to delve into the subject in the specific sector of infrastructure, knowledge regarding infrastructure projects is necessary. Work on *project governance* (or project management) provides insights on governance issues specific to this sector, which helps develop a governance system aligning to the local context.

Applying insights from these four research fields, we propose that an effective environmental governance system should incorporate regulative (e.g. sanction and enforcement), normative (e.g. expectations of professional performance or social obligation), and cognitive (e.g. sense of doing the right things) mechanisms that are mutually complementary and reinforcing. While we develop the governance framework with a focus on the infrastructure sector, we believe the framework provides important implications to other policy fields.

Environmental governance

Environmental governance aims to use governance systems to effectively deliver environmental services and tackle environmental challenges such as global warming, the depletion of natural resources, pollutions, and the like. It combines two important elements: governance and environment. Both have been defined and discussed intensively. For instance, a few widely cited definitions of governance are listed in Table 1 (see Qi, 2008; Weiss, 2000).

Table 1 Definitions of governance

Sources	Definitions
World Bank[22]	"The manner in which power is exercised in the management of a country's economic and social resources." Three aspects of governance: (i) the form of political regime; (ii) the process by which authority is exercised in the management of a country's economic and social resources for development; and (iii) the capacity of governments to design, formulate, and implement policies and discharge functions
United Nations Development Programme[23]	"The exercise of economic, political, and administrative authority to manage a country's affairs at all levels. It comprises mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences"
Institute on Governance[24], Canada	"Governance determines who has power, who makes decisions, how other players make their voice heard and how account is rendered. Ultimately the application of good governance serves to realize organizational and societal goals."
ANZSOG Institute for Governance, Australia and New Zealand	"In its broadest sense, it refers to how a country is run, and specifically to how power within a society is maintained, exercised, delegated and limited."

Scholars have long expressed concerns with pressing environmental challenges and offered calls for more holistic and timely change in governance systems (Blake, 1999; Dietz, Ostrom, & Stern, 2003; Hoffman & Ventresca, 2002; Lemos & Agrawal, 2006; Millennium Ecosystem Assessment, 2005). However, although many suggestions deriving from empirical studies call for a novel governing system and paradigm for environmental protection, an effective one is still being explored and experimented.

For instance, in 2005, The Millennium Ecosystem Assessment (2005), a comprehensive assessment of ecosystem degradation and its consequences for human well-being, was published. The assessment carried out between 2001 and 2005 was a collective work of more than 2,000 authors and reviewers worldwide. It includes

[22] World Bank, Governance in Middle East and North Africa, "What is Governance?" Accessed August 29, 2011. http://go.worldbank.org/G2CHLXX0Q0.
[23] UNDP Policy paper, "Governance for sustainable human development," published in 2005.
[24] Institute on Governance is an independent, non-for-profit institution. Its definition of governance can be accessed at http://iog.ca/en/about-us/governance/governance-definition. Accessed August 29, 2011.

the assessment of 74 responses to ecosystem degradation challenges, which serves as a useful collection of lessons. Many scholarly discussions followed (Adger & Jordan, 2009; Lemos & Agrawal, 2006).

Up to now, it remains difficult to reconcile the tension between the incremental change suggested by problem-solving approaches and the radical change demanded by the projected goal of sustainable development (Weale, 2009). Political scientists posit that policy systems are path-dependent and sustained by historically-rooted institutions including values, cultures, political systems, government structures, and the like. Innovative changes that fail to align with existing systems are rarely sustainable. On the other hand, environmentalists urge that pressing environmental problems call for new ways of thinking and novel governing structures. However, environmental issues are interrelated, complicated, and full of uncertainties while political systems work the best with specific goals and procedures. Policy makers are requested to pay more attention to inter-relations between multiple environmental issues and ecosystems, but how can they work effectively if the policy outcome is difficult to measure?

Devising an effective system that governs the environment is further complicated by the nature of environmental issues that involve social justice and the wellbeing of large populations. The inherent moral aspect leads to the deep connection between environmental issues and social norms, values, and cognitive frameworks. As a result, debate over environmental issues such as energy consumption and emissions as well as how to cope with these challenges are often controversial. They are crucially shaped by the actors engaged, problems raised, and perceived proper solutions. For instance, political scientists view environmental governance as mainly comprised of regulatory processes, mechanisms and organizations through which political actors exert environmental intervention (Lemos & Agrawal, 2006). Economists advocate market mechanisms as a means to optimize resource allocation and pricing pollutions and emissions as a means to internalize cost of environmental damage. Ecologists suggest that creative environmental initiatives must take place at the individual and organizational level because the effective solutions to environmental problems must be derived from the local environment (Jennings & Zandbergen, 1995).

In general, scholars have come to agree that governance does not require the government to play a dominant and authoritarian role that was traditionally assigned. The government is assumed a stirring role that works together with a web of actors from the private and public sectors (Li, 2006). In addition, a convergent understanding regarding key aspects of effective environmental governance is formed (Agrawal & Lemos, 2007; Lemos & Agrawal, 2006):

1. **Decentralization**: environmental governance involves a wide range of actors at all levels including states and governments, private firms, non-government organizations, professional associations, expert groups, and the public; they tend to have different interests;

2. **Mixed forms of governance**: environmental governance comprises both authoritarian and voluntary, formal and informal elements including processes, rules, and institutional mechanisms;

3. **Multi-level governance**: environmental governance has become a trans-regional and transnational issue that involves conflict resolution, negotiation, and collaboration spanning the boundaries of government agencies, regions, and nations.

Scholars largely agree that there is no one-size-fits-all model. It is important to recognize opportunities of integrating different viewpoints by devising various policy instruments and mechanisms that are to be used simultaneously. Effective governing systems are a function of local institutions (i.e., culture, norms, regulations,

practices, and routines) and conditions. The eclectic combination of policy instruments and mechanisms is also affected by the environmental issue being dealt with. Therefore, to produce meaningful results, the design of environmental governance systems must be placed in a specific context and needs to be a process of continuous adjustment and improvement.

Policy implementation

Environmental governance is an issue of policy design and implementation. To understand how the nature of environmental issue affects the implementation of environmental policies, we draw insights from studies on policy implementation.

The rise of research on policy implementation was triggered by disappointment in public policies when many government programs went sour in the 1960s and 1970s (O'Toole, 2000). Debate over top-down versus bottom-up frameworks or emphasis on policy-formation versus execution has largely ceased. There is a convergent agreement on the view that effective implementation is a function of policy characteristics and implementation environment. Moreover, policy formation and implementation should not be viewed in isolation. Certain sources of conflicts and ambiguity that hinder implementation are embedded in the policy formation process. This implies that proper implementation approaches are a function of the nature of policy issues.

This point is made clear in Matland's (1995) categorization of four paradigms of policy implementation—administrative, political, experimental, and symbolic implementations—based on two policy dimensions: ambiguity and conflict (see Table 2). He posits that, when a policy has a low level of conflict and ambiguity, ***administrative implementation*** is at work. The outcome is determined by resources available for solving technological questions of compliance. When a policy has a high level of conflict and low level of ambiguity, ***political implementation*** is enacted. Outcomes are determined by power bargaining and negotiations. If the desired outcome can be easily measured and monitored, coercive means can be effective; otherwise cooperation induced by remunerative means may be useful. When a policy has a low level of conflict and a high level of ambiguity, ***experimental implementation*** is at work. This implementation process is determined by the contextual conditions of the implementation environment due to the lack of clear measures of achieving the shared goals. It provides opportunity of policy learning that lead to desirable outcomes. When a policy has a high level of conflict and ambiguity, ***symbolic implementation*** is enacted. Because this type of symbolic policy is mostly to declare new goals or emphasize principles, many interpretations of the policy that tie to the interests of different actors are generated, which lead to divergent, superficial implementations. Local coalitions surrounding the same interest determine the local outcome.

Table 2 Four paradigms of implementation processes

Implementation	Administrative	Political	Experimental	Symbolic
Level of conflict	Low	High	Low	High
Level of ambiguity	Low	Low	High	High
Main determinant	Resources for solving technological issues	Power	Contextual conditions	Local coalition
Approaches	Top-down	Top-down	Bottom-up	Not Applicable

Source: based on the Ambiguity-Conflict implementation model of Matland (1995).

Matland's model with an emphasis on conflict and ambiguity dimensions of public policies provides important implications for policy development. First, through policy learning processes, a policy can shift from one implementation paradigm to another. For instance, after involved actors gain more knowledge and understanding about a policy, the level of ambiguity decreases. The policy can move from the experimental or symbolic to the administrative or political paradigms that produce more predictable outcomes.

Second, policy implementation processes may reflect the characteristics of policy issues that are dealt with rather than the features of a nation's governance system or political paradigm. Taking decision-making patterns in a few policy fields as a nation's governance structure and systems may not be valid. Third, conflict and ambiguity are inherent in policies although varying significantly in degrees, depending on policy issues. Conflict and ambiguity provide opportunity of policy learning and open dialogue among multiple involved actors, which helps to shape policies to adapt to implementation conditions. To realize and appreciate this, one has to possess proper cognitive frameworks. Without correct mindsets, efforts are likely to be put on suppressing conflicts or reducing ambiguity rather than policy learning that lead to policy improvement and development.

Implementation of environmental policies

Environmental issues are full of conflict and ambiguity due to externalities and collective action problems (Li, 2006). The major source of conflict of environmental issues is that (1) natural resources are commonly owned by people, (2) the cost of utilizing the resources is borne by individuals who do not benefit from the usage, and (3) utilizing resources by one individual reduces resources available to others. These characteristics of natural resources lead to two common responses: free-riding and unwillingness to maintain the resources (Ostrom, Burger, Field, Norgaard, & Policansky, 1999). Individuals and enterprises tend to overuse resources and overproduce pollutants in order to pursue their interests and maximize their own benefits.

However, whether the characteristics of natural resources are necessary the main source of conflict is now questioned. The main assumption behind this perspective is viewing the responses as prescribed and humans as passive and ignorant. Recent studies observe that some communities collectively protect the natural resources upon which their livelihood depends (Dietz et al., 2003; Ostrom et al., 1999). The communities realize that the pursuit of short-term interest by a few, hurts everyone's long-term interests. The observations can be supported by the same self-interest assumption regarding human behavior. More importantly, they indicate that actors' responses are not fixed and that a deeper source of conflict lies at the difference of values (or interests, priorities) and the perceptions of relations between humans and the natural environment. The nature of natural resources is given but people's values and perceptions can change. This opens an opportunity for efforts to be put in place to reduce conflict by reducing value gaps among different actors through open dialogue and consensus-shaping.

The sources of ambiguity in environmental issues include: (1) Size and carrying capacity of, and interactions among multiple natural resource systems remain unclear, (2) Environmental costs and damages are difficult to measure, and (3) Cause-and-effect relations of environmental damages are difficult to establish because environmental consequences of activities are hard to monitor and the complications of their collective effects are hard to segregate.

The level of ambiguity varies among different environmental issues. For an environmental issue like infrastructure development, the level of ambiguity and uncertainty tends to be high. There are three categories of environmental impacts of human activities. ***Direct impacts*** caused immediately by activities are normally well understood such as pollution and deforestation. ***Indirect impacts*** are consequences of activities of which the

causes are less clear. ***Cumulative impacts*** are synergetic or collective consequences of activities that are often difficult, if not impossible, to predict. Infrastructure development involves a large number of interdependent and simultaneous activities. Indirect and cumulative impacts tend to be significant, which result in a high level of ambiguity and uncertainty.

As presented in Figure 2, these three types of impacts should be mitigated by different policy implementation paradigms because of their characteristics. Direct impacts are less ambiguous and highly visible such as the loss of arable lands and forest, and relocation of affected residents. Many well-developed approaches exist to mitigate these impacts. However, they can remain policy issues of political implementation and cannot be handled with effective administrative measures. Political negotiations are dominant if the conflict of interests cannot be resolved by the shared value and goal of environmental protection. Indirect environmental impacts are being better understood with the advancement of technology and decades of lessons learned (Esty, 2004). These impacts are moving from the issue of symbolic implementation to that of political implementation through continuous learning. However, the interactions and cumulative effects of impacts are still far from clear. Therefore, cumulative impacts are mostly an issue of symbolic implementation. Nevertheless, in places where common goals of environmental protection are firmly established through open dialogue and consensus-shaping, these less-understood impacts can move into experimental implementation processes. Bottom-up approaches will take place and innovative solutions will be tried and spread. This, in turn, facilitates learning about these impacts and corresponding mitigation approaches.

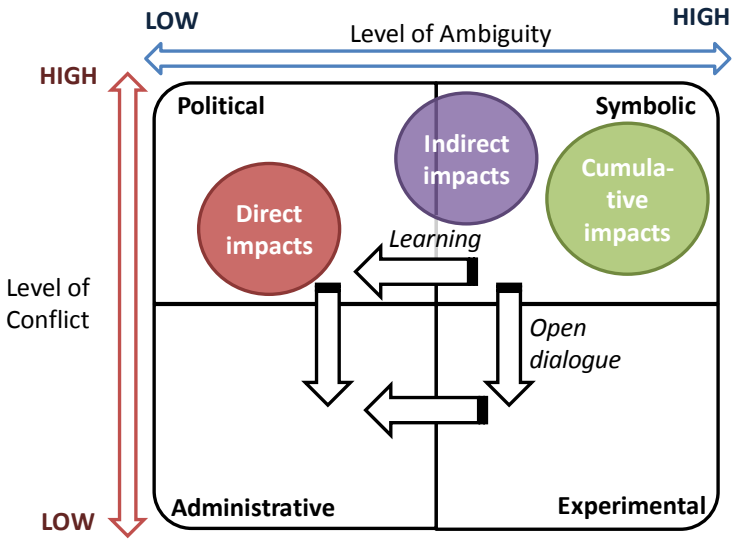

Figure 2 Environmental impacts and policy implementation paradigms

After the discussion of the nature of environmental issues, it becomes apparent that different environmental impacts enact different policy implementation mechanisms. More importantly, policy learning and open dialogue are crucial to reducing ambiguity and conflict and, in turn, reducing the cost and difficulties of implementation.

The work of policy implementation focuses mostly on policy programs and processes rather than on actors (Hall & O'Toole, 2000). It does not take into account actors' capacity that is required to influence the social systems and take necessary actions under different implementation paradigms. We thus turn to research on organizational institutionalism that incorporates both policy programs and actors.

Organizational institutionalism

Organizational institutionalism is a research field beginning to develop since 1977, when a group of scholars apply institutional theory (Scott, 2008a) to depict and understand organizational behavior (Greenwood et al., 2008). Therefore it helps to answer the question: How do organizations respond to institutional pressure of environmentalism? How does organizational decision-making interact with the natural environment? It is thus useful to explain the compliance and implementation of environmental policies if they are measured as the adoption of environmental processes and practices.

Institutions regularize organizations' behaviors and thoughts. As Richard Scott puts it: They "provide guidelines and resources for taking action as well as prohibitions and constraints on action (Scott, 2008a: 50)." Drawing from Scott's definition, institutions are "composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and meaning to social life (p. 48)." They possess the quality of inertia and tend to be stable. However, given the fact that they are emergent from and embedded in their environment, they also evolve with their changing environment. Scott's seminal work divides institutions into three categories: cultural-cognitive, normative, and regulative institutions (Scott, 2008a). The categorization provides a analytical framework that comprehensively deals with institutions at different levels and is useful in analyzing institutional and policy systems as well as their underlying mechanisms in various sectors (Chi & Nicole Javernick-Will, 2011; Hoffman & Ventresca, 1999; Scott, Ruff, Mendel, & Caronna, 2000; Thelen, 1999).

Regulatory institutions. The regulatory pillar is the most explicit and formal aspect of institutions among the three. It represents "the capacity to establish rules, inspect others; conformity to them, and, as necessary, manipulate sanctions—rewards or punishments—in an attempt to influence future behavior" (Scott, 2008a: 52).

Scholars who emphasize this aspect of institutions view the function of institutions as mainly reflected in the exertion of the rules of the game and in the severity of punishment enacted by violation. This indicates that the primary mechanism of regulatory control is *coercion.* In fact, in addition to control and constraint, regulatory institutions also empower actors by, for example, conferring licenses and power to certain actors. A study on the diffusion of ISO 14001, an environmental management system and standard, found that regulatory pressure exerted by European governments played an important role through two main approaches (Delmas, 2002). First, governments endorsed ISO 14001 and enhanced the reputation of firms that adopted the practice. Second, governments provided technical assistance to encourage the adoption of the practice, which facilitated firms' learning of the practice and reduced the cost of information search. Whether using inducement or sanction as instruments, *the exercise of power and authority* lie at the heart of regulatory institutions. Studies focusing on this aspect inevitably pay much attention to the role of the state and oversight agencies as well as policy and enforcement systems.

Normative institutions. Normative systems include values, roles, social expectations, and norms that designate appropriate ways of pursuing desirable goals. They usually take the form of standards, rules-of-thumb, and educational curricula (Hoffman, 1999). They give rise to prescriptive and normative expectations regarding how individuals and organizations are supposed to behave. They "confer rights as well as responsibilities; privileges as well as duties; licenses as well as mandates" (Scott, 2008a: 55). Examples of normative institutions include kinship groups, professional associations, universities, and voluntary organizations, systems in which shared values and beliefs serve as primary basis for order.

Normative systems have moral roots. The strong drive for compliance with normative systems originates from emotions such as a sense of shame, disgrace, honor, or pride induced from self-evaluation or peer-evaluation. For example, in the past few decades, sweatshops, child labor, and water pollution have stirred strong emotional reactions and protests from a wide range of non-government audience, which led to self-regulation and –certification movements (Bartley, 2007). These controversies including environmental damages share one similar source of power—*moral and ethical standards*. The normative power is able to mobilize non-state actors to create informal systems of governance, in which "naming and shaming campaigns" are often used to force firms into conformity to social and moral obligations that directly affect their reputations and market positions.

Moreover, studies found that nongovernmental stakeholders greatly motivate firms to adopt environmental protection practices (Delmas & Toffel, 2004). Consumer concerns and preferences, as well as community interest that reflect social values, motivate the adoption of environmental practices. Certain large multinationals are able to influence their subsidiaries and suppliers to behave responsibly. Communities with higher incomes and more education have greater influence on the plants with toxic emissions to build treatment facilities. Similarly, industry associations are found to motivate firms to use energy-saving technologies. If an industry is dominated by a few large enterprises, they are likely to have significant influence on the diffusion of environmental practices in the industry. In short, actors are internally motivated to comply with norms and social expectations, especially those of their network and communities.

Note that organizations only need endorsement from a few, rather than all, audiences in order to ensure required legitimacy and resources for continuous operation. Organizations face competing demands from their environments and are compelled to respond selectively. More importantly, some form of *interdependence* has to exist for an environment to exert influence on organizations (Pfeffer & Salancik, 1978). This means that if communities or associations that urge firms to adopt environmental practices are not the firms' key audience, the normative pressure they exert may not lead to conformance. Therefore, understanding organizations' *key audiences* and competing demands help to predict the extent to which an environmental demand is able to get the organizations' responses.

One telling example is the railway company that runs China's Jiaoji Passenger Dedicated Line[25]. It ignored three times the notices of sanction from the Ministry of Environmental Protection asking the company to stop the operation of the line because it failed to complete the environmental inspection required by the Environmental Law. The first notice was issued on September 10, 2009, which stated that without passing the inspection, this line was not allowed to operate. However, the Ministry of Railways gave the line a pass and it has been operating since then. The company said that without the order from the Ministry of Railways, it will not stop the operation.

Cultural-cognitive institutions. The cultural-cognitive institutional elements are "the shared conceptions that constitute the nature of social reality and the frames through which meaning is made" (Scott, 2008a: 57). Cognitive frames determine the meaning and the interpretations of objective conditions and events, guiding our understanding of reality. In addition, they dictate the information-processing of decision-making, including what information will receive attention and how it will be interpreted.

[25] Details can be found in a news report on 21cbh.com: "First high-speed rail environmental offence to Jiaoji passenger dedicated line facing down" at http://www.21cbh.com/HTML/2011-5-16/3MMDAwMDIzODM3MA.html (in Chinese), accessed Oct 7, 2011.

The cultural-cognitive systems have two distinct forms: the form of symbolic systems that are perceived as "objective and external" to actors as well as the subjective and internal form of interpretive process, "the software of the mind" (Hofstede, 2005). The former exists at the more aggregate level and take the form of signs, national flags, categorizations, and political ideologies. The latter takes the form of routines, taken-for-granted ways of doing things, and scripts for actions. Compliance to cognitive frameworks is often taken-for-granted and takes no conscious thought. Alternatives are unconceivable or unable to be understood (Zucker, 1977). Therefore, the cognitive systems are critical in adoption of new practices and paradigms.

For example, the international trend, "diversified quality production," impacted domestic wage bargaining structures and produced different outcomes for different countries in the 1980s (Thelen, 1999). Diversified quality production claimed to end mass production and emphasized broadening production lines to high-end products based on skilled labor. This trend conflicted with the egalitarianism rooted in Danish and Swedish institutions and led to serious struggles in the workplace that were disruptive to existing systems for years. Conversely, in German systems, which value skilled workers over unskilled, this trend reinforced some characteristics of existing institutions.

Moreover, cognitive frameworks determine how organizations interpret external pressures and determine how to respond. For instance, if organizations perceive environmental issues are opportunities for market competitiveness, they actively search for environmental solutions and creatively solve environmental problems (Porter & Linde, 1995b). A survey on Canadian oil and gas companies confirms that whether the companies perceive environmental issues as threats or opportunities critically affects their choice of responding actions (Sharma, 2000). In addition, this study points out that, firms' long-lasting identity provides meanings to certain actions and issues commitment, which can reduce the necessity for formal control and incentives to enforce environmental actions. More importantly, it points out that, while firms have the willingness to carry out environmental practices, they need time and resources to figure out effective solutions in the face of uncertainty and ambiguity inherent in environmental issues. This means actors' willingness and voluntariness cannot be equated to their capacity in carrying out environmental practices. The latter should be addressed individually. We will return to this point in the next paragraph.

Relations of the three institutional elements

Recently, scholars have recognized that the interaction between the regulatory, normative and cognitive institutions cannot be ignored. The use of power generally needs legitimacy conferred by social norms. When ambiguity exists in regulations, it offers rooms for sense-making and interpretation that mostly rely on normative and cognitive institutions. For instance, Edelman et al. (1999) examine organizations' responses to Equal Employment Opportunity (EEO) Law, Title VII of the Civil Rights Act passed in 1964 and found EEO Law induces collective interpretations among firms, the personnel profession, and courts. EEO Law provides only principles of non-discrimination of employment without specific guidance of actions. Organizations that seek to act rationally turn to the personnel professionals who suggest "rational" and appropriate responses by interpreting EEO Law, which lead to wide adoptions of internal grievance procedures. Courts, in turn, recognize the practice and confer it legal status. These suggested responses are called "rational myths" because they are not proven solutions before their adoptions.

Similarly, Dobbin and Sutton (1998) examine the rise and diffusion of the human resource management divisions, arguing that the weak position of the federal state in the United States in regulating the industry strongly promotes normative development and creation of personnel, antidiscrimination, and safety practices. The

state issues ambiguous regulations with unclear compliance rules, which prompts organizations to devise compliance practices as solutions to avoid legal uncertainty. Further, organizations produce rationales for these solutions, which sustain and spread the compliance practices. In some cases, the large variety of institutions and their relations to each other, which are dense, layered, and nested, create special challenges in governance. This is mainly because the three types of institutions are not always well-aligned. They interact and evolve with different pace.

The work of Andrew Hoffman (1999) illustrates this point nicely by empirically analyzing how these three types of institutions interact and evolve over time. He examines the emergence and evolvement of environmentalism in the U.S. Chemical industry in three decades. In the 1960s, environmental problems resulting from chemicals began to draw wide attention with the publication of *Silent Spring* in 1962. But the U.S. chemical industry held a firm belief that its "engineering advances improved the quality of life for all humankind" and thus denied the severity of environmental issues (Hoffman, 1999: 360). The following period was characterized by the establishment of regulations, oversight agencies, and legal channels for conflicts. The industry responded to enforcement actions with technological solutions. Gradually, normative dialogue regarding environmental protections emerged and the industry turned to a cooperative attitude toward regulatory agencies and non-governmental organizations. Finally, in the early 1990s, a cognitive turn was observed in the industry dialogue focusing on proactive environmental principles and self-motivated environmental management.

This line of work provides important insights for environmental governance because environmental policies and regulations are hardly unambiguous and consistent. Often, these problems involve actions of multiple actors and the consequences of the actions occur when a significant period of time has passed. In addition, in the context of China's transitioning economy, new rules often overlap with old rules and traditions. Moreover, although the state occupies a dominant position in the regulative realm, its environmental regulatory systems are rather experimental—issuing mostly goals, guidance, and principles. Therefore, in the policy field of environmental governance, normative and cognitive institutions play a critical role in organizational responses and actions (Jennings & Zandbergen, 1995).

Moreover, the studies aforementioned illustrate the importance of the *capacity* of non-state actors to respond to ambiguous regulations and policy issues. Capacity is a critical dimension of environmental activities that cuts across the three institutional systems. Even if existing norms and cultures motivate non-state actors to actively contribute in shaping governance systems of an ambiguous policy issue, they need knowledge and skills to do so. In addition, information is an inextricable element of capacity. Information can critically reduce the level of ambiguity and uncertainty that characterize environmental challenges. Information on the scope, spread, and effects of environmental impacts facilitate better policymaking. Lack of information impedes calculations of environmental damage and delay corrections and remedies. Furthermore, lack of information renders social justice unable to be maintained, which is the main source of knowledge deficiencies and misperceptions of environmental damages.

Therefore, a robust information systems and a public database are the basic infrastructure of good environmental governance. Low cost and easy access to data required for analyzing and understanding environmental impact can boost our capacity to identify and solve environmental problems (Esty, 2004). It allows environmental decision-making to be more transparent, scientific, and analytically rigorous. It signals credible commitment to sustainability, enables a wider range of actors to participate in creating environmental solutions, and facilitates self-motivated environmental initiatives.

Applications for environmental policymaking

Policy-makers in the environmental field need to maintain and deliver an integrated vision regarding environmental protection and preservation, in both the short-term and long-term. Legal experts can emphasize only improving regulatory systems and device regulatory strategies. Environmental professionals and scholars can emphasize only designing "training and certification" systems. Political leaders can promote economic goals for people's wellbeing. But policy makers are not specialists in one single area. Policy makers carry the mission of elaborating a nation's vision and providing guidance of realizing the vision. They need to see how three institutional elements can work differently to regulate and guide individual and organizational behavior. For urgent issues such as environmental challenges that we have to tackle in a limited time period, it is necessary to mobilize all three institutional elements to accelerate the process of meeting the goal of environmental protection and sustainability. An institutional framework for environmental policy implementation based on the aforementioned discussion is summarized in Figure 3.

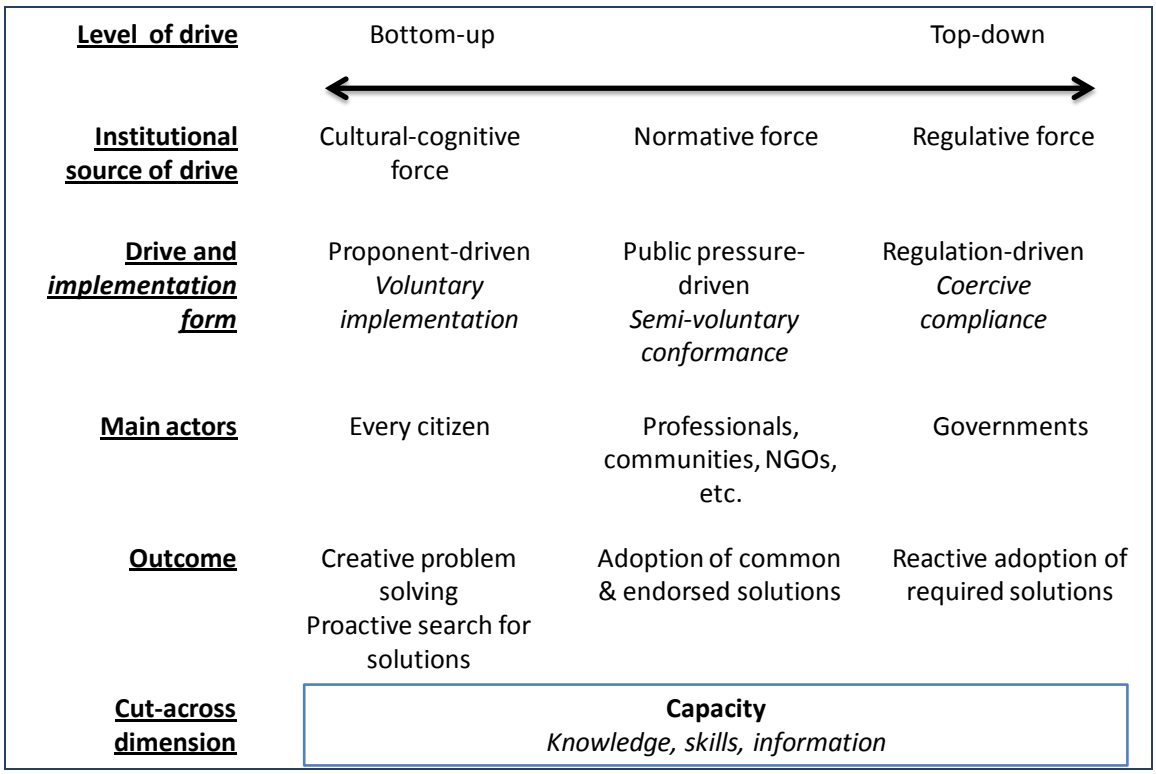

Figure 3 Institutional framework for environmental policy implementation

Possible measurements of institutional drivers of environmental policies include:

- Regulatory forces: enforcement actions such as inspections and sanctions; the number of state-level policy initiatives (Delmas & Toffel, 2004)
- Normative: community complaints; public demonstrations; public opinion surveys regarding environmental attitudes such as trade-offs between environment and jobs or regulations being too stringent or lenient.

- Cultural-cognitive: organizations' identity and their environmental attitudes can be measured by questionnaires sent to managers or by analyzing companies' annual reports, environmental reports, and mission statements (Sharma, 2000).

Project governance

Large infrastructure projects are complex, temporary systems with networked organizational forms that have attracted scrutiny by scholars from both organization and management studies (Scott, 2011). Large infrastructure projects are becoming increasingly prevalent with the rise of less developed regions. Nevertheless, they are often plagued by delays, budget overruns, re-negotiations and disputes (Miller, Lessard, & Group, 2001). These projects are characterized by high levels of uncertainty, interdependency, and asset specificity, all of which create unique challenges to coordination and governance. These challenges are acerbated by the industry's high level of fragmentation in terms of trades (i.e., mechanics, electrical, design, plumbing, and structure), as well as project lifecycle (i.e., project conceptualization, design, construction, and operation).

Large infrastructure projects comprise a web of actors from multiple sectors including the government, designers, contractors, suppliers, and, sometimes, foreign actors. These actors who must perform many interdependent tasks in different project phases often have conflicting interests and different priorities. This high level of interdependency allows the costs and consequences of actions of one party to be passed onto other parties who present in the later phase of the project lifecycle.

For example, the actors who bear the cost of capital investment during the project initial phase normally do not bear the operating cost. They are thus reluctant to pay for design features or energy saving technologies that that would save operating costs. The central government that bears the costs of capital investment in the project initial phase does not consider design features that would save operating costs that is borne by local governmental agencies. Recently, a survey on six demonstration projects of solar energy systems in Beijing found that the systems were abandoned because their owners could not afford the maintenance costs resulting mainly from the defects of design and construction. This type of principal-agent problem stemming from the industry's fragmentation is called the "*broken agency*" (Sheffer & Levitt, 2010). It is found to hinder the diffusion of energy-efficient technologies (Sheffer, 2011).

The characteristics of large infrastructure projects—especially their size and complexity— give rise to opportunistic behaviors and, therefore, necessitate widespread regulatory governance mechanisms (e.g., external contracting and legal requirements) for specialized engineering, construction, financial and other services. Based on perspectives of transaction cost, regulatory governance mechanisms can mitigate high risks under unified governance structures or by introducing third party intervention and commitment (Williamson, 1979). The essentiality of regulatory measures to the mitigation of opportunism, as quoted by Oliver Williamson (1988), is nicely captured by H. L. A. Hart's remarks (emphasis in original):

> Neither understanding of long-term interest, nor the strength of goodness of will ... are shared by all men alike. All are tempted at times to prefer their own immediate interests .... "Sanctions" are ... required not as the normal motive for obedience, but as a *guarantee* that those who would voluntarily obey shall not be sacrificed by those who would not.

However, for the same reason, regulatory governance alone is not sufficient, because: (1) the contracts are necessarily incomplete; and (2) negotiation power shifts significantly after contracts are signed. Therefore, normative and cognitive mechanisms of governance must be explored and employed simultaneously. Henisz et al.

(2012) applied institutional theory (Scott 2008) and categorize project governance mechanisms into regulatory, normative, and cognitive mechanisms. While regulatory governance mechanisms rely on formal processes to generate cooperation, normative and cognitive mechanisms rely on informal processes that appeal to collective group norms and shared personal values.

Normative and cognitive mechanisms support relational governance that emerges from repeated exchanges, shared values and identities, mutual agreements, and social norms and functions as a complement to regulatory governance (Poppo & Zenger, 2002). Shared goals motivated by common norms and culture can mobilize significant commitment from project participants. Reciprocal relations and mutual understanding underlying trust among project participants can contribute to coordination and cooperation and encourage problem-solving and knowledge-sharing practices (Chi, Ruuska, Levitt, Ahola, & Artto, 2011).

One form of relational governance is the internalization of control, replacing the autonomy of contractual parties with hierarchical authority and organizational control (Williamson, 1979). For instance, to reduce transaction costs, actors can actively establish cooperative ties through organizational agreements such as strategic alliances or vertical integration (Dyer & Singh, 1998). By doing so, contractual relationships are transformed into partnerships, and employment relationships and firms can employ organizational controls to constrain opportunistic behavior.

However, overly relying on hierarchical control and internalization without supervision and monitoring mechanisms of regulatory governance can be highly problematic. Project participants at the lower level of hierarchy with their stripped autonomy of making professional decisions will compromise the quality, safety, and sustainability of project outcomes. For instance, in the Chinese construction sector, the government dominantly controls and maintains close ties with large state-owned enterprises. The government is thus virtually the judge and the player (The Economist, 2011a). This has incurred controversies regarding the lack of transparency, safety, indebted projects, and corruption (The Economist, 2011b). In turn, the lack of transparency and monitoring encourages bad practices and collusion. The secrecy of project activities makes it difficult to find the sources of problems and accidents. It also prevents enterprises from correcting errors and making improvements. Moreover, incidents such as the Wenzhou high-speed train accident called into question what is at stake in the acceleration of development (Hao, 2011; Tu, 2011). Therefore, other forms of normative and cognitive mechanisms in which contractual parties have more equal status and professional autonomy should be explored and cultivated.

Integrating project and environmental governance

Although environmental governance involves a higher level of ambiguity and externalities compared to project governance, both cope with high levels of uncertainty, conflict, and opportunism. It is thus sensible to integrate the two into a set of governance systems for infrastructure projects by incorporating environmental requirements and considerations into every project contract and each phase of the project lifecycle. We have described three institutional governance systems (i.e. regulatory, normative, and cultural-cognitive). We now turn to the discussion of three elements that cut across these three governance systems: processes, capacity, and information.

Regulatory governance is the most fundamental of the three types of governance. Without regulatory governance to protect vulnerable citizens and voluntarily compliance to a good code of conduct, normative and cultural-cognitive governance that motivate desirable actions could compromise and hardly last. We must establish an effective and uncompromised system of regulatory governance demanding and monitoring project

quality, safety, as well as environmental sustainability. Most importantly, information systems and feedback loops must be in place for the system to function properly and effectively. Because the infrastructure sector is characterized with fragmentation, effects and consequences of actions may take a long time or may be indirectly felt by the responsible entities. Therefore, the feedback loops have to be established deliberately and cover the entire project lifecycle.

At the same time, certain regulatory governance mechanisms that cultivate normative and cultural-cognitive governance cannot be ignored or delayed. Environmental policies will remain symbolic if there is a lack of proper norms and culture motivating the wider public to innovate and translate environmental principles into problem-solving practices, and if the level of ambiguity and conflict remains high. Therefore, a delay in shaping a positive environmental paradigm will reinforce adversarial paradigms and greatly compromise the development of a regulatory governance system. We use two environmental paradigms to elaborate this point.

Paradigm 1: forced behavior and compliance to environmental standards

In this paradigm, environmental protection and goals are pursued through hierarchical modes of governance with the government as the dominant actor. Oversight agencies can effective in monitoring and punishing violations and force organizations into compliance to environmental standards. In order to exert sanction effectively, responsibility allocation is emphasized and specified. Regulations and standards are developed and expanded to constrain organizational behavior. Specifically, they promote technological control of environmental problems because technological innovations and development is considered as the key solution.

However, this paradigm is restrictive. Environmental standards set limitations for organizational environmental initiatives to a minimum acceptable level. Responsibility allocation that reinforces structural boundaries among organizations in the functional division of labor or hierarchy may prohibit collaboration and collective problem-solving and hinder interaction among different functions. In addition, it perpetuates the perception that the interests of economical development and environmental protection are mutually exclusive (Hoffman & Ventresca, 1999).

This paradigm tends to reward only compliance. Creative environmental initiatives are not rewarded but only lead to risky responsibility and uncertain consequences. As a result, it locks organizations into a passive position focusing only on following regulatory rules and standards rather than substantive improvements in their daily practices. Of particular importance, for infrastructure projects facing a high level of complexity and uncertainty, the paradigm may be unable to produce positive outcomes. Project participants need to make contingent decisions on a daily basis when encountering unexpected situations, which formal rules and standards cannot comprehensively specify. They need a different cognitive framework to act upon in order to make a decision that takes environmental goals or societal interests into account and to search for optimal and creative solutions to complex problems.

Paradigm 2: motivated behavior and active actions

The paradigm achieves environmental protection and goals through networked modes of governance with a myriad of self-motivated social organizations and individuals as the main actors. Organizations can be motivated to pursue environmental objectives if they see environmental protection presents competitive opportunities or serves as a critical source of legitimacy. When they perceive that the synergy of economic and environmental objectives can become their competitive advantage, they become creative and active in searching for solutions to environmental problems and environmental actions (Porter & Linde, 1995a, b). Porter and Linde point out that a

great amount of case studies have shown that companies' international competitive advantage is continuous innovation and improvements rather than low cost and large scale, and addressing environmental requirements often lead to innovation and savings from, for instance, energy savings and higher morale.

This paradigm connects and integrates environmental and economic sustainability in many fields of institutional systems. For example, in professional training and education, students learn environmental and economic considerations in the same course rather than in separate courses. In the policy-making realm, decision-makers take environmental initiatives in all policy fields rather than emphasize environmental issues only in environmental policies. In the business world, firms take environmental initiatives in formulating market strategies and business practices.

Both of the two environmental paradigms place regulatory governance and policies at the core. However, the first one emphasizes sanctions and curbing undesirable behaviors with centralized power while the second one emphasizes synergy and promoting desirable behaviors with decentralized power that mobilizes a large portion of organizations in a society devoting to sustainability. While the first one is an inevitable evil, the second one is urgently needed. Recently, China is turning toward this direction by promoting renewable energy technologies as strategic industries. However, this does not stop pollution and many environmental damages, as Christina Larson put: "China may soon be both the greenest and blackest place on earth[26]."

This is not a paradox. We have learned that different environmental policy issues need multiple different policy instruments to deal with the issues, simultaneously. Of particular importance, the infrastructure sector is where the most challenging tasks lay. It is where the old, deeply-rooted development mindset directly confronts with new environmental paradigms. The adversarial confrontation is manifested and reinforced by the rise of new actors such as the Ministry of Environmental Protection, an array of environmental agencies, and environmental impact assessment institutes. The sector is a naturally monopoly (Posner, 1969) dominated by a few, large, state-related enterprises. These powerful actors are likely to resist change, as the aforementioned case of the Jiaoji railway company. However, the infrastructure sector and environmental protection need not be in adversarial confrontation, for the adoption of environmental protection practices by the infrastructure sector's large enterprises can critically influence the industry's norms and culture, since smaller firms constantly observe their behavior.

[26] Christina Larson is an environmental journalist and long time observer of China's environmental issues. This quote is from her article, "The Great Paradox of China: Green Energy and Black Skies," posted on Yale Environmental 360, 17 Aug 2009, accessed on 7 Oct 2011, http://e360.yale.edu/content/print.msp?id=2180

CHAPTER 3: PROMOTING SUSTAINABLE DEVELOPMENT WITH ENVIRONMENTAL IMPACT ASSESSMENT

Abstract

Environmental impact assessment (EIA) is promoted as a tool to ensure sustainable development but its realization in developing countries is challenging. To reveal the fundamental source of the challenge, the Chinese EIA system is used to demonstrate how an imported institutional system is localized and tailored to fit local goals and systems. The outcome of the EIA localization is assessed by comparing the international version of EIAs and the Chinese version, and the localization process is examined by looking into the negotiation in the making of China's EIA Law. The concept of decoupling, specifically its strategies and outcomes, is used to assess and discuss the Chinese government's responses to the disjuncture between the international EIA requirements and local institutional systems. This shows that decoupling strategies is a double-edged sword. It helps the diffusion of sustainable principles and EIA but leads to the government's unresponsiveness the demand of the public and ineffectiveness in implementing sustainable principles in EIA.

Introduction[27]

To promote sustainable development, environmental impact assessment (EIA) is widely used as an environmental management tool as well as an integrated planning tool to ensure environmental protection (IAIA & IEA, 1999). Until now, EIA has been adopted by more than a hundred countries (Noble, 2009). Many developing countries adopt EIA under strong international pressure to demonstrate their commitment to environmental protection (Hironaka & Schofer, 2002). However, the outcome is far behind that of EIA in developed countries (Wood, 2003a). Although EIA has been identified as a useful tool for sustainable development (Morrison-Saunders & Retief, 2012), to what degree EIA ensures sustainable principles are incorporated into development projects is a question of localization. The paper aims to explore how the localization of EIA in developing countries affects the extent to which EIA promotes and secures the sustainable principles.

[27] A short draft of this chapter has presented to and benefited from the comments of the participants in the Engineering Project Organization Conference, Rheden, The Netherlands, July 10-12, 2012.

China is among the earliest countries to adopt EIA in the 1970s. Policy mechanisms were experimented with during the 1970s to 1980s to tackle serious water and air pollutions (Wang, Morgan, & Cashmore, 2003). At the regulative level, the development is impressive: by 2010, a total of 1,547 environmental regulations and legislations were promulgated in addition to more than 1,000 environmental standards and 51 international environmental treaties signed (Qi & Dong, 2010; Wang, 2011). China has made observable efforts in improving EIA. Two key efforts are the passing of the EIA Law in 2002 (went into effect in 2003) and the elevation of the Ministry of Environmental Protection of the People's Republic of China (MEP, previously State Environmental Protection Administration, SEPA) one level higher in the governmental hierarchy in 2008.

However, the EIA system seems to fail to solve persisting problems. In addition to many large scale pollution accidents, uncontrolled development and urbanization cause increasingly frequent geological disasters like mudslides (Wu, 2011). Uncontrolled development and urbanization cause increasingly frequent geological disasters like mudslides (Wu, 2011). A large amount of construction projects began their construction work without proper and approved EIAs (Wang, 2011). In December 2004, the MEP disclosed and suspended the construction of thirty large projects with a total investment of 117.94 billion RMB—most of them which were hydro- or thermal power plants owned by the government-related enterprises—that failed to provide EIAs as required in the environmental law (State Council, 2006). Nevertheless, the State Council settled the matter by allowing these projects to resume their construction without consequence (Moore & Warren, 2006) and submit "make-up" EIA reports in one to two months (Wang, 2011). About half of EIAs were done after the construction of projects began, and these EIAs were normally easier to get approved (Wang, 2011). Scholars have urged to strengthen environmental monitoring and enforcement (Qi, 2008; Qi & Dong, 2010; Xue, Simonis, & Dudek, 2007). However, this apparently conflicts with the government's dominant logic and imperative of development (Li & Lang, 2009). Development projects as a powerful economic engine are often framed as beneficial to economic development. For example, the development project turning Hainan province into an international tourist island destroys tropical forest and mangroves, which is framed by the government as a great achievement[28]. Asking why EIA is not working alone is insufficient to reflect the core issue of its ineffectiveness. It is necessary to examine the perceived function and position of the imported EIA system in the institutional context where it operates.

Literature review

Concept of decoupling and loose coupling

Developing countries constantly face the tension between pressing domestic demand of development and the international demand for environmental conservation. Institutional theory suggests that when organizations face contradictions and incompatibilities created by their technical demands for efficiency and institutional demands for legitimacy and appropriateness, they often decouple the formal structure from activities (Meyer & Rowan, 1977; Thompson, 1967).

[28] This story "Hainan's tropical rain forest dying a glorious death" is reported by a courageous citizen who used to work for the Hainan government. He was awarded the 2012 China Environmental Press Awards. Details about his story can be found at http://www.chinadialogue.net/article/show/single/en/4866-Citizen-journalists-in-China, posted on April 11, 2012.

Decoupling usefully describes the disconnection between decisions, plans and policies, and their implementation (Hironaka & Schofer, 2002). In comparison, the term "loose coupling" addresses the connection between structure and activities that exists, although weakly (Orton & Weick, 1990). This paper neither distinguishes the two terms nor uses "decoupling" to mean disconnection or isolation.

Decoupling is used by an organization to reduce influence and control exerted by the key audience that constantly evaluates and monitors the organization. The existence of interdependence between the key audience and the focal organization is a necessary condition for the key audience to exert control (Pfeffer & Salancik, 1978: ch3). Two important forms of interdependence are that the key audience possesses (1) *information* of the organization's performance and outcome, and (2) control over the use, access, and allocation of important *resources* on which the organization depends for survival. The first factor makes the organization's actions *visible* for the audience to judge whether the actions meet the demands. The later gives the organization *motives* and *incentives* to meet the audience's demands (Pfeffer & Salancik, 1978). Increasing interdependence indicates constraints on behavior and decisions and a loss of autonomy. Therefore, attempts to reduce interdependence with the key audience can be seen as tactics of decoupling. It is manifested in the activities performed beyond the purview of supervisors, ambiguous goals, ceremonialized inspection and evaluation, and an value and importance attached to human relations used to informally coordinate activities (Meyer & Rowan, 1977).

Decoupling has four major outcomes (Orton & Weick, 1990). The first outcome is *persistence*, meaning that decoupled organizations or systems become less responsive to external demand and thus is able to resist change. The second outcome is *buffering*, referring to decoupled systems attempting to seal off problems and prevent the impacts from ripple effects. The third outcome is *adaptability*, referring to organizational learning and accommodation to change. The forth is *satisfaction*, which refers to job satisfaction among organization members, provided by a reduced level of conflict and a sense of safety from being closely monitored.

One of a few studies that applies the concept of decoupling in studying environmental policies is the work of Hironaka & Schofer (2002), which argues that one impact of decoupling is the *facilitation of adoption*. It shows that the procedural characteristics of EIA promote adoption but are often decoupled from intended policy goals as predicted from an institutional perspective. At the same time, it points out the adoption of EIA has indirect effects such as increasing environmental awareness and creating legitimacy for environmental mobilization. The study at the global level provides useful perspectives. In-depth studies at the national level and a more systematic discussion of the consequences of decoupling are needed to generate implications for improvement and theoretical insights.

Policy making and implementing

Many studies consider the ineffectiveness of the Chinese EIA system as a question of why certain laws, regulations, and policies are not properly implemented. They frequently assume the system imported from developed countries should have similar governance effects and conclude that the lack of enforcement and monitoring mechanisms is the main source of the problem, and that the government structure is fragmented so that implementation is decoupled from design and distributed at the local level (Lieberthal, 1997; Ma & Ortolano, 2000; Qi & Dong, 2010; Wang et al., 2003).

However, most large development projects operate in industries where authority is centralized in the ministries rather than distributed to local governments. Their non-compliance with EIA cannot entirely be explained by fragmented authority. Moreover, actors' behavior is not only directed by rational calculations but

also directed by cultural and normative factors. Particularly, China's environmental regulations are developed rapidly and can easily decouple from prevailing norms and cultural routines that guide actual daily practices. It creates a changing environment full of uncertainty, in which actors adjust their behaviors by making sense of the new situation, seeking appropriate responses by developing a new framework through which events can be interpreted and understood (Scott, 2008a). Their interpretation of EIA critically links to implementation (Dutton & Jackson, 1987). Therefore, EIA implementation cannot be analyzed separately from the design and formation of the EIA system (Matland, 1995).

In addition, the traditional view that implies an authoritarian, formal, and coercive imagery of the legal and regulatory system is now questioned. Most of the time, regulations and laws are much less explicit and coercive than they are assumed (Suchman & Edelman, 1996). Even when EIA is adopted, the choice of instruments and arrangements used to carry out EIA is a function of local means of social control and relations between political society and civil society (Le Gales, 2011). Moreover, although regulations are formal written rules that create order by explicitly setting codes of conduct, they need to be built on normative elements of institutions in order to claim their legitimacy, or to be implemented. As a result, without proper normative and cultural systems in place, regulative systems can easily become the tool supporting existing practices, for example, EIA certifications becoming another means of rent-seeking (Hironaka & Schofer, 2002).

EIA assessments

EIA has a characteristic that promotes decoupling: their core activities and principles are sufficiently ambiguous and uncertain (e.g., impact prediction) while their forms and stages of process are simple and specific. Many studies assess the effectiveness of EIA. One simpler and direct approach is to measure the presence of EIA components. For example, in 1995, Japan compared the EIA system of 60 nations based on five key components (i.e., screening, scoping, alternatives, follow-up, and strategic environmental assessment) (Huang, 2010). Wood's (2003b) 14 evaluation criteria is frequently applied in studies of different nations (Haydar & Pediaditi, 2010; Heinma & Põder, 2010). Ahmad and Wood (2002) combines the evaluation criteria with the control mechanisms in the legislative and administrative procedures for EIA to propose a analytical framework that comprises 24 indicators for measuring EIA effectiveness and is applied in the assessment of EIA systems in other nations (El-Fadl & El-Fadel, 2004; Nadeem & Hameed, 2008).

Most of the studies focus on the procedural effectiveness of EIA. Their criteria are focused on the components, procedures, and outlines required in the EIA system. The emphasis risks directing attention and commitment away from meaningful implementation (Pfeffer & Salancik, 1978) and encouraging inspection and evaluation to be ceremonialized (Meyer & Rowan, 1977). Particularly, the criteria used by external donors like the World Bank often lead to goal displacement of developing nations because they provide incentives for the government to produce countable outputs rather than focus on desirable social outcomes (Bohte & Meier, 2000).

Recently, scholars begin to evaluate the substantive goals of EIA and whether EIA plays a role in promoting sustainable development in the decision-making process (Gibson, 2006; Morrison-Saunders & Retief, 2012). Because of various levels of localization and adaptation of EIA in different countries, the goals and functions of EIA cannot be assumed. Rather, they are fundamental variables to be examined.

Sustainable development

Sustainable development combines environmental, economic, and socio-political concerns in development, balancing the preservation of natural resources with their use in meeting human needs. Even under the widely-quoted Brundtland's definition of sustainable development, the concept is still open to various interpretations that lead to different development actions (Hopwood, Mellor, & O'Brien, 2005). This paper adopts a viewpoint that recognizes the interwoven relationship between natural and human environments and considers social and economic equity as important in preventing a collapse of social systems and wars over resources in the longer term. Therefore, it views sustainable development as the integration of environment protection, social well-being, and economic development.

Methods and analysis

We employed an archival analysis that relies on secondary documents (Ventresca & Mohr, 2005) including regulations, government official websites, three credible local reports produced by reputational universities (Qi, 2008; Wang, 2006, 2011) that record observations of expert participants in events relevant to EIA. From 2011 to mid-2012, news articles were surveyed, 9 EIA experts (6 academic and 3 industry experts) were interviewed, and 2 government officials (one retired) were informally communicated to triangulate the archival materials. The strategy is useful in capturing decision makers' perceptions and interpretations of issues and, therefore, helps us understand decision makers' responses. Decision makers constantly make arguments, define options, and defend their choices with rationales, through which they reveal their issue perceptions and reasoning of decisions (Schneiberg & Clemens, 2006). In fact, the strategy mostly captures the outcomes and changes over time of collective decision making at the national level rather than directly measure the meaning and logic of decision makers' own words. Nevertheless, it is appropriate for studying China's policy making featured by negotiations, compromises, and consensus building at the national level (Lieberthal, 1997), which surveys and interviews at the individual level are normally difficult to represent.

Selection of regulatory documents

We identified the relevant legal documents of EIA governing the construction projects in two steps. First, a comprehensive set of legal documents were searched with the key word "*environmental impact assessment*" from the Beida Fabao Laws & Regulations Database created by Peking University-funded Chinalawinfo Co., Ltd. It contains the laws, regulations, and other legal information promulgated by the Chinese central government and most of local governments since 1949. The search results in 27 laws, 108 administrative regulations, and 955 department rules and 10 other rules (total = 1100) in all sectors up to September 2011 (see Figure 4).

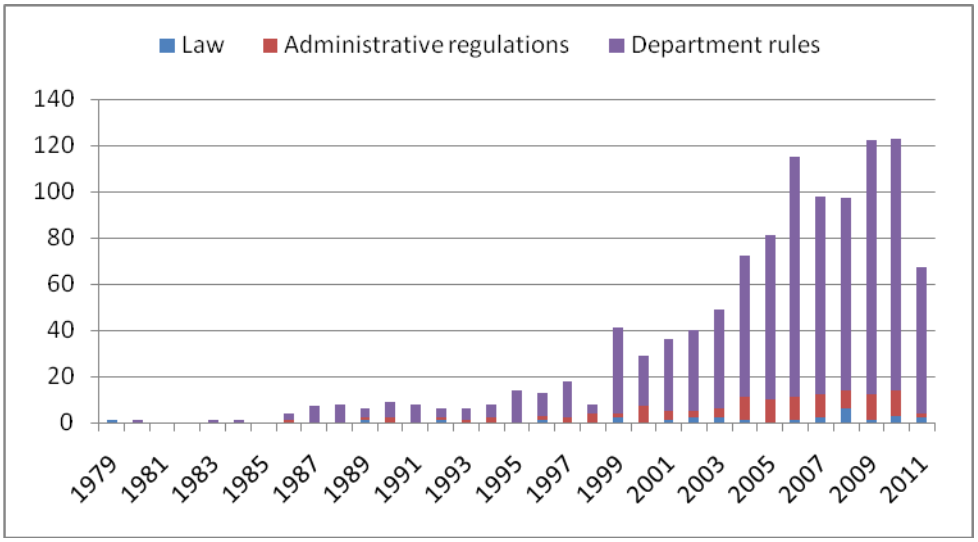

Figure 4 Chinese department rules, administrative regulations, and laws related to Environmental Impact Assessment up to September 2011

Second, in addition to the total of 135 laws and administrative regulations, we selected department rules that are related to both construction projects and EIA (e.g., EIA professionals, public participation, environmental information transparency, relocation and acquisition, and environmental administrative punishment) for analysis. Department rules often have specific functional aims and contain the interpretation and intention of the issuing functional organs regarding how the laws and administrative regulations should be implemented and enforced (National People's Congress and National People's Congress Standing Committee, 2000). Therefore, it is necessary to select the ones that are relevant to our study rather than make the selection based on the jurisdiction of specific ministries or commissions. In the end, the selection strategy resulted in a sample of 281 department rules issued by 27 state functional organs.

Analysis

We combined two approaches of analysis. First, in examining the outcome of the EIA localization, we looked at the design of the Chinese EIA system and how it differed from the international version in order to measure the disjuncture between the two versions of EIA. In assessing the degree to which the Chinese EIA incorporates values and principles of sustainability, we adopted the conceptual criteria "*adequacy*" (i.e., goals and principles)[29] (Sadler, 1996). We did not employ the framework of sustainable assessment (Gibson, 2006) because the study focuses on the localization of the imported EIA and its outcomes. This requires an approach that can capture the evolving and changing natures of EIA in a transition economy.

To do this, we relied on existing studies of EIA assessment as well as an analysis of Chinese EIA regulations. We compared the international EIA with Chinese EIA based on the governing mechanisms of EIA summarized by a literature review. We then assessed the *adequacy* by specifically looking at (1) the definition of environment and (2) the frequency and ways of which two key terminologies, "*sustainable development*" and

[29] Sadler's report (1996) categorizes the application of sustainability, strategic environmental assessment, and cumulative effects as "New dimensions in EA." The paper combines these three applications into the category "the adequacy of EA systems" because they are no longer "new" in EIA practices, and it allows us to analyze whether the guiding values and principles of EIA systems reflect the principles of sustainability.

"*environmental rights and interests*", that signify sustainable principles are used in EIA related regulations. We then looked at the contradictions in the regulatory system that reflect tensions between the demand for development and needs for environmental conservation.

Second, in examining the localization of EIA, we used the Chinese EIA Law as a case study focusing on the negotiation of EIA components. The case is relevant and interesting because it experienced a lengthy debate before its approval. In the institutional context of China, regulations and laws are made by administrative organs of the government rather than independent legal organs. Therefore, local governments and ministries that carry out regulations and laws can defend their interests and voice their concerns in the law-making process (Wang, 2011). In addition, the original draft of the EIA Law was consistent with international standards and incurred serious debates that led to three revisions. Thus, the controversial process of reviewing the EIA Law revealed how different groups of decision makers perceived and responded to the disjuncture between local practices and international standards and the degree to which they consider sustainable principles and goals.

To unpack this process, we relied on the local reports and a conceptualization of issue categorization developed by Jane Dutton and Susan Jackson (1987). Their conceptual model suggests that linguistic labeling (categorizing) of an issue reflects decision makers' cognitive interpretation of the issue and subsequently affects their information processing and motivations. Such labeling is powerful in ambiguous circumstances.

Results

Outcomes of EIA localization

The World Bank (2006a) published a report comparing the EIA system of 12 nations/regions with the criteria comprising seven EIA components: scope/coverage, alternative study, public participation, information disclosure, clearance timing, certification of consultants, and follow-up monitoring. China's EIA system is relatively advanced. It is one of three out of the 12 EIA systems that account for plans and programs in addition to projects[30].

Since 1979, EIA has become a modular and packaged system that comprises locally invented instruments used to facilitate EIA implementation and can be easily used as a managerial tool in different domains. Figure 5 shows that, by September 2011, EIA has been applied in 51 areas categorized in the Chinese legal system (e.g., environmental protection, industrial management, military, and transportation). Locally invented "Three synchronizations" that aimed to control and prevent pollution was immediately incorporated into EIA (Wang et al., 2003). In 1984, a notice[31] was issued to require the governmental agencies to secure the environmental costs in project budgets. The cost of EIA should be included in the budget of project feasibility study and the cost of "make-up" EIA should be included in project construction budgets under the category of "unforeseen events."

[30] This report claims that China's EIA Law only includes plans, which is incorrect. In Chinese language, "*gui hua*" can refer to both a plan and a program. In the Law, they are separately described in Article 7 and 8, although specific implementation approaches are absent.

[31] "Notice of the provisions regarding the environmental protection funding channels" was collectively issued by the Ministry of Urban and Rural Construction and Environmental Protection (re-organized as the Ministry of Housing and Urban-Rural Development and Ministry of Environmental Protection), State Planning Commission (currently State Development Planning Commission), State Scientific and Technological Commission, State Economic and Trade Commission, Ministry of Finance, China Construction Bank, and Industrial and Commercial Bank of China in 1984 and is effective (last checked: August 2012).

From 2006-2011, in the area of Standardization Management and Certification, there is a surge of using EIA as control for industrial access, forbidding polluting businesses to establish.

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011/8
Audit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Consultation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
National Affairs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Business Management	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Constitution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0
Administrative Proceedings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Animal Husbandry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0
Education	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0
Fishery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	0
Postal service telecommunication	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1
Bank	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0
Sports	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Public Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
Travelling	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	0	2	1	0
Foreign Economy and Trade	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	1	0	1	0	0
Hong Kong, Macao transaction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Quality Control and Supervision	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Cultural relic literature and history	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Technology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3	2	2	0	1	1	0
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	1	3	3	2
Business Commodity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	5	0	0
Plan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	2	1	2
State Asset	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0
Foreign Exchange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Civil Administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0
Water Conservation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	4	2	2	2	0	7	4
Resource	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	4	2	5	2	5	3	6	8	7	4	6	3
Rule by law work	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	2	1	1	2	0	4	4
Forestry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0	1	0	1	0	0	1	4	2	4	0
Standardization Management and Certification	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	3	7	3	5	6	3
Enterprise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	2	0	1	0	1	0
Land	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0
Meteorology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	1	1	0	2	1	0	0
Human affairs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	1	0	0	5	1	1	2	1	1	0
Loan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	0	0
Management of tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0
Development Zone	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0
Statistics	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Energy	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	1	2	3	1
Health	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	2	0	0	1
Military	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Price	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	4	1	0	1	0
Labour Union	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Transportation	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	1	1	1	1	2	3	1	2	2	1	2	5	3	4	3	4
Governance Office Work	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	3	4	3	5	2
Geology and Mineral Resource	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	2	2	0	0	3	1	1
Industrial Management	0	0	0	0	0	0	0	0	3	2	1	0	0	0	1	0	4	2	2	0	1	0	0	0	4	3	6	11	7	8	8	9	5
Reform and Open	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1	2	2	1	1	1	1
Financial Finance	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	2	4	2	3
Construction Industry	0	1	0	0	0	0	0	2	1	0	0	0	0	1	0	0	1	0	0	0	1	0	0	1	1	3	1	2	5	2	5	5	1
Environmental Protection	1	0	0	0	1	0	0	1	3	1	2	7	4	3	3	7	6	6	13	3	27	14	25	19	34	38	40	61	38	36	55	52	24

Figure 5 Diffusion of EIAs in the Chinese regulatory system: regulatory sectors and the numbers of regulations issued in January 1979-August 2011

Note: Total number of regulations coded with software Nvivo = 1100

Managing and certificating increasing numbers of EIA professionals is also a major focus of the MEP. In 1999, a total of 122 EIA professional organizations received the certification (Class I) from the MEP for the first

time. Up to March 2012, there are 189 Class I and 981 Class II certified EIA organizations (official website of the MEP). In addition, The MEP exerted great efforts in establishing and regulating the EIA sector by issuing standards and technical guidelines, setting standards of service fees, certifying EIA professionals and firms, building the database of the EIA firms, and offering training sessions. The MEP arranged inspections of selected EIA companies. If finding unqualified EIAs, it revoked the certification of the responsible EIA firms and announced the company names. In addition, the MEP upgraded its capacity substantially. The number of technical professionals in the MEP increases from 1195 in 2003 to 1797 in 2009, in which professionals with PhD qualifications account for 9.5% and 20.4% respectively (see Figure 6).

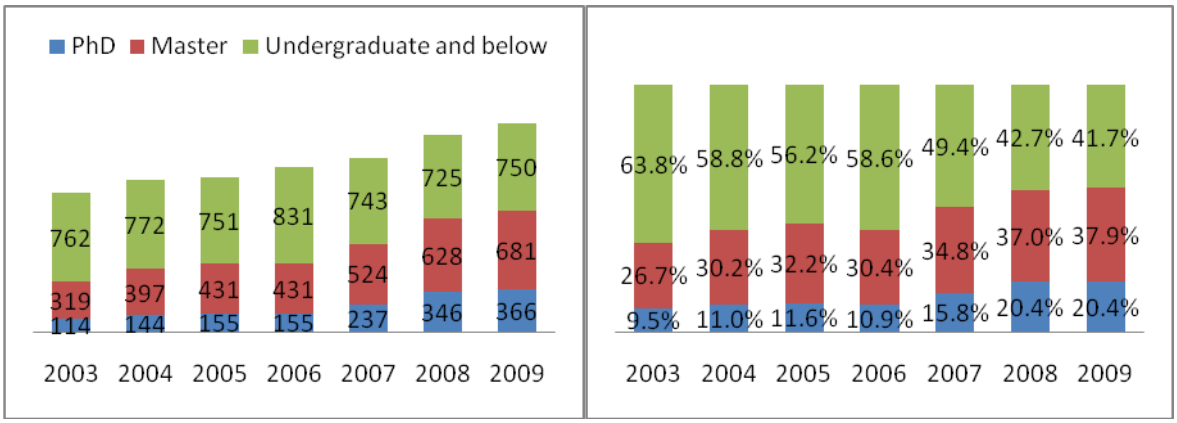

Figure 6 The number & percentage of the technical professionals employed by the Ministry of Environmental Protection, 2003-2009 (Data source: the annual report of the Ministry of Environmental Protection)

Adequacy

The International Association for Impact Assessment (IAIA) defines EIAs as: "The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made" (IAIA & IEA, 1999: 2). The major objectives of EIA incorporate sustainable principle by indicating that EIA serves as a *pre-decision analysis* that aims to prevent environmental damages, and that EIAs consider impacts on *physical, social, and economic environments* and "health, culture, gender, lifestyle, age, and cumulative effects" of development activities (IAIA & IEA, 1999: 4).

However, in China's EIA system, especially *the Environmental Protection Law*, *the EIA Law*, and *Regulation on the Administration of Construction Project Environmental Protection*, three core regulatory pillars, environment is narrowly defined as ecological environment. In addition, pollution of water, soil, and air has been the main focus in EIA regulations and practices since China adopted EIA to tackle pollution problems (Wang et al., 2003; interviews).

However, the goal of sustainable development is well-pronounced in China's legal system. China adopted sustainability as its development principles and goals in 1992, after the Earth Summit held in Rio de Janeiro. China approved and issued a white paper on China's population, environment, and development in the 21st century, or "Agenda of the 21st century" in March 1994. The term "sustainable development" entered the EIA system in 1996. The EIA Law passed in 2002 states the principle of promoting sustainable development:

> The Law has been enacted to carry out the strategy of sustainable development, prevent adverse environmental impacts of plans/programs and construction projects after they are carried out, and promote the concerted development of the economy, society, and environment (Article 1).

More importantly, China began to recognize individuals' environmental rights in the legal system in 1999 (see Figure 7). The majority of these regulations that mentioned environmental rights indicate the environmental rights of citizens need to be respected and protected, and the public needs to be educated about their rights and encouraged to report violations. For example, the National Tenth Five-year Plan of Environmental Protection issued in 2001 proposes public supervision as a governance mechanism in coping with pressing pollution issues:

> Increase the publicity of the news media and the supervision of public opinion and set up public opinion and public oversight mechanisms. Regulatory environment, information release system, in accordance with the law to protect the public's environmental right to know. Strengthen environmental petition to safeguard citizens' environmental rights. (Article 8, section 4, translated from Chinese)

This article in the Five-year plan paved the way for regulations of public participation and environmental information disclosure.

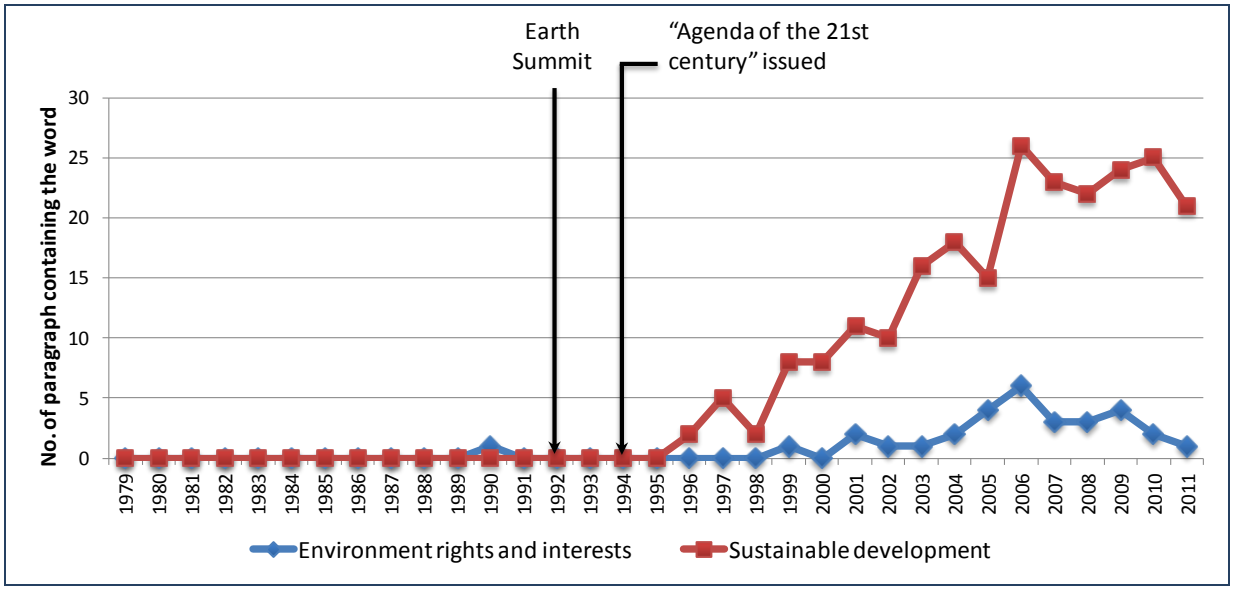

Figure 7 Coding of key words in Chinese EIA regulations: Environmental Rights and Interests and Sustainable Development

Note:

3. Total number of regulations coded = 1100; they are coded to show numbers of paragraphs that contain the specified key word with software Nvivo.
4. In 1990, the term, "environmental rights", is used in Chinese regulations for the first time to declare that the environmental rights of the *nation* should be protected and respected when foreign technologies and facilities are imported. Not until 1999 is the term used for citizens.

It is apparent that the diffusion of sustainability principles in the Chinese EIA system is triggered by international forces. Yet locally, the formally acknowledged goal of sustainable development is not tightly connected to the derivative version of EIA. It fails to motivate re-definition of environment and incorporation of social elements. Moreover, it has not activated the preventive function of EIA at the early project stage. EIA can hardly affect early project decisions (Interviews). About 99% of all China's construction projects pass their EIAs (Chang, 2012). As indicated in regulations, EIA still enters the project process *after* projects are approved by the central government and the feasibility study begins. The government agencies preserve the discretion of exceptions to protect "confidential projects" and forms of public participation, which means that interactions with interest groups remain limited (Moore & Warren, 2006).

Contradictions

Contradictions in regulations and practices signify tensions between economic development and sustainability for a developing country. The most salient one in the Chinese EIA system is that if a project begins construction without EIA, the environmental authority suspends the project without further penalty and asks EIA to be conducted within a specific time; Only when the "make-up" EIA fails to meet the deadline, the project owner can be fined between 50-200 thousand RMB (EIA Law, Article 31), a small amount of expense for large public projects. This term literally encourages EIA to be conducted after projects begin (Moore & Warren, 2006; Wang, 2006), the stage when the government is subjected to strong "soft budget constraints" because the public project is often considered as too important or costly to fail (Moore & Warren, 2006). This has important effects on a developing country, where the environmental authority is unlikely to cancel a project after a large investment has been made or suspend it after operation begins when many social and economic benefits are at stake. For example, China's Jiaoji Passenger Dedicated Line[32] began operation without completing EIA inspection. It had received and ignored three times the notices of sanction from the MEP asking to suspend the operation of the line since September 2009. However, the line did not stop operating.

The second contradiction resides in speeding up project approval and strengthening the EIA review. From 1988 to 2010, at least six regulations stated that the time of the EIA preparation and review should be shortened (see Table 3). Especially, in 2008 when the global economic recession began, the Chinese government invested heavily in infrastructure as a means to support domestic economic growth. The government asked to speed up the EIA review except projects with high levels of pollution and energy consumption. Infrastructure projects were considered highly beneficial. Again, in 2012, China's GDP growth shows signs of slowing down (BBC, 2012), the National Development and Reform Commission, China's top macroeconomic management agency, approved 328 and 239 projects in April and May, respectively[33].

[32] Details can be found in a news report on 21cbh.com: "First high-speed rail environmental offence to Jiaoji passenger dedicated line facing down" at http://www.21cbh.com/HTML/2011-5-16/3MMDAwMDIzODM3MA.html (in Chinese), accessed Oct 7, 2011.

[33] The number was calculated from data on the official website of the National Development and Reform Commission, Project Appraisal and Approval, at http://www.sdpc.gov.cn/xmsphz/, last accessed: 14 June 25.

Table 3 Regulations that urged the speeding up of EIA review process

Title	Date
Opinions of the Ministry of Environmental Protection on Issues concerning the Environmental Governance of Construction Projects	1988
Notice of the Ministry of Environmental Protection on Issuing the Opinions on Further Doing a Good Job in Environmental Protection of Construction Projects	1993
Notice of the General Office of the Ministry of Environmental Protection on Further Strengthening the Environmental Protection Work under the Current Economic Situation	2008
Notice of the General Office of the Ministry of Environmental Protection on Further Strengthening the Examination and Approval of Environmental Impact Assessment under the Current Economic Situation	2008
Notice of the State Council on Ratifying and Forwarding the Opinions of the Ministry of Housing and Urban-Rural Development and Other Ministries on Further Strengthening the Disposition of Urban Living Garbage	2011

Third, in 1988, the Ministry of Water Resources and Electric Power promulgated a regulation (effective) explicitly stating that the EIA reports of hydropower projects are national secrets. Although this regulation only indicates hydropower projects, in reality, EIA reports of nearly all types of infrastructure projects are not available after a website search and three requests for EIA reports of high speed rail projects sent to the MEP by the author.

Decoupled systems

The regulations stipulating actors and processes of EIA show structural decoupling as a response to international requirements and an effort of defending autonomy.

Since the economic reform, China has attracted significant international investment and is increasingly subject to international influence. As stated in the "The Outline of National Environmental Protection International Cooperation Work (1999-2002)" issued by the MEP in 1999:

> China's comprehensive, multi-channel, multi-level international environmental cooperation has been formed. International environmental cooperation has become an important part of our diplomacy and environmental protection (Section 1.2, translated from Chinese).

It also shows that China has been well aware of the increasing environmental demands from the international community:

> International environmental cooperation is facing new challenges. Since the United Nations Conference on Environment and Development, sustainable development has gradually become the overall strategy to guide States in the economic and social development . . . At the end of this century, the World Bank and other international financial institutions will no longer provide preferential loans and grants to our country; the scale of preferential loans and grants provided by some developed countries will also be significant reduced; the use of international development assistance funds is subject to increasing constraints and demanding requirements (Section 1. 4, translated from Chinese).

In the 1980s, international sponsors such as the World Bank began to require EIA to be conducted by borrower countries (Wood, 2003a). In response, the top Chinese environmental agency set up a unit dedicated to working on EIA with international sponsors. This arrangement greatly improved China's EIA technical skills

(Wang et al., 2003). However, at the same time, the Chinese government buffers the international control by setting different processes and requirements for EIA of projects applying for international loans, which are specified in regulations separate from domestic EIA. For instance, the MEP regulation issued in 1993 (no. 324) requires that only certain certified EIA organizations familiar with international requirements can conduct EIA for projects that apply for international loans, and that these EIAs need to include impacts of relocation and resettlement. More explicitly, the regulation issued by the Ministry of Railways[34] in 2002 requires that, for foreign-funded projects, in addition to EIA reports prepared by EIA organizations, the project resettlement action plan, project poverty reduction impact report, and project socio-economic impact analysis have to be prepared by the Foreign Investment Center of the Ministry of Railways. This indicates that the social aspect of the impact assessment and mitigation plan have become part of administrative work in the loan application process, which is completely decoupled from project processes.

Localization—negotiating the EIA Law

The promulgation of the Chinese EIA Law signals an important step of China's development toward a more sustainable model. However, the project level process remains largely unchanged (Wang et al., 2003). The process of negotiating the Law reveals a strong tendency to maintain the existing project process of review and approval and to control project information.

In the late 1990s, China was preparing for accession to the World Trade Organization (WTO) and put great efforts in establishing and improving its regulatory and legal systems. Strengthening environmental regulations was part of the effort. In 1999, the central government asked the MEP (then the SEPA) to draft the EIA Law. The draft was based on the international standards and included the integrated analysis of environmental, economic, and social impacts, project alternatives, follow-up, and public participation, as well as the strategic environmental assessment (SEA) on policies, programs, and plans. However, it provoked serious debates and resistance from ministries and local governments.

Based on a detailed account (Wang, 2006: 222-235), the review process of the EIA Law contains three rounds of review by the National People's Congress (NPC), China's top legislature, as well as central and local governmental organs. The draft law was subsequently modified based on their comments and opinions, from which issues and actions can be categorized into three types: issues outside of legitimate social categories, legitimate but conflicting issues, and most debated issues.

Issues outside of legitimate social categories

Three EIA components were taken out from the original draft with few debates and negotiations: project alternatives, the integrated analysis of social and economic impacts, in both the SEA and EIA, and the EIA conducted before project proposals are approved. This signifies that these EIA components were excluded by all decision-makers as acceptable options.

The consideration of alternatives to the proposed project including the "no action" option is considered the fundamental mechanism for realizing the preventive function of EIA (Noble, 2009). It can ensure that decisions are made after considerations of possible approaches that may produce fewer environmental damages and more benefits rather than merely based on justification for proposed actions. However, this was considered "*infeasible* and *unnecessary"* by most local governments and ministries in the review process (Wang, 2006: 231). In practice,

[34] The regulation is "Interim Measures for the Administration of Railway Project Investment Plans Utilizing Foreign Loans."

the project owner often had selected the site and secured the land when EIA was conducted (Wang et al., 2003). As an interview respondent indicated, for infrastructure projects under the jurisdiction of ministries that make important project decisions, the decisions can hardly be challenged by environmental agencies with weaker political power.

The integrated analysis of social, economic, and environmental impacts, referred as "horizontal integration" (Dalal-Clayton & Sadler, 2005: 369), is complex and difficult to be done well (Noble, 2009). Considering social impacts is linked to ensuring social stability and acceptance in the process of development and thus is considered the key to realizing sustainability (Gibson, 2006). However, in the review process, social impacts were excluded with few discussions.

The integration of impact analysis into the decision-making process of development actions, referred as "process integration" (Dalal-Clayton & Sadler, 2005: 369), indicates the linkage of EIA to larger national planning and decision-making system embedded in its institutional context. It ensures EIA can make a substantial contribution to development decision-making (Jay, Jones, Slinn, & Wood, 2007). The original draft required EIA to be conducted during project proposal preparation. The local government and ministries commented that the requirement was "*inappropriate*" (Wang, 2006: 231), and one review comment from the NPC required the draft law to be "*consistent and compatible"* with existing project process (p. 233), which indicates an effort of maintaining existing institutional systems. It also means that EIA and feasibility studies continue to be prepared separately by different organizations.

Legitimate but negotiated issues

Generally, *public participation* ensures a more balanced decision-making considering the interests of all major stakeholders (Noble, 2009). It can generate different benefits at three different project stages.

At the scoping stage, public participation ensures that the public concerns and values are included in EIAs (Noble, 2009). This directs limited time and resources being invested in establishing shared objectives and collecting meaningful information and analysis, which is directly related to the quality and social acceptance of EIA. This process is tightly connected to social impact assessment and is not considered by the Chinese authorities. At the later stage of project development, public participation can help to recognize socially acceptable solutions to environmental damages and thus minimize conflicts and delays. After project construction begins, public participation can facilitate the implementation of environmental mitigation plan and monitoring.

In the negotiation of the terms in the draft law, all parties largely agreed that the requirements for public participation should be included. However, they intended to in a limited fashion inform rather than consult the public. The requirement of *information disclosure* that originally mandated EIA reports to be available to the public was firstly modified to require disclosing only EIA abstracts and then taken out from the law. "Confidential projects" remain entirely excluded from the requirement of public participation. The timing of participation was changed from "during the scoping of the impact assessment" to "after the assessment is completed and before it is submitted for approval". The changes allow the public to be informed only selectively about the major project decisions that have already been made.

The function of public monitoring is promoted by the Chinese government in the department rule "Environmental Petition Approach" stipulated in 1997. The public is encouraged to report EIA violations through environmental petition, a political expression that refers to the appeals of citizens or non-governmental organizations (NGOs) to the Chinese governments regarding environmental complaints and conflicts. It was

modified in 2006 with more specific details of implementation and is further backed by the "Measures for Environmental Administrative Reconsideration" promulgated in 2008. However, the entire petition and ruling process is under the jurisdiction of the government agencies. Reporting environmental violations of the infrastructure and national projects, of which the violators are mostly governmental-related enterprises, is difficult without a fair and transparent process.

Most debated issues

Whether *SEA* should be included in the EIA Law and the levels of which SEA should be applied were most debated. SEA can serve as a "early warning mechanism" of development decisions (Sadler, 1996: 200). The local government and ministries considered SEA "*infeasible and unnecessary"* (Wang, 2006: 230-231). They argued that the meaningful implementation was questionable since mechanisms of supervision and review were absent in the higher levels of decision-making in China, and that, traditionally, a policy was experimented at the level of administrative regulations or rules before being given a legal status. But the central government emphasized the importance of including SEA into the law, at least by stating SEA principles. This led to the terms that, although ambiguous, enabled experimental SEA to be carried out later on.

Another most debated component was post-decision monitoring (*follow-up*). Follow-up has three functions that normally require different arrangements and techniques (Noble, 2009):

1. Control function: monitoring can serve as a means of control for compliance to ensure the implementation of the guidelines and principles of environmental protection. Common approaches include inspections, regulatory permits, and agreement with affected groups that empower them to monitor for compliance.

2. Watchdog function: monitoring project progress allows managers to respond to unexpected environmental damages and adverse environmental change in a timely way.

3. Learning function: monitoring can increase the understanding and knowledge of environmental impacts and thus decrease uncertainties in the assessment of future projects related decisions.

The central government recognized the necessity of mandating follow-up. The local government and ministries argued that it was difficult to identify the causal link of environmental impacts, particularly when multiple projects were constructed simultaneously, which was commonly seen in China. That they commented EIA follow-up as *infeasible* and *unnecessary* merely based on this argument reveals their narrow definition of EIA follow-up as control for compliance. The other two important functions that contribute to prevention of environmental damages are not considered.

The results of the debates were compromised approaches (summarized in Table 4). Policies were excluded from SEA. Approaches of carrying out plan/program SEA were to be specified by the responsible ministries and local governments through experimental projects. Follow-up was ambiguously defined and required conditionally: (1) a environmental monitoring is needed if a plan/program has "significant" environmental impacts (Article 15), (2) at the project level, a post-appraisal of the environmental impacts has to be organized by the project owner if actual environmental impacts differ from what is predicted in the assessment (Article 27), and (3) follow-up inspections for projects should to be conducted by the environmental agencies and track down responsible parties for "serious" pollution and ecological damages (Article 28).

Table 4 Summary of the negotiated EIA aspects, governance mechanisms, and decision makers' decoupling attempts

EIA aspects	Governance mechanisms	Assessment of the EIA system
Issues outside of legitimate social categories		
Project alternatives	Realizing the preventive function of EIA	✦
Horizontal integration	Ensuring social stability and acceptance in the process of development	✦
Process integration	The extent to which environmental assessment specialists are part of the decision-making body	✦
	The stage at which the EIA enters the decision-making process	Stage of feasibility study
Legitimate but negotiated issues		
Public participation	**At the scoping stage**: Ensuring the public concerns and values are included in the EIA at the scoping stage	✦
	At the later stage of project development: Recognizing socially acceptable solutions to environmental damages and thus minimize conflicts and delays	In place; Limited information disclosure
	After project construction begins: Facilitating and monitoring the implementation of environmental mitigation plan	In place; Limited information disclosure
Most debated issues		
SEA application	Ensuring environmental considerations can influence decision making at higher level and early stage	Experimental implementation
Post-decision monitoring (follow-up)	Control function ensuring the implementation of the guidelines and principles of environmental protection	Being suggested in EIA reports; Conditional implementation
	Watchdog function allowing timely response to adverse environmental change	Requirement in place without specific approaches
	Learning function increasing knowledge of environmental impacts and decrease uncertainties in EIAs of future projects	✦

Note: ✦ = No provision in current regulation

Discussion

Since the beginning of economic reforms, China's environmental issues have drawn great pressure and intensive attention from the international community (Cann, Cann, & Shangquan, 2005). This pressure and serious pollution problems together drive the development of China's environmental system (Wang, 2006). In the evolving process, policy learning (Hall, 1993) and collective sense-making is observed in the improvement of EIA. Locally invented policy instruments, newly created and elevated environmental agencies, and wide diffusion of modular EIA across bureaucratic boundaries indicate vibrant institutional innovations and increasing awareness of environmental issues in the process of localization. For instance, in its entering the international community,

China accepts international rules and concepts such as "sustainable development". Decision makers acknowledge the necessity of including public participation in EIA. The acceptance without argument and explanation indicates a shared understanding has been formed regarding the importance of the new values. In the perspective, international influences contribute greatly to driving and shortening the learning process.

On the other hand, certain local institutional elements are resilient. For instance, pollution prevention was the policy focus when EIA was introduced and tailored as a tool for the task. It remains the main consideration in EIA while public projects (e.g., infrastructure and urbanization) are often framed as important and beneficial, of which appraisal and approval processes are often sped up for boosting economic growth. Most importantly, the government preserves the control of information and access to information although the Measures for the Disclosure of Environmental Information (Trial) which came into effect on May 1, 2008[35].

Moreover, the localized EIA system comprises elements of China's traditional decision making. Under China's planned economy, the decision-making process of development project involved only politicians and bureaucrats. After project proposals were approved by the central government, the proposing agency proceeded to begin project feasibility studies and designs (Chi, 2010). Although there were review mechanisms in the process, they aimed to support the decisions that were already made in the technical aspect. The traditional paradigm of central planning is reflected in the interpretation of EIA. For instance, EIA is still placed in the position of technical support (Wang et al., 2003).

This persistence of certain institutional elements can be viewed as reinforced and defended by institutional incumbents who benefit from existing institutional arrangements (Fligstein & McAdam, 2011). Another cultural-normative force is also importantly shaping the evolution and localization of EIA. Delving into the process of debating the EIA Law reveals that, key decision-makers' issue interpretations determine which international EIA components are appropriate, feasible, and necessary and thus filter the EIA components imported. Early interpretation of EIA translated into bureaucratic systems becomes difficult to change (Dutton & Jackson, 1987). This is explicitly reflected in the decision-maker's requirement that the EIA Law needing to be compatible with existing project processes. The requirement may signify the decision-makers' unwillingness to make fundamental change in project processes.

The effects of filtering and issue interpretations can significantly moderate policy learning and improvement in the context of decoupling system. Avner Greif (2006) observes that "[i]n collectivist societies the social structure is 'segregated'" (p. 269), meaning that individuals are confined in their particular groups that are loosely connected and rarely cooperate with different groups. In this context, decoupling attempts are observed when China introduces international EIA that promotes participation and integration, which stand in sharp contrast with China's centralized and authoritarian decision-making. Therefore, the four outcomes of decoupling (Orton & Weick, 1990) are useful in identifying how these decoupling attempts are reflected in EIA and affect the Chinese EIA's ability to safeguard sustainable development.

Persistence: The control of information and resources by the Chinese government has allowed the government agencies to be unresponsive to the public. In EIA, the Chinese government preserves early decision-

[35] The project EIA reports is also excluded from the Measures, which is subject to the "Law of the People's Republic of China on Guarding State Secrets" issued in 1988. "Tentative Measures for Public Participation in Environmental Impact Assessments" promulgated by the SEPA/MEP in 2006 requires that a simple version of EIA report must be available to the public no less than 10 days (Article 12).

making power and discretion of evaluation standards regarding what accounts for "significant impacts" and "confidential project and nationally important projects". The financial, safety, and environmental performance of infrastructure projects undertaken by the ministries and local governments as well as EIA reports are largely unavailable to interest groups including researchers and NGOs. As a result, the government agencies and large enterprises under their jurisdiction can avoid evaluation and inspection by a broader range of external groups with social and environmental criteria. Moreover, current institutional arrangements allow the Chinese government to be the most powerful actor without countervailing audiences. The government controls virtually all important resources including authorities of EIA licensing, certification, rule-setting that tightly connect to the job prospects of professionals and citizens. This restricts the expression of demands and honest feedback (Pfeffer & Salancik, 1978) and permits the government to reduce the level of external control.

Buffering: That the government controls information can buffer adverse impacts and chaotic mass movements. This is reflected in the strict information control of large public projects such as dams and nuclear power plants. This is sensible in a developing nation where most population still has limited education and can easily be instigated by rumors. The salt-buying panic aroused by the nuclear accident in Japan is an example[36]. However, the buffering strategy cannot produce positive and durable results for environmental issues. It risks damaging the government's credibility and leads to social instability in the longer term[37]. Recently, the government has noticed the increasing number of oppositions and conflicts due to land acquisition and relocations as indicated in the "Emergency notification of the State Council on furthering strict land acquisition and demolition work and earnestly safeguarding the legitimate rights and interests of the masses" (issued in 2010). The government is likely to set a separate system handling the social issue so that it can operate beyond the purview of the international community and the society.

Moreover, the internet's rise to become a powerful channel through which social groups can exert pressure on the government and invites aligning partners from the international community. For example, the public reactions to the Wenzhou high speed train accident voiced on the internet was partly responsible for the government representative of the Ministry of Railways being forced to step down. The Secretary-General of People's Daily Internet Center & Public Opinion Monitoring Room, Zhu Huaxin, sees the increasing use of internet to voice public opinion as a response to the lack of channels for public opinion and the lack of responses to the opinion by the government (Zhu, 2011). Especially, the China Environment Press Awards founded in 2010 by chinadialogue and the British newspaper the *Guardian* signals the emergence and encouragement of environmental journalism in China. Opinion leaders have emerged by using internets and blogs to shape the broader public sentiment. This trend is expected to continue and force the government to interact with and face the demands of the public.

Adaptability: China has a tradition of gradual reform at its own pace (Shirk, 1994). Decoupling contributes to a trial-and-error reform that produces impressive results. However, it is likely to become an inward learning led by dominate actors with vested interests. It is critical to note that adaptability derived from a decoupled environment is achieved by deliberately bringing in different perspectives on means-ends relationships

[36] An report can be found in the article "Japan radiation fears spark panic salt-buying in China" by David Pierson, Los Angeles Times, March 18, 2011, at: http://articles.latimes.com/2011/mar/18/world/la-fg-china-iodine-salt-20110318.

[37] For instance, the New York Times reported cases of coercive relocation and demolition that have created a sense of instability in the society in "Harassment and Evictions Bedevil Even China's Well-Off" by Andrew Jacobs, October 27, 2011.

to create collective judgment (Orton & Weick, 1990). Uniformity that lacks such characteristics threatens creativity and continuous learning. This reflects in the lack of integration and autonomy of new actors in EIA.

Newly-created organizations are powerful in creating and sustaining institutional change (Greif, 2006; Scott, 2008a). However, most of these actors are excluded from early project decisions and are assigned to technically support the decisions or tackle problems caused by the decisions. The MEP expects that the incorporation of SEA into the EIA system can prevent early decision mistakes, a major shortcoming of the Chinese EIA. However, if all decisions made by ministries and top governmental agencies are in a closed process and different perspectives are excluded, issues regarding accountability and objectivity remain. Therefore, to what degree can the EIA actors promote sustainable development under the constraints of hierarchical and organizational control is to be observed.

Satisfaction: China adopts gradualist reform to avoid strong opposition from actors who stand to lose from the change (Shirk, 1994). The process of reviewing the EIA Law manifests the principle of collective decision-making by central and local governments. The avoidance of conflicts and obvious losses of any government agencies inevitably leads to the missing of the public's voice, ambiguous policies and legal terms, and the sustaining of traditional values and norms. For example, the interpretations of EIA components in negotiating the EIA Law still emphasize the public's role in reporting environmental pollutions and post-decision monitoring as control for compliance. Moreover, government agencies complacent with traditional decision-making have an entrenched perception of the decoupled relationship between the government and the public. They tend to see public participation as a threat and dealing with public opinion as troublesome (Buckley, 2006), and respond to the emphasis on sanctions in legal terms with attempts at concealing information (Moore & Warren, 2006).

Conclusion

The study has used the Chinese EIA system as a case study to explore the outcome and process of which a highly standardized EIA system is localized and tailored to fit the perceived function and goal of the system. By using longitudinal archival analysis, the study has captured the diffusion and evolution of the Chinese EIA as well as the tension between economic development and environmental conservation, providing a picture differing from that provided by procedural assessment. By unpacking the dynamic local processes through which EIA is translated, negotiated, and changed to adapt to established institutional systems, the study has shown the important role of local decision makers' issue interpretations, which sheds light on the fundamental source of EIA ineffectiveness. The interpretations can evolve when new knowledge and information is gained (e.g., from international influences), which create opportunities for institutional change. Moreover, the approach allows both shared understandings and conflicts over one policy issue to be discussed simultaneously. It thus reveals tensions between change and stability and helps to identify policy arenas where heated debates occur, which indicates opportunities for change because traditional logic is losing dominance and legitimacy.

Moreover, it is difficult for a novel institutional component to gain traction if supporting cultural norms and understanding are absent. Certain governance mechanisms embodied in the international EIA to ensure sustainable development are filtered out in issue interpretation of the localization process. The trial-and-error approach of building China's EIA permits the new system to fit local conditions. However, the system's distance from social groups by opaque operations and control of resources and information disconnects the feedback loop

that is crucial for social and policy learning. This disconnection hinders the evolvement of the Chinese EIA beyond an administrative procedure into a preventive, integrative, and meaningful tool.

As shown in the case of the Chinese EIA, in the context of a centralized political system and segregated society, decoupling is employed to limit the influence of both international sponsors and local social groups and to maintain state autonomy. It contributes to China's gradual reform with minimized resistance and a quick diffusion of EIA. However, it often leads to superficially adopted procedural elements that are measured by the main audience. Therefore, if the audience, such as international sponsors and the environmental authority, mainly emphasizes procedural compliance and checks on EIA components and outlines, EIA can easily become paperwork of project approval rather than tools for sustainable development.

By using the decoupling concept rather than transparency and accountability, the study is able to more precisely discuss both benefits and risks of the government's responses to the disjuncture between international best practices and local institutions in developing countries. It captures the transitioning nature of the institutions of developing countries and shows that certain outcomes and effects of decoupling are instrumental for institutional change. For instance, adaptability and satisfaction help to maintain stability and efficiency in transition, which is crucial for developing countries. Additionally, it is able to distinguish the tactics of decoupling such as unresponsiveness to the public and concealing relevant information that can lead to instability and cease of learning in the longer run. The study thus contributes to institutional theory by empirically examining the effects of decoupling at the national level and contributes to policy studies by moving beyond the dichotomy of policy success or failure to address the complexity and dynamics of a policy issue.

Appendix 3-1: China's Legislation System

The legal documents in the Chinese legal system can be categorized into four major categories with different levels of legal effect: laws, administrative regulations, local regulations, and department rules. The effect of the law is the highest and that of the administrative regulation is the second-highest. According to the Legislation Law of the People's Republic of China, which went into effect in 2000, local regulations and department rules have the same level of legal effect. If there is inconsistency between these two over the same legal matters, the State Council is given the authority to make a final ruling (Article 86). These four categories of legal documents serve different purposes. The law and administrative regulations aim to govern national affairs and governmental administrative matters. Local regulations and department rules aim to implement and enforce the law and administrative regulations (see Table below).

Table 5 Legal documents in the Chinese legal system: categories, issuing entities and purposes

Categories of legal documents	Issuing entities	Purposes
Laws	National People's Congress and its Standing Committee 全国人民代表大会和全国人民代表大会常务委员会	Governing criminal offences, civil affairs, the State organs and other matters. (Article 7)
Administrative Regulations	State Council 国务院	Implementing the provisions of law and governing the administrative functions. (Article 56)
Local Regulations	The people's congresses or their standing committees of the provinces, autonomous regions and municipalities directly under the Central Government (Article 63) 第六十三条　省、自治区、直辖市的人民代表大会及其常务委员会根据本行政区域的具体情况和实际需要，在不同宪法、法律、行政法规相抵触的前提下，可以制定地方性法规。	Implementing the laws and administrative regulations under actual local conditions and governing specific local matters. (Article 64)
Department rules	Ministries, commissions of the State Council, and other administrative governmental organs directly under the Council (Article 71) 国务院各部、委员会、中国人民银行、审计署和具有行政管理职能的直属机构，可以根据法律和国务院的行政法规、决定、命令，在本部门的权限范围内，制定规章。	Enforcing the laws, administrative regulations, and decisions and orders of the State Council. (Article 71)

Data source: the Legislation Law of the People's Republic of China (2000)

The authority of issuing these legal and rule-making documents is assigned to the corresponding levels of governmental organs. The National People's Congress and its Standing Committee have the highest legislative authority and the power of legal interpretation. The State Council (the Cabinet), the highest organ of state administration, has the power of formulating administrative regulations. These regulations aim to implement the law and execute the State Council's administrative functions. Some of them also serve as the experiment and precursor of law. As stated in Article 54 of the Legislation Law, when the administrative regulations governing certain issues "have been tested in practice and when the conditions are ripe for making a law on the affair, the

State Council shall, in a timely manner, request the National People's Congress or its Standing Committee to make the law."

Ministries and commissions of the State Council are central-level functional units under the State Council and serve as the most powerful functional organs of the national government hierarchy. They have the power of making department rules, which aim to enforce the law and administrative regulations. Sharing the same bureaucratic rank with ministries but in the territorial hierarchy, provincial governments have the authority of making local regulations that aim to implement the law and administrative regulations adapting to actual local conditions.

Appendix 3-2: Evaluation criteria for EIA system

14 evaluation criteria for EIA system (Wood, 2003)

1. Is the EIA system based on a clear and specific legal provision?
2. Must the relevant environmental impacts of all significant actions be assessed?
3. Must evidence of the consideration, by the proponent of the environmental impacts of reasonable alternative actions for environmental significance take place?
4. Must screening of actions for environmental significance take place?
5. Must scoping of the environmental impacts of actions take place and specific guidelines be produced?
6. Must EIA reports meet prescribed content requirements, and do checks to prevent the release of inadequate EIA reports exist?
7. Must EIA reports be publicly reviewed and the proponent respond to the points raised?
8. Must the findings of the EIA report and the review be a central determinant of the decision on the action?
9. Must monitoring of action impacts be undertaken and is it linked to the earlier stages of the EIA process?
10. Must the mitigation of action impacts be considered at the various stages of the EIA process?
11. Must consultation and participation take place prior to, and following, EIA report publication?
12. Must the EIA system be monitored and, if necessary, be amended to incorporate feedback from experience?
13. Are the financial costs and time requirements of the EIA system acceptable to those involved and are they believed to be outweighed by discernible environmental benefits?
14. Does the EIA system apply to significant programmes, plans and policies, as well as to projects?

EIA evaluation criteria: systemic and foundation measures (Ahmad & Wood, 2002)

Systemic measures

(1) EIA legislation
1.1 Legal provisions for EIA
1.2 Provisions for appeal by the developer or the public against decisions
1.3 Legal or procedural specification of time limits
1.4 Formal provisions for SEA
(2) EIA administration
2.1 Competent authority for EIA and determination of environmental acceptability
2.2 Review body for EIA
2.3 Specification of sectoral authorities' responsibilities in the EIA process
2.4 Level of coordination with other planning and pollution control bodies
(3) EIA process
3.1 Specified screening categories
3.2 Systematic screening approach
3.3 Systematic scoping approach
3.4 Requirement to consider alternatives
3.5 Specified EIA report content
3.6 Systematic EIA report review approach
3.7 Public participation in EIA process
3.8 Systematic decision-making approach
3.9 Requirement for environmental management plans
3.10 Requirement for mitigation of impacts
3.11 Requirement for impact monitoring
3.12 Experience of SEA

Foundation measures

(1) Existence of general and/or specific guidelines including any sectoral authority procedures
(2) EIA system implementation monitoring

(3) Expertise in conducting EIA (national universities, institutes, consultancies with EIA technical expertise)
(4) Training and capacity-building

CHAPTER 4: PUBLIC PARTICIPATION IN ENVIRONMENTAL IMPACT ASSESSMENT FOR PUBLIC PROJECTS: A CASE OF NONPARTICIPATION

Abstract

Public participation in environmental impact assessment (EIA) is recognized as key to project success and sustainability. However, its implementation in public projects in China remains limited. The study unpacks the issues of nonparticipation by focusing on the attitude and capacity of the citizens who experienced the impacts brought about by Wuhan-Guangzhou High Speed Railway with 38 interviews and 361 questionnaires administered in person. A passive attitude and a low level of capacity were observed. While some respondents considered participation in government-invested and owned projects unthinkable, most of them were discouraged by the absence of a sense of security and significance. Institutional barriers included the lack of participation channels, project information, and transparent and proper processes of handling social impacts. Most respondents preferred communication through public hearings or questionnaires administered in person. Responsible agencies' demonstration of credible commitment, follow up on the social impacts, and education through disseminating project information are needed to shape active and cooperative citizen attitude and capacity which are fundamental to effective public participation.

Introduction

Public projects have been assuming great importance to social welfare and economic growth, but are accompanied by negative externalities. For example, China has been quite aggressive in harnessing hydropower to quench its thirst for energy, but incurred serious environmental and social consequences such as geological hazards and loss of livelihood (Economy, 2004; Li, Liu, & Li, 2012b; Xu, 2005). The public's health and well-being should be secured de jure in the process of economic development through their involvement in environmental decision-making (Tang, Wong, & Lau, 2008; Webler, Tuler, & Krueger, 2001). In China, public participation in environmental impact assessment (EIA) for public projects is required by Regulations on Environmental Management of Construction Projects adopted in 1998, mandated by Environmental Impact Assessment Law enacted in 2003, and further backed by Interim Measures for Public Participation in Environmental Impact Assessment enacted in 2006 and Measures of Environmental Information Disclosure (Trial) released in 2007.

Over the years since these legal documents became effective, encouraging progress has been made in disclosing information and addressing the public's complaints regarding tailpipe pollution (IPE & NRDC, 2008, 2010). However, regarding the construction and operation of public projects, the public's voices are largely absent (Li, Ng, & Skitmore, 2012a). Quite often, ecological environment and the benefit of the citizens directly affected by the projects give way to economic development and political will. Affected citizens are forced to mobilize oppositions to get their voices heard (Li et al., 2012b). As China is tottering through its transitional stage, economic development is still given the first priority (Li & Lang, 2009; Ma & Ortolano, 2000). Foreseeably, more public projects are expected to be deployed to boost economy. As an example, in the first quarter of 2012, China's economic growth shows signs of slowing down (BBC, 2012), and then the National Development and Reform Commission, China's top macroeconomic management agency, approved 328 and 239 projects in April and May, respectively[38]. Therefore, to facilitate and implement public participation in public projects in China has great practical value.

Public participation has been a key mechanism in EIA for development projects (Noble, 2009). As concluded by the World Bank from its 20-year experience of involvement in infrastructure projects, public engagement is critical to projects' success and sustainability (World Bank, 2006b). However, to effectively implement public participation, it is necessary but not sufficient to give the public the right to participate (Li et al., 2012b; Moore & Warren, 2006; Rowe & Frewer, 2000). A deep transformation of cultural norms is required for the meaning and value of public participation being recognized by both the government and the public (Buckley, 2006). This is especially true for developing nations where a civil society is underdeveloped, the public is traditionally excluded from project decision-making, and the notion of public participation is novel and revolutionary (Wood, 2003a).

In China, although there are a few successful cases of public opposition to public projects (e.g., the Nu River Dam project), which helped increase the public's environmental awareness (Li et al., 2012b), whether the public has fostered a better understanding of participation remains a question (Almer & Koontz, 2004). Citizens' attitude towards and capacity of effective public participation cannot be assumed to be a natural outcome of regulatory arrangement that spontaneously emerges when EIA regulations are in place (Mitchell, 2005). They are shaped and to be shaped by other entrenched cultural elements. For developing nations which frequently borrow exotic policies and institutional systems to solve their domestic problems, it is especially important to understand the actual local responses towards these policies and institutional systems. In this regard, we identify the public's attitudes towards and capacity of participation in EIA and the institutional barriers for the public to participate in EIA, in order to discern opportunities for improvement, with a survey of affected citizens along the line of Wuhan-Guangzhou high speed railway (Wu-Guang HSR for short) in China. By so doing, we empirically investigate a case of nonparticipation at the micro-level, which enables us to identify barriers to public participation outside of regulatory realms.

Analytical framework

The term "public participation" or "political participation" has different connotations in different contexts (Rozema, Bond, Cashmore, & Chilvers, 2012). It could be the involvement of citizens in political decision

[38] The number was calculated from data on the official website of the National Development and Reform Commission, Project Appraisal and Approval, at http://www.sdpc.gov.cn/xmsphz/, last accessed: 14 June 25.

making through voting, social movements, and lobbying, the influence of citizen power on public decision making (Arnstein, 1969), the participation of the underprivileged to improve social equity, or the involvement of the public as an mechanism for collective and deliberative problem solving (Webler, Kastenholz, & Renn, 1995). In our context, public participation is a core governance mechanism in EIA for public projects, and is voluntary rather than obligatory. Involuntarily organized actions hardly reflect citizens' preference and motivation and thus have limited civic significance (Putnam, Leonardi, & Nanetti, 1994).

Public projects deliver social services and promote quality of life. Over the life time of public projects, generating technically sound decisions is not sufficient. Uncovering and incorporating common needs of stakeholders is equally if not more important (Webler et al., 1995). As the key stakeholder, the public plays an important role to the success of public projects. Ineffective public participation often consumes resources and time, and delays the delivery of social services (Irvin & Stansbury, 2004; Soneryd & Weldon, 2003). Effective public participation requires in its first place citizens' positive attitude towards and sufficient capacity of participation in EIA (Palerm, 2000), as their attitude and capacity determine their motivation and ability to negotiate, communicate, decide, and act on collective benefits. Previous research focused more on the performance of public participation in EIA (Almer & Koontz, 2004; Li et al., 2012b; Nadeem & Fischer, 2011; Soneryd & Weldon, 2003; Webler et al., 1995), the prerequisite of which is that the public has participated. An equally important phenomenon which has drawn less attention is *nonparticipation*. Nonparticipation is common in EIA for public projects in China (Li et al., 2012a; Zhao, 2010). Understanding the cause of it is essential to the very first step of public participation — motivating and inviting citizens to participate.

Several barriers to effective public participation are recognized as common for citizens in developing countries and regions (Adomokai & Sheate, 2004; Wood, 2003a), which can be broadly classified into two categories: individual barriers and institutional barriers. Individual barriers include illiteracy, passive attitude, and lack of knowledge regarding both EIA and the nature of public projects. Institutional barriers include language and cultural differences that hinder effective communication, limited access to information, unequal access to participatory processes (e.g., women are refrained from participation), lack of time and resources to organize public participation, and remoteness and lack of communication infrastructure (e.g., transportation and internet). In China, authoritarian culture and socialist governing ideology are also identified as the critical barrier to participation (Tang et al., 2008).

Individual barriers and institutional barriers are intertwined. While individual barriers directly restrain individuals from participating, institutional barriers can systematically reinforce individual barriers by, for instance, reducing citizens' willingness to participate, limiting their access to information, and/or driving the poor into deeper poverty and further from being able to participate. In other words, the latter can sustain the former and lead to lasting nonparticipation. With that being said, we asked about citizens' experience with public projects to unravel individual and institutional barriers to citizens' involvement in public projects.

Citizens' *experience* related to public projects, including whether they have been given access to participatory process in the past, partly shapes citizens' perception and attitude (Searle, 1995). Conventional practices are often embedded in common sense and may last even when conflicting with new regulations. These practices exert powerful influence on the public's attitude and capacity. In China, government is virtually in charge of every aspect of public projects and make them arenas where government-citizen relationship and conventional means of social control manifest (Tang et al., 2008). Under the authoritarian image of the communist state, it can render meaningful participation unthinkable for the public (Diamond, 1999).

Additionally, we examine *regional differences* in citizens' attitude and capacity. Regional conditions reflect different levels of development of regions where citizens reside, which help shape citizens' attitude and capacity. A survey conducted for the West-to-East Pipeline Project in China found a significant difference in residents' attitude with regard to their places of residence (Chen, Tian, Zhang, Feng, & Yang, 2011). The economic source of community, the possible gains and losses caused by the proposed projects, and the ability to benefit from the proposed projects all affect citizens' attitude towards the proposed projects. For example, if citizens' livelihoods are dependent on natural environment (e.g., farmers), they may become vulnerable and emotional after the land is taken and the water is cutoff due to project construction. Their expectation and focus of participation can be quite different (Rodr ́guez-Izquierdo, Gavin, & Macedo-Bravo, 2010).

Finally, we investigate citizens' *preferred participation approaches* – the institutional channels through which citizens want to involve in the process (Doelle & Sinclair, 2006), so that they can comfortably voice their concerns with little speculation. This helps to provide practical suggestions at the end of the study.

Research methods

Case selection

To empirically examine citizen's attitude towards and capacity of public participation as well as the institutional barriers to public participation in public projects in a Chinese setting, we selected the Wu-Guang HSR project as a case. Wu-Guang HSR started its construction in June 2005 and began its operation in December 2009. It has a length of 968 kilometer (601 mile), connecting Wuhan, the capital city of Hubei province, and Guangzhou, the capital city of Guangdong province, with a design speed of 350 km/hour and operating speed of 300 km/hour[39].

The project was approved and listed in the "mid- and long-term railway network planning" in early 2004[40], while the EIA Law went into force in 2003. It was thus required to consult with the public before its design and construction work began. However, both EIA report and the government's EIA approval decisions were unavailable after the author's three requests sent to the Ministry of Environmental Protection, which indicated a case of nonparticipation.

Before the Beijing-Shanghai line started its service in 2011, Wu-Guang HSR was the longest passenger dedicated line in operation cutting across three provinces (i.e., Hubei, Hunan, and Guangdong) and covering ten cities. It therefore provides a natural experiment that allows us to examine affected citizens' responses to the same project in different localities. Selecting one large project assures that (1) these project activities were conducted under the same set of design/industrial specifications, standards, and principles, (2) the same announcement and news messages at the national level were delivered to citizens, and (3) local impact handling processes were subject to the same national regulations and policies. We are thus able to focus our comparisons on local variables.

[39] It operated at a speed of around 330 km/h, which was reduced to 300 km/h after the Wenzhou train accident.

[40] Full content is available on the official website of the MOR (in Chinese): http://www.china-mor.gov.cn/tljs/tlgh/201012/t20101228_729.html, and an English introduction available on the website of the International Tunneling and Underground Space Association (ITA): http://www.ita-aites.org/cms/fileadmin/filemounts/general/pdf/HomePage/China_20-21_nov_2006_report.pdf, last access: 11 November 2011.

The expansion of high speed rail network continues to be one of China's core policies. Therefore, an understanding of citizens' responses to its environmental impacts has practical implications. Also, Wu-Guang HSR is a representative type of large infrastructure with high technological standards. Thus, the study also has implications for other types of public projects that are complex and highly technical.

Sample selection

It is infeasible to conduct a comprehensive survey at every site along the Wu-Guang HSR line. To serve the needs of our research, representative sites are selected (see Table 6) based on the following considerations.

Wu-Guang HSR goes through three provinces, which are Hubei, Hunan and Guangdong. In each province, two cities were selected along the line with salient differences in terms of GDP per capita and city characteristics (see Table 1). In each selected city, we picked at least two sites within 100 meters of the railway line or nearest to the railway stations. In each site, we tried to reach as many communities as possible to diversify our respondents, especially when respondents in one community offered highly consistent information. In our pilot survey, we found that a community shared similar opinion developed from collective activities (e.g., community organized protests, or negotiations with the project team) related to the project. Community members' similar descriptions of project impacts can lead to analytical bias that amplifies certain issues and shields other ones. The main drawback of the sampling strategy is that it leaves out the affected communities that were relocated to areas remote from the line. This leads to uncontrollable sampling bias since the total number of relocated communities is unattainable.

Table 6 Basic information on survey sites and effective questionnaires

Province	City	2010 GDP Per Capita (yuan) [a]	Level of urbanization [b]	Effective questionnaires (number (%))	Gender (number (%))
Hubei	Wuhan	58961	N/A	83 (23.0)	
	Xianning	21129	N/A	54 (15.0)	Male
Hunan	Changsha	66464	62.6%	40 (11.1)	191 (52.9)
	Hengyang	20419	43.1%	56 (15.5)	Female
Guangdong	Guangzhou	87458	82.5%	68 (18.8)	170 (47.1)
	Qingyuan	29487	34.9%	60 (16.6)	
Total number of usable questionnaires				361 (100.0)	

[a,b] Data source: the 2011 Statistical Yearbook of Hubei, Hunan, and Guangdong provinces.

Data collection and analysis

The questionnaire was modified with the feedback from five Chinese experts who have survey experience, and improved with a pilot survey in a neighboring community of Beijing South Railway Station. The final version of the questionnaire is available upon request. The questionnaire aims at gathering six categories of information.

1. Information on respondents' attitude and opinions towards the project itself and public participation;
2. Information on respondents' knowledge of EIA and institutional channels for participation as well as knowledge about environmental impacts and protection measures of the project;
3. Information on respondents' perceived impact of the project and perceived barriers to participation;

4. Information on respondents' actual experience of participation in EIA for Wu-Guang HSR, including at which stage and through which channel they learned about the project;
5. Information on their preferred approaches of participation; and
6. Demographic information such as place of residence, gender, age, and profession.

Comparing with "attitude", it is more difficult to operationalize the concept "capacity". Although Habermas's theory of communication has been applied in assessing communicative competence in public participation in environmental decision making (Webler, 1995), issues such as how cognitive and linguistic competencies are measured and how they affect public participation remain to be clarified (Palerm, 2000). The less problematic indicator we adopted is the knowledge needed for citizens to understand their roles and make claims, including EIA regulations and the scope and nature of impacts brought about by projects.

We administered a semi-structured questionnaire at the chosen sites along the railway line from the 20th to the 30th of October, 2011. Considering that some citizens may be illiterate, we administered the survey in the form of interview and wrote down the answers for our respondents unless they stated their preference of filling in the questionnaire by themselves. We began our survey by asking "how do you think the project affected your life and the environment?" Many citizens were skeptical and declined our request. Most respondents agreed to talk to us only when they were assured that their names would not be asked. Thirty-eight respondents offered in-depth description regarding their interactions with contractors and relevant governmental agencies because of issues raised during the project process. Among them, three were members of local village committee and one was the director of a high school adjacent to the line. We recorded these stories as contextual information that helped us better understand the respondents' answers. To overcome the difficulties of communicating in local dialects, we were assisted by three to four graduate students of local origin in each province who had survey experience. We paired with local assistants in conducting the survey, discussed our experience, and wrote down individual research memos at the end of each day. Therefore, at each site, we were able to compare memos from five interviewers to find key themes and elements of respondents' answers, which enhanced internal validity.

A total of 361 usable questionnaires were collected (see Table 6) and analyzed with SPSS.

Results

In this section, we present the public's attitude towards participation in public projects, their perception and knowledge that indicate the capacity of participation in public projects, their experience with public participation in public projects, as well as regional difference and preferred participation approaches that has implications for practice.

Attitude

We explicitly asked the respondents' attitude towards Wu-Guang HSR when they heard of it in the first time (see Table 7). About half of the respondents (53%) expressed that they supported the project. About one third of the respondents (32.1%) were indifferent to the project, and 42 of them provided answers when being asked why. Most of them thought that it was a national policy on which they had no influence or it was the government's business. To some extent, these responses reflected the passive attitude of the respondents towards public participation in public projects, showing that the respondents alienated themselves from development projects.

When being asked about the opinions about public participation in the project, 66.8% of the respondents thought that the public should participate in EIA and 66.2% of the respondents expressed their willingness to participate when being offered a hypothetical scenario of a new project to be built in the neighborhood. The public was skeptical of the efficacy of public participation though, as 60.7% of the respondents stated that it was difficult for public opinion to influence project decisions. Eighty-five respondents (23.5%) expressed that they did not know how to participate. Half of the 24 respondents who chose "other" explained that they did not want to participate, think of participating, or have the courage to participate. Six of them said that they did not have sufficient knowledge and could not communicate clearly.

Table 7 The public's attitude towards and opinions about public participation in the project

Question	Choices	Number of respondents	%
What was your attitude towards the project when you first heard of it?	Support	191	53.4
	Oppose	52	14.5
	Don't care	115	32.1
How do you think about public participation in environmental impact assessment?	The public should participate	241	66.9
	It has nothing to do with the public	82	22.8
	The public lacks domain knowledge about the project, and thus won't be helpful to EIA	37	10.3
Are you willing to participate in EIA in the future?	Willing to participate	239	66.2
	Not willing to participate	51	14.1
	Indifferent	71	19.7
In your opinion, what is the largest barrier for the public to participate in EIA?	Public opinion won't have any influence on decision making	219	60.7
	Don't know how to participate	85	23.5
	No barrier	30	8.3
	Other	24	6.6
	I do not know	15	4.2

Capacity

The respondents showed limited knowledge about EIA, let alone their right to participate. When being asked "have you heard of Environmental Impact Assessment", the majority of them (81.2%) responded that they never heard of the term (Table 8). We deliberately kept the original term in the question to test the dissemination of the policy. We then further explained this policy details including public participation, to test the dissemination of the policy concept. Their responses remained the same after our explanation, indicating a low level of dissemination of both policy terms and concepts.

The respondents' knowledge about proper environmental protection measures was low and took the conventional measures that provided little protection for granted. A total of 118 (32.8%) respondents expressed that they did not know whether the construction management had taken environmental protection measures; 59 (16.4%) confirmed that environmental protection was offered. However, when being asked about specific measures such as construction fences and dust control measures (e.g., watering sprays), all of them reported no

construction fences; one community reported watering sprays were implemented after they complained. This indicates that their knowledge regarding what measures should be offered was limited.

The most striking results were answers to the question asking through which channels the respondent would reflect their opinions (see Table 8). We aimed at assessing respondents' *knowledge* of existing institutional channels to voice their concerns. Instead of directly answering the question, many respondents (46%) reported that they did not want to voice their opinion or never thought about it, which, in fact, reflected their *attitude*. This reaction importantly suggests that when citizens have a passive attitude, they pay little attention to whether institutional channels are available for them to voice their opinions. We decided to incorporate answer choices to reflect actual situation. As high as 21.1% of respondents reported "I did not know". The answer appeared quite frequently and it had vague meanings. For instance, it may reflect an uncertain attitude: whether to reflect their opinions or what to say.

Table 8 Knowledge about public participation in EIA and channels for participation

Question	Choices	Number of respondents	%
Have you heard of Environmental Impact Assessment?	I have never heard of it	293	81.2
	I have heard of it, but do not really understand it	47	13
	I am aware of the general content	19	5.3
	I have a pretty good understanding of it	0	0
	No answer	3	0.8
Through which channels would you reflect your comments or suggestions for the project?	Giving up: my opinion is unlikely to be taken into consideration	121	33.5
	I do not know	76	21.1
	Relevant government authorities (such as the Environmental Protection Agency)	67	18.6
	Never thinking of reflecting my opinion	45	12.5
	Project construction management	44	12.2
	Television, newspapers and other news media, internet	24	6.6
	Other	13	3.6

Table 9 shows the respondents' perception on the environmental impact of the project. It can be seen that respondents complained most about noise and vibration. A total of 112 respondents (31.1%) reported that noise disturbed their sleep and work. Most of the respondents did not know what electro-magnetic effects are, which interviewers often needed to elaborate. Some of them sensed weakened cell phone signals but were unsure about the source of the problem. Seventy-seven respondents mentioned other impacts, among which the top four are relocation and compensation (40 responses), construction waste disposal (15 responses), air pollution and dust during construction (15 responses), and house damage during construction (10 responses).

Table 9 Perceived environmental impacts

Perceived degree of impact	Noise (%)	Vibration (%)	Electro-magnetic (%)	Others
No effect	26.4	37.9	64.8	N/A
Negligible effects	13.9	22.8	12.1	N/A
Tolerable effects	28.6	22.3	11.0	N/A
Effects that affect my daily life	31.1	17.0	12.1	N/A
Total	100.0	100.0	100.0	N/A
Number of respondents	360	359	355	77

Experience

The respondents who lived nearby the line experienced little involvement and were not actively informed and communicated about the project. Table 10 presents the results of the questions regarding the public's actual experience with public participation in EIA. More than 95% of the respondents reported that they neither participated nor heard of other people participating in any form of consultation and communication regarding the project. They learned about the project mainly through personal observation (59.1%) and hearsay (31.1%). Only 10 respondents reported that they were approached by governmental representatives including contractors (state-owned enterprises). More than half of the respondents (66.7%) learned about the project after its construction began. Respondents obviously lacked effective information channels to learn about adverse environmental impacts related to the project, as they reported personal network (i.e., hearsay, 22.9%) as the main channel and mass media as the minor one (6.6%).

Table 10 Experience of public participation in EIA

Question	Choices	Number of respondents	%
In which stage of the project did you hear of Wu-Guang HSR?	Construction	185	51.3
	Planning	120	33.2
	Operation	56	15.5
Through which of the following methods have you learned about Wu-Guang HSR in your residential area?	Personal observation	194	59.1
	Hearsay	102	31.1
	Newspaper/Magazines/Internet	33	10.1
	Community bulletin board/ leaflets	21	6.4
	Government representatives	10	3
	Project forum/hearings	4	1.2
	Questionnaires	0	0
	Others	14	4.3
Were you involved in Wu-Guang HSR 's environmental impact assessment?	No	346	96.1
	Yes	14	3.9
Have you heard of other people participating in the assessment?	No	279	95.2
	Yes	14	4.8
In addition to your personal observations, where have you learned about the adverse environmental impacts of Wu-Guang HSR? (multiple choices)	Personal observation	262	72.6
	Hearsay	83	22.9
	News media/Internet	24	6.6

Regional differences

Regional differences in respondents' capacity, attitude, experience and preferred participation approaches are tested (see Table 11). The results indicate that *capacity* and *attitude* are significantly different ($p < 0.05$) among respondents in different regions, and that experience significantly differs among regions as well. This indicates that even for the same public project, local variances exist. The interviewees from four of the six cities we visited reported perceived corruption, three cities reported violent suppression, and two cities existed serious unresolved issues regarding relocation. In addition, in some rural areas, internet access was not available and access to information was very limited. This indicates local governments play a critical role in handling project impacts on citizens' lives.

In addition, analysis shows that the respondents' capacity and attitude differ significantly with age, education, and profession. Figure 8 and 9 visualize the strong correlation between age and attitude and that between age and capability[41]. Younger respondents expressed stronger willingness and were more capable to participate in public projects. They were less likely to give up their voices and more knowledgeable about EIA. In general, the respondents possessed limited knowledge about environmental protection, but younger ones had a stronger tendency of using conventional news media and internet to acquire information. In addition, there was a strong negative correlation between age and education measured with Pearson correlation (-0.530, $p<.01$, N=358), which indicates the younger respondents were more educated.

[41] We selected one question choice from each question in the test because all choices in the same questions tend to have strong correlations.

Table 11 Regional differences in experience, capacity, attitude, and preferred participation approaches

Var.	Simplified questions and choices		Region	Age	Edu.	Pro.
Experience	Stages of hearing about the project	Project planning stage	**			**
	Channels of project information	News media/Magazines/Internet	**		***	***
		Community bulletin board/leaflets	*			
		Project forum/hearings				
		Government representatives				
		Hearsay				
		Personal observation				
	EIA participation	Personal participation				
		Hearsay about participation	*			
	Channels of learning about environmental impacts	News media/Internet		***	***	***
		Hearsay				
		Personal observation	**			
Capacity	Understanding of EIA	Awareness of the general content/or having heard of it	***	*	***	**
	Noise/Vibration/ Electro-magnetic	Negligible effects, or no effect on my life	***			*
Capacity/attitude	Environmental protection	I do not know	*	*	*	
	Channels of reflecting opinions	Relevant government authorities	**			
		Project construction management	***			
		News media	*	***	***	***
		I do not know	***			
		Giving up reflecting opinions	***	*	*	*
		Never thinking of reflecting my opinion	**			
Attitude	Attitude to support or oppose the project	Not mattering	***			
	Perceived barriers	No knowledge regarding how to participate	***			*
		Difficulty for public opinion to play a significant role	**			
		No barrier				*
		I do not know				
		Others	***			
	Value position of participation	Yes	*	*	*	*
	Willingness for participation	Yes	***	*	*	*
Preferred approaches	Preferred approaches	Providing basic project information				
		Questionnaires or interviews	*			
		Seminars or hearings	*			*
		Providing channels				
		Project website				

Var.	Simplified questions and choices	Region	Age	Edu.	Pro.
	Not mattering				

Note: Significance level (two tailed): * p< .05; ** p<.01; *** p<.001; Edu.= Education; Pro. = Profession.

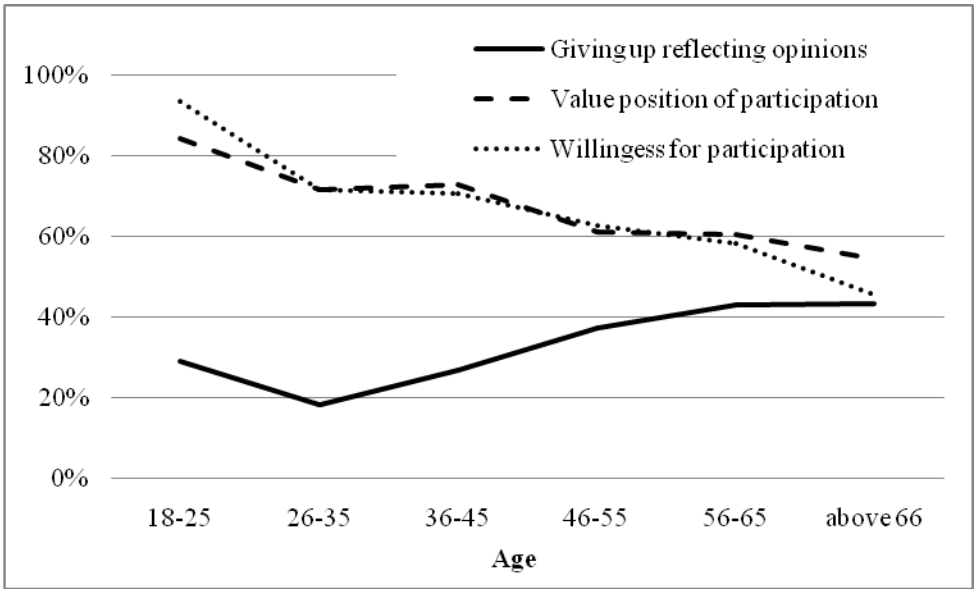

Figure 8 The relationship between attitude and age

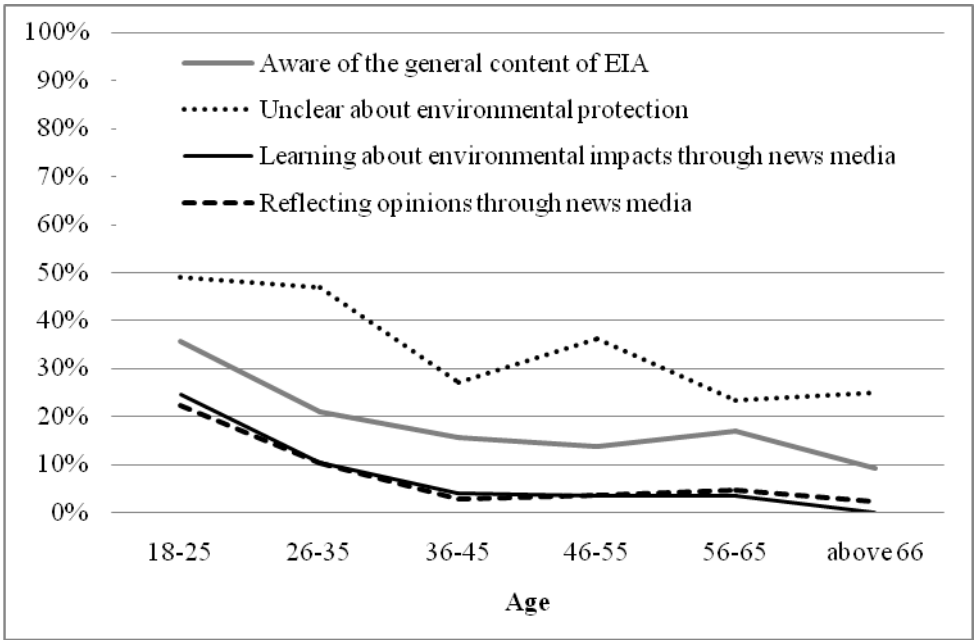

Figure 9 The relationship between capacity and age

Preferred participation approaches

The most favored approach of public participation is seminars or hearings (43.1%) and the second one is face-to-face questionnaire surveys or interviews (32.6%). These respondents emphasized that they wanted to keep anonymous in the participation so that they would feel safe. They indicated that face-to-face surveys like the one we administered allowed them to examine our intention and identity and to ask clarification questions so that they felt comfortable to answer. Although the question design opened to local approaches that were not listed in EIA policies, only a few respondents (5.2%) mentioned it, which was participating through collective units they worked for. We think this indicates a decline of traditional communication and decision-making model, reflecting a social value shift (Tang et al., 2008). Individuals increasingly want to participate personally and have their own voice (with the protection of identity).

Discussion

Citizens' attitude towards and capacity of participation in public projects under the EIA framework essentially determines whether public participation can generate positive and desired results. For example, at the scoping stage, it helps identify potential environmental impacts and establish shared objectives for EIA preparation so that it directs limited time and resources to the collection of meaningful information and analysis (Wood, 2003a). At the stage of project planning and design, it helps recognize socially acceptable and more sustainable solutions to environmental damages and communities' needs and minimize conflicts and delays (Doelle & Sinclair, 2006). It also helps facilitate the implementation of environmental protection and monitoring strategies at lower costs comparing with external enforcement and monitoring (Noble, 2009) at the stage of project construction and operation.

However, none of these desirable outcomes can be achieved without citizens' active and cooperative engagement underpinned by their awareness of the right, their knowledge of the role, and their confidence in the process. Therefore, it is important to assess citizens' attitude towards and capacity of public participation and identify main barriers to participation in order to formulate proper strategies to realize genuine public engagement.

Our case study shows that the majority of the respondents possessed little knowledge regarding EIA policies, let alone their right and role in participating in EIA. They also knew little about proper environmental protection measures such as construction fens. Additionally, they had limited channels to learn about adverse environmental impacts of projects. Most of them perceived environmental impacts caused by the project only through direct experience rather than educated and deliberate observations. Environmental impacts that less directly affect daily life or are with less explicit causal-effect relations (e.g., electro-magnetic effects, interrupted natural water supply, and lose of trees and arable lands) were largely left unmentioned. This indicates a low level of capacity that hindered the public from perceiving environmental consequences caused by public projects including impacts on their quality and security of lives in both short and long terms.

Moreover, one third of respondents saw themselves having nothing to do with project decisions (22.8%, Table 2) or unable to contribute (10.3%, Table 2), demonstrating a relatively passive attitude. Many respondents repeatedly said that "it was useless" to express their opinions in EIA processes and "my opinion is unlikely to be taken into consideration" (60.7%, Table 2), showing a low level of confidence in the process. In addition, because the projects were national policies, some respondents reflected that opposition was unthinkable.

Our case study observes that the two perspectives (i.e., attitude and capacity) interact to some degree. When being asked the question through which channels the respondent would reflect their opinions (Table 4), the respondents who gave up voicing their concerns appeared not to pay much attention to whether there were institutional channels available for them to communicate with the authority. In a similar vein, they are unlikely to actively acquire information or knowledge regarding EIA or public participation. On the other hand, those who have only limited understanding regarding project impacts and meanings of public participation are unlikely to sense the necessity of requesting it or investing time and resources in it.

Fortunately, the attitude of respondents towards participating in project decision-making was largely supportive and positive. Many respondents supported public projects (53.4%, Table 2) because they believed that the projects promoted economic development and great convenience. The fact that most respondents believed that the public should participate (66.9%) indicate an increasing awareness of citizens' right in public projects. The positive value position is a fundamental social cognition favorable to actions of participation. Additionally, the strong correlation between age, attitude, and capacity as well as the negative correlation between age and education implies that younger generation has received better education and formulated more positive attitude towards participation in public projects. This may also indicate that their voice can no longer be ignored by the responsible authority in the future.

The case study also observes regional differences in terms of attitude, capacity, and experience. The respondents who reported issues regarding threats and unresolved compensation and relocation were concentrated in two of the three provinces (i.e., Hunan and Hubei) in our case study. This can be explained by the Chinese government system in which local governments are in charge of social impacts brought about by public projects (e.g., relocation and land acquisition) even when the projects are delivered by the higher level of government (Cao, 2011). Local governments can use different approaches to handle social impacts but they would be punished if oppositions are organized and draw national attention. Therefore, how local governments handle these impacts is a manifest of the relationship between local governments and the public. This indicates an area worthy of further studying in order to motivate local governments to build a cooperative relationship with citizens.

The study identified several prevalent barriers to participation that need to be addressed before meaningful public involvement can take place. Conventional practices and cultural norms the respondents experienced critically influence their attitude and capacity. Existing channels for public participation were lacking and EIA related information was not available for the public. The residents who were directly affected by the project were not properly informed and communicated. Based on our 38 interviews, six years after the project's construction started, unresolved issues such as relocation and damages of houses caused by construction were reported along with suppressions, threats, and low levels of compensation due to perceived corruption. If taking into account many affected citizens who shunned away from our interviews, the level of feeling comfortable and safe to express oneself was quite low. The concerns that silenced their voices were unknown but surely would stop them from voluntary and active participation.

Finally, the finding that most respondents preferred participation through public hearings or questionnaires administered in person signifies that citizens preferred bi-directional communication. Some respondents pointed out that they would like to be able to quickly get doubts clarified and ask questions when they arise.

Conclusion

This study has unpacked the issues of nonparticipation in the context of public projects in China by focusing on the *attitude* and *capacity* of the citizens who experienced the impacts brought about by Wu-Guang HSR. It combines interviews with questionnaires administered in person to enhance our understanding of respondent's answers to the questionnaire and assist our interpretation of the results. Despite certain sampling constraints, the approach permits field observations of environmental impacts of the project and citizens' attitude towards open discussions regarding the project.

The case study has shown that there are multiple interrelated factors behind citizens' nonparticipation in public projects in China. Public projects, especially large-scale infrastructure projects like high-speed railways, are state-owned, operated, or invested. The long history of government involvement and dominance has led to a weak social voice and rendered public participation a revolutionary idea to both the governmental authorities and the public. Due to the fact that some factors are deeply rooted in cultural norms, it is still a long way to go before meaningful public participation taking place in this sector.

Although as literature suggests, some respondents reflected that participating in or opposing to government-owned projects was unthinkable, they were not majority. Two main concerns captured in the study are a sense of security (i.e., anonymous participation or interviews and being in groups and public hearings) and significance (their opinions being listened to by the responsible agencies and being able to play a relevant role). This has important implications for government authorities.

The authorities need to demonstrate credible commitment to public participation in public projects, which helps to build citizens' confidence in the process. Moreover, providing the citizens a sense of significance and the perception of efficacy through mutual communication (Kollock, 1998) or fair processes (Smith & McDonough, 2001) can motivate active participation and collective problem solving and monitoring. As our study shows, public hearings and questionnaires administered in person are preferred channels through which Chinese governments, project authorities, and citizens can establish cooperative relationships and trust by face-to-face interactions.

In addition, although there are good intentions in authorizing local governments to handle social impacts, the responsible authority of public projects cannot be released from its social responsibility. Particularly, relocation and compensation that directly affect citizens' livelihood stir strong reactions that demand immediate responses from relevant agencies. As stated in the recent government regulation "Emergency notification of the State Council on furthering strict land acquisition and demolition work and earnestly safeguarding the legitimate rights and interests of the masses" (issued in May 2010), the increasing number of oppositions and conflicts due to land acquisition and relocations has threatened social stability. Follow-up on critical social impacts and how compensations and relocations are carried out should be implemented. Moreover, the government and professionals should pay more attention to exploiting potential benefits of social impacts rather than merely to the difficulties and costs associated to social impacts. Social impacts, if handled well, can generate positive outcomes including community development, capacity building, increase in equity, and poverty reduction (Vanclay, 2003).

The government should recognize that when new regulations and policies are enacted, a necessary understanding does not spontaneously take place. A systematic education and dissemination of information must be implemented not only focusing on the governmental officials but also the public in order to form a social consensus. Fortunately, the study has observed that younger generations are generally better educated and more

capable of using information technology in acquiring information and communicating with the wider society. A deeper transformation in terms of a perception of citizens' role and an understanding of the meaning and goal of public participation could be achieved through China's thriving education system.

CHAPTER 5: GENDER INEQUALITY IN A TRANSITIONING CHINA: A MULTI-LEVEL INSTITUTIONAL EXPLORATION

By Chenni Xu and Cheryl S.F. Chi

Abstract

Although China's regulations and white paper promulgated by the central government acknowledge and discourage gender inequality, there is a lack of a cultural-normative mindset in place to implement these regulations. High levels of non-participation in EIA processes by rural women are emblematic of overall levels of non-participation and lack of equal access to decision-making processes. Explorative research was conducted beginning at the family level using a semi-structured interview design containing indicators derived from the literature. Fifty-five interviews in rural and urban areas give rise to rationales that inter-connect the four institutional layers of family, community, market and government, and uncover underlying mechanisms that perpetuate gender inequality in China.

Introduction

More than a decade and a half after the United Nations' Fourth World Conference on Women, held in Beijing to address the obstacles to the advancement of women worldwide, women in China are facing widening gaps between what they and their male peers can achieve in the current market economy. Although women enjoyed comparatively equal rights during the Mao or pre-reform era (1949-1976) as bestowed by the central government, the current rapid economic growth has exacerbated the inequality between women and men. In pre-reform China, the average female salary was 83 percent of a male salary, surpassing many current Western female-to-male earning ratios (Razavi 2007). In the Third Survey of the Social Status of Women in China conducted in 2010, women's average annual income was found to be 67.3 percent of men's in urban areas, and 56 percent of men's in rural areas. Chinese women are receiving a shrinking share of income as the economy grows.

While China's economic growth and rapid urbanization have captured numerous headlines, the environmental costs of the country's historic growth are becoming harder to ignore. Severe air, water and land pollution, the loss of arable land due to industrial expansion, and improper waste management are just some of the issues with which China must now contend (World Bank 2012). Public dissatisfaction is also growing, especially at local authorities' ineffectiveness at addressing these environmental problems. As public frustration with environmental degradation grows, many young Chinese are beginning to recognize that solutions will need to come through collaboration between the private and the public sectors, between citizens and the elite.

Gender inequality in China cannot be separated from rapid economic transition and industrial development. The forces of rapid economic development have both exacerbated and mediated existing gender hierarchies. Chinese society is traditionally agrarian, but rapid industrialization over the past few decades has unleashed a wave of rural to urban migration and individuals, the majority of whom are men, continue to leave their rural villages at astonishing rates in search of economic opportunities in larger cities. These opportunities include working in the manufacturing, construction and service industries. Indeed, this year was the first year in which China's urban population exceeded its rural counterparts, and the World Bank estimates that the share of China's population living in urban areas will climb to nearly 75% by 2030. This rural-urban flux has increased rural women's workloads as the men move away leaving them in charge of managing their farms. Today, women make up an estimated 60% of China's agricultural workforce, despite the fact that they receive less technical training from NGOs and have countless other domestic responsibilities to which they must tend.

In the cities, beginning from 1978, a disproportionate number of women were laid-off from State Owned Enterprises (Razavi 2007). The lay-offs affected countless women brought up during the Mao era when they were told, "Women hold up half the sky." The laid-off middle-aged urban women usually returned to the caretaker role, as it was difficult for them to find another job in the new market-oriented system. Post-reform, Chun (1996, 285) noticed, "Women are losing their prior 'preferential treatment' and are increasingly discriminated against, exploited, abused, and even turned into sexual objects," evidence of which can be seen in Internet advertisements and news media.

To be sure, the fact that women entered the workforce did not mean women were equal to men. Women during the Mao era, as now, carried the "double burden" of working outside and within the home. This is "The Engelsian myth," which is "the view that women's empowerment, or emancipation as it used to be called, lies in their incorporation into the paid workforce" (Razavi 2007, 39). We see that the Engelsian myth is simply that – a myth – because pre- and post- reform, Chinese women have performed traditional female roles at home, usually in addition to entering the formal labor market.

Among women's domestic responsibilities in rural and urban areas, to varying degrees, is to raise and educate their children, provide cooked food for the family, obtain the water supply, manage family hygiene, manage waste disposal, and so on. However, women's access to, and knowledge of, these basic living needs and resources are disproportional to their representation in community meetings and in the central and local governments (Murthy 2010). Moreover, women's public participation is an indicator of overall citizenship rights and equality.

Women's political representation is crucial to good governance in the "green economy"; however, women hold only about 18% of legislative seats worldwide. China's central government has acknowledged the importance of gender equality for sustainable development in the 1994 White Paper on China's Agenda 21, which was written in support of the United Nations' Agenda 21 on Sustainable Development set forth in Rio de Janeiro,

Brazil in 1992. However, the reality in China is that parliamentary participation has remained at around 21% since the late 1970s, with no female representation at the topmost level of government. In addition, female officers are by and large at the deputy or secretarial positions.

Although the gendered division of labor in the rural household and women's daily access to basic living needs places them in an ideal position to participate in environmental governance and to teach their offspring this knowledge, women are at a disadvantage in terms of being trained and having their voices heard in participatory meetings. Yet, due to their lack of access to representational and leadership positions in the central and local governments, women in China are by and large left out of the decision making mechanism of environmental governance, although they remain one of the most vulnerable and affected groups.

China's 1994 White Paper promised to work towards increasing women's participation in sustainable development, while firstly acknowledging the "social discrimination and prejudice against women" including "the difficulty of female employment, unequal employment opportunities for men and women, violence against women," etc. Furthermore, the Paper explicitly states the "dual task of social production and reproduction" as a burden of especially rural women. A progressive document, China's Agenda 21 hews closely to international standards of gender equality; yet, at the same time, it is illustrative of how far China still needs to go in terms of achieving gender equality.

Post-reform, the state, lacking a comprehensive social welfare system, has reinforced popular Confucian ethics, especially those of filial piety and the female caretaker, as a way to maintain a stable social structure and place the burden of welfare onto the family – and therefore, onto women (Cook and Dong 2011). Strictly defined, binary gender roles based on hierarchical dualism (e.g. men are rational; women are emotional; men are decision-makers, women are caretakers, etc.) were revived and encouraged by the state in order to maintain familial, community, workplace, and government stability in the new market-oriented economy.

Prior studies

Prior studies on gender and development in China mostly focus on explaining traditional gender inequality from a historical perspective (Gulliver 2012); explaining gender gaps using large-scale surveys (China's National Bureau of Statistics, the All-China Women's Federation); and assessing the current status of gender hierarchy and related practices, such as women's political participation (Zheng et. al. 2009), citizenship rights (Chun 1996), unpaid care work and social welfare (Razavi 2011, Cook and Dong 2011), son preference (Eklund 2011), female rural-to-urban migration (Gaetano and Jacka 2004), modern factory life (Ngai 2005), etc. However, the underlying mechanism that reinforces gender hierarchies and inequality in China has not been studied sufficiently.

Identifying and exploring the mechanism is crucial for us to understand the striking resilience and persistence of the patriarchal and patrilineal elements and their revival after the Mao era. Specifically, we wish to explore the following question: How do cultural and normative forces underlying China's gender inequality interact across institutional levels to reinforce and perpetuate the inequality even when the country's regulations and white paper (China's Agenda 21, 1994) promulgated by the central government acknowledge and discourage gender inequality? Identifying these mutual mechanisms enables us to discuss possible policies and actors at each level that can enable change towards a more equitable and healthier society. It also helps to understand how China's rapid economic development affects entrenched gender hierarchies.

Gender and Development through an institutional lens

Contemporary gender and development analysis points out the political nature of gender relations and postulates that the social relations of gender are dominated by male interests and are maintained, at root, coercively (Kabeer 1999). That is to say, gender relations are power relations, and gender is a social relation constructed via cultural norms – for example, an assigned role as a supplementary, rather than principal, wage earner (Cornwall 1997, Rathgeber 1989). In this paper, we view gender as a social relation that is constructed via norms or socially assigned roles, especially binary gender roles based on biological natures that dictate social behavior and leaves little room for interpretation (James 1997).

Social roles are more than social expectations. They are prescriptions of "how specified actors are supposed to behave" (Scott 2008: 55), i.e. a prescription of appropriateness. Social roles rest on social obligations and values, which specify desirable goals and legitimate means to achieve these goals (Scott 2008). From this institutional perspective, gender is only one of multiple social relations an individual possesses. Individuals are embedded in layered social groups at different and inextricable institutional domains (e.g. family, workplace, and government), each of which assigns a social role that embodies different logics of appropriateness (Padgett and McLean 2006). Thus, gender roles and hierarchies can be seen as being embedded in various institutional levels, or layers. The interaction pattern among the layers is manifold and mutually reinforcing.

The Social Relations framework

Kabeer (1994), in the Social Relations Framework, depicts the four institutional levels on which inequalities are reproduced as family and kinship, community, market, and the state. This framework is the basis of our institutional analysis. Institutions are distinct frameworks of rules for doing things, and organizations are the structural forms that institutions take. Institutions include laws, norms, and cultural beliefs and are deeply rooted in a society through activities, social obligations, values, and incentives that provide stability and meaning to everyday life (Scott 2008). Using institutional theory as a lens for viewing various types of gender inequality, we see that cultural beliefs underlie gender inequality in China through the construction of specific gender roles that give "stability and meaning to everyday life."

The Social Relations Framework argues that institutions ensure the production, reinforcement and reproduction of social relations, and, thereby, social differences and inequality. As Table 12 presents, for each layer, gender inequality can be assessed by using different quantitative indicators based on women's control of key aspects of their lives. Indeed, gender equality is the fulfillment of these indicators, while gender inequality is the absence of these indicators (with the exception of the devaluation of women).

Specifically, Kishor (1997) defines *financial autonomy in marriage* as "a married woman who currently controls her earnings, or her earnings as a share of household income." *Reported sharing of decision-making* is measured by egalitarian decision-making (i.e. an equal say in decision-making), and similarly, *reported sharing of household responsibility* is measured by the egalitarian division of household labor (i.e., equal sharing of household workloads). Although some may contend that "egalitarian" means when both partners agree to a certain system of household labor sharing or decision-making, this definition can be misleading because it is difficult to ascertain whether one partner is making a choice which undermines their own well-being. Kabeer (1999: 441) reminds us: "The notion of power is a controversial one because it allows for the possibility that

power and dominance can operate through consent and complicity as well as through coercion and conflict." The *devaluation of women* is measured by reports of domestic violence. These indicators have been usefully applied in analyzing women's control over key aspects of their lives by Kabeer (1999). We include the indicator of *public participation* because we see participatory rights as emblematic of women's citizenship rights. By "reclaiming and constructing genuine citizenship," women are at the forefront of reclaiming true citizenship rights (Chun 1996, 284). We define *autonomy within marriage* by the existence of and time for friends after marriage.

Table 12 Indicators of gender inequality in China (Based on Kabeer 1994)

SRF* Institutional Levels	Indicators	Definition or examples of indicator
State	Regulations and Laws	1) One-Child Policy
		2) The Marriage Law (1950); 2011 amendment regarding real estate ownership in divorce
		3) Labor and Employment Laws
Market	Discriminatory hiring and payment practices	Hiring rate of women; treatment during and post-maternity leave; compensation as compared to men
Community	Autonomy after marriage	Measured by existence or time for friends
	Public Participation	Measured by who attends community meetings
Family and Kinship	Financial autonomy in marriage	A married woman who currently controls her earnings; or her earnings are a share of household income
	Reported sharing of decision-making	Measured by egalitarian decision-making
	Reported sharing of household responsibilities	Measured by egalitarian division of household labor
	Devaluation of women	Measured by reports of domestic violence

*Social Relations Framework

The approach of the study

The idea presented here emerged from a field study of how gender hierarchies affect family relationships in China based on the aforementioned theoretical framework (i.e., institutional theory, social relations framework, and forces of rapid economic development). We were interested in not just how husbands and wives interact within households, but in the forces of gender hierarchies outside of households that shape their actions and choices, and how they perceive, interpret, and respond to these forces. Since prior studies providing explanations from macro-historical, economic or social perspectives rarely attend to the issues from the micro-individual level, we chose an exploratory approach to allow the unanticipated discovering and the identification of underlying mechanisms.

In particular, we paid special attention to language, a fundamental carrier of social norms and codes of conduct. Traditional Chinese notions of gender roles such as femininity and masculinity appear first in the family: for example, men who have been told since they were young to take on the primary breadwinner role may find it difficult or unsatisfying to have a fulfilling life under these expectations. Gender roles are assigned to boys and

girls from a young age, as there is a strict sense of what constitutes masculinity and femininity. These gender roles are ingrained in the spoken and written language.

Cultural Scripts

Language is the tool we use for communication. It also mirrors the perceptions that persist in a culture. Bansal and Penner (2002) explain that although the reality that individuals confront may be the same, individuals may construct issues in different ways by forming cognitive categories which they then use as a mental shorthand to make sense of their environment. Over time, these individual labels or cues become the unimpeachable basis for evaluating or interpreting an issue.

Kabeer (1999) explains that this kind of labeling can be found in "Bourdieu's (1997) idea of 'doxa' – the aspects of tradition and culture which are so taken-for-granted that they have become naturalized. Doxa refers to traditions and beliefs which exist beyond discourse or argumentation." The discursive output becomes concretized as certain concepts are repeatedly validated.

In spoken and written Mandarin Chinese, interviewees used traditional sayings in their speech such as, "Men belong in the public life and women belong at home, 男主外，女主内, *nanzhuwai, nüzhunei*"; "Having a son will help support one's old age, 养儿防老, *yangerfanglao*"; and "Value the male and disdain the female (i.e. in instances of son preference), 重男轻女, *zhongnanqingnü*." In China, traditional patriarchal attitudes such as the above are circulated in the daily conversations of members of the family and community, and are evident in actions such as son preference and discriminatory hiring and payment practices (Lu 2009).

Research methods

Overview

In October 2011, the first author, along with field assistants who were familiar with local dialects, conducted 30 open-ended interviews with persons who lived along the Wuhan to Guangzhou ("Wu-Guang") High Speed Railway, focusing on how gender hierarchies affect familial relationships in contemporary China. Initially, we used the qualitative data analysis software tool *Nvivo*, which allows highly iterative coding of interview data and cross comparison between multiple sources of data, to parse through the 30 rural interviews. In addition to the indicators suggested by Social Relations Framework, several repeated and mutually related themes emerged.

We presented the preliminary results and themes in an international workshop comprising 12 experts in development policy related areas in March 2012, soliciting feedback and suggestions. The main issue raised was that, although the emerged themes revealed interconnection among indicators and different institutional levels, more data was necessary to test how the interconnection works. Mega-cities like Beijing and Shanghai, where China's economic transition is most salient, provide valuable comparisons.

As a result, we moved on to initiate the second round of data collection and to focus on identifying the interaction and mutual reinforcement mechanisms among different institutional levels from interviewees' causal rationales. These mutual reinforcement mechanisms perpetuate gender hierarchies and are at the crux of our discussion.

Interview Design

Data was collected from three main sources: semi-structured open-ended interviews, observation, and secondary archival data. The first author, along with field assistants who were familiar with local dialects, conducted a total of 30 open-ended interviews (each lasting 30-60 minutes) in Mandarin with rural communities who lived within 50 – 200 meters of the Wu-Guang High Speed Rail in Hubei, Hunan, and Guangdong provinces of China in October 2011. The first author and her assistants took turns being questioner and note taker (i.e., in instances where the local dialect was a hindrance, the assistants asked the questions and interpreted answers, while the first author took notes and asked further questions in Mandarin, which is generally understood by most Chinese). The first author conducted a total of 25 interviews both on her own and with an assistant (each lasting 15-120 minutes) with urban interviewees in a residential community near Tsinghua University as well as with young professionals in Beijing municipality, in April 2012.

To take the factor of rapid market-oriented reform into account, locations were selected based on contrasting GDP levels. We define "urban" as a "first-tier city" in China, which is generally agreed to be Beijing, Shanghai, Guangzhou, and Shenzhen. "Rural" is defined in contrast to the above definition in this paper. Two provincial capitals (Wuhan and Changsha), which are categorized by the Chinese government as "second-tier cities," were visited and interviews in both locations were conducted on the rural-urban fringe (near the "Wu-Guang" High Speed Railway). We conducted urban interviews in Beijing municipality. The two sets of samples have intra- and inter- variation in terms of age, gender, geographic location, and educational attainment.

This design allows us to distinguish regional differences and effects of the level of economic development in China. We began our interviews with a semi-structured template based on related literature, and then opened it up to free exploration. In our conversations, we asked interviewees to give rationales for their answers and explain the interactions and trade-offs made with their partners in order to gauge their prescription of social norms. This exploratory method provides a level of in-depth information that more general survey methods on large samples cannot attain, and offers the prospect of new insights and voices to be heard. Table 13 presents an overview of the interview cites and data.

Table 13 Provincial and interview data

Province	City	GDP Per Capita 2010 (RMB)	Interviews	Women	Men	Range of age
Hubei	Wuhan	58,961	4	3	1	
	Xianning	21,129	9	7	2	
Hunan	Changsha	66,464	6	4	2	20-82
	Hengyang	20,419	7	4	3	
Guangdong	Qingyuan	29,487	4	2	2	
Beijing Municipality		78,194	25	13	12	19-75
		TOTAL	55	33	22	

Data collection

Handwritten transcripts were made during each interview; no interviews were tape-recorded. At the end of each day during the rural field study trip, the first author transcribed interviews into English and kept field notes about the day's interviews, and then discussed the day's work with the second author. Questions were slightly modified

based on the data collected, in order to take advantage of the uniqueness of our cases and allow for the emergence of new themes (Eisenhardt 1989). A natural "saturation" method was used, where the number and variety of interviewees were decided by whether or not adding new interviewees to the study would generate new information (Glaser and Strauss 1967). At the same time, it permitted control over a more balanced sample across different age, gender and educational groups. In Beijing, interviews were transcribed into English and field notes were written immediately after they were conducted.

Data Analysis

We read the transcripts repeatedly, produced minutes about key indicators, how the interviewees perceived gender hierarchies, and their rationales. We discussed these minutes multiple times and distinguished quantifiable outcome of indicators and descriptive rationales, in order to avoid our own interpretive bias or missing themes. Relevant secondary data and research reports were also collected as supplementary materials to validate our analysis.

The analysis presented here was focused on the levels of family and kinship and the community using Kishor's (1997) quantitative indicators of *financial autonomy within marriage*, *reported sharing of decision-making*, *reported sharing of household responsibility*, and *devaluation of women*. On the community level, *autonomy within marriage* and *public participation* indicate levels of gender inequality. Each interviewee was asked to give an answer to the above indicators and corresponding rationales. Indicators at the other two institutional levels (market and state) emerged from interviews.

Results

Descriptive Statistics

In our comparison between rural and urban interviews, we sought to ascertain whether and how rapid development in China has influenced gender structures.

In terms of **financial autonomy**, *as measured by the number of combined incomes*, the prevalence (85%) of combined incomes in rural households is due to financial need and number of family members in the households; in contrast, only half of urban interviewees reported combined incomes (see Table 14). When asked about the number of family members in their household, rural interviewees would often answer "six" because they include themselves and their partner, a set of live-in grandparents, and usually more than one child. In contrast, urban interviewees would include only themselves and their partners, and their child if they have one, thus oftentimes they would answer "three".

Furthermore, female urban interviewees were graduate students or working professionals in the public policy, architecture, interior design, law, teaching, and marketing fields. These urban women have control over an independent, steady source of income, as their employers directly deposit salaries into individual bank accounts. Thus, it seems unnecessary, and indeed, cumbersome, to set up a joint bank account with one's spouse, when the couple can simply pool together funding for a big expense. The modern finance-based economy and urban women's financial independence dictate that incomes are naturally not combined at marriage. A new figure emerged in the urban data as 16% of interviewees reported separate and joint accounts with their spouses.

Table 14 Descriptive statistics of key indicators

		Interviews			
Indicators	**Operational definition**	**Rural**	***%***	**Urban**	***%***
Financial autonomy	**The number of combined incomes**	(N=26)*		(N=25)	
	Combined	22	*85*	13	*52*
	Separate	4	*15*	5	*20*
	Separate + joint accounts	0	*0*	4	*16*
	Cannot foresee	0	*0*	3	*12*
Reported sharing of decision-making	**Egalitarian decision-making**				
	Shared decision-making	9	*35*	23	*92*
	The husband made the decisions	9	*35*	2	*8*
	The wife made the decisions	5	*19*	0	*0*
	Other	3	*12*	0	*0*
Reported sharing of household responsibilities	**Egalitarian division of household labor**				
	The female does more housework	18	*70*	6	*24*
	Equal sharing of household responsibilities	8	*30*	14	*56*
	The male does more housework	0	*0*	4	*16*
	Other	0	*0*	1	*4*
Devaluation of women	**Reports of domestic violence** (male to female or in-laws to female)	5	*N/A*	N/A	*N/A*

* Married informants only

In terms of **reported sharing of decision-making**, *as measured by egalitarian decision-making*, the question we posed was: "Who makes the big decisions, such as those relating to financial disbursements, at home?" In rural households, an equal amount of interviewees reported shared decision-making and dominant decision-making by the husband. By contrast, in urban households, the large majority (92%) reported shared decision-making (see Table 14). This indicator is tightly linked with the next indicator on shared household responsibilities.

When asked about the **sharing of household responsibilities**, 70% of rural interviewees reported that women did the housework, while about half of urban interviewees reported sharing of housework between partners (see Table 14). In rural areas, a few male rural interviewees responded, "Men belong in the public life and women belong at home, 男主外，女主内, *nanzhuwai, nüzhunei*", a well-known, traditional phrase. This sentiment of strictly defined, binary gender roles is supported by data from the Third Survey of the Social Status of Women in China conducted in 2010, which showed that 62 percent of men and 55 percent of women believed that "men belong in the public life and women belong at home," increases of 7.7 and 4.4 percentage points since 2009. The relegation of women to the private sphere reduces their voice in decision-making, delineates the time they need to spend at home, and limits their network.

We can see in Figure 10 that elderly urban male interviewees expressed similar sentiments to rural male interviewees. One elderly male retiree in Beijing said,

> I make all the big financial decisions, and my wife does the housework. All old Beijingers are like this. In my opinion, the female comrades do not have the capacity (潜力, qian li) to explicate differences among complicated social issues because they do not have much exposure to these social issues.

We contrast this with a young urban female professional, who said,

> I envision an equal split in household responsibilities. I think this division is very important in sustaining a relationship. My mom is very traditional and always asks me if I have cleaned my boyfriend's clothing for him. I tell her: he knows how to do the laundry!

The two responses above suggest that the difference in thinking about gender roles lie not with rural or urban differences but rather with generational, and perhaps educational, differences. A new option also emerged in the urban data, as 16% of all urban interviewees report that the male does more housework at home. One male interviewee said,

> I can do more, it's not a problem. Plus, in a relationship these things are a shared responsibility, and both of us are busy, so it's a nice thing to share.

Nevertheless, we found that a majority of interviewees believed in a hierarchal dualism between the sexes. That is, men are seen as rational and better decision-makers, and therefore, better leaders in the workplace; whereas, women are seen as emotional and more 'meticulous,' an adjective we heard often, and therefore, better at childcare and detailed work at the workplace (such as secretarial work).

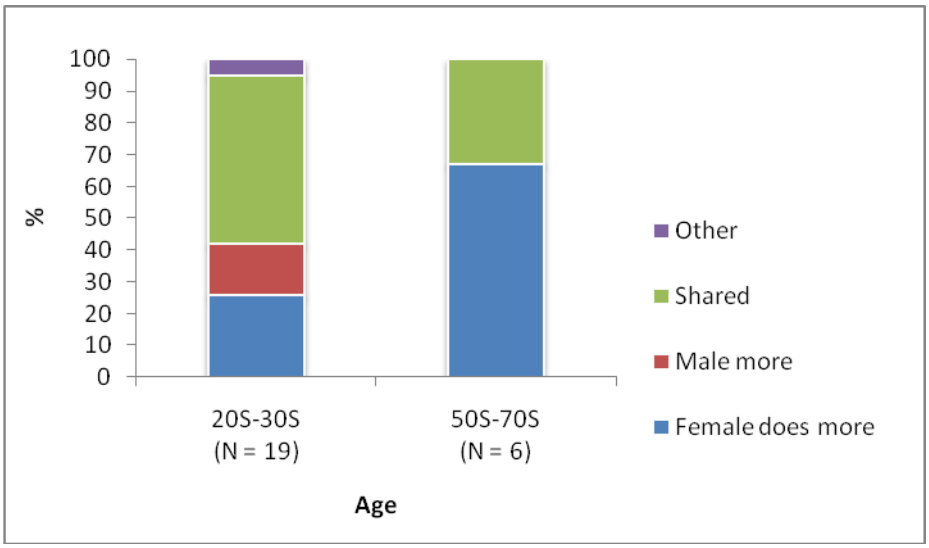

Figure 10 Urban division of household labor

In line with a 2010 All-China Women's Federation survey that found that domestic violence occurs in 30 percent of China's families, with more than 85 percent of the sufferers being women, there were five **reports of domestic violence** out of a total of 26 rural married interviewees (see Table 14). Two were reports of husband-to-wife violence, two were reports of in-law to daughter-in-law violence due to the 'failure' of the wife to produce sons, and one was reported knowledge of male colleagues' treatment of their wives. In Hunan, an ex-army man with a middle school education told us that he often hits his wife (if they argue verbally, she wins; but if they fight physically, then he wins). When we asked him if he felt regretful for beating his wife, he pointedly said, *"No, I*

feel fine." When we asked him what if his wife went to her family to complain, he laughed and responded, *"What good would that do? I can beat up both her father and her brother."* No national laws exist to protect sufferers of domestic violence, and domestic violence is seen as a private issue and a taboo. The lack of awareness about what constitutes domestic violence, along with patriarchal attitudes and the lack of a legal framework for sufferers of domestic violence coalesce to create the current status quo.

In terms of **autonomy within marriage**, *as measured by existence of and time for friends*, we found that in rural households, 72% of married women reported having no friends or no time for friends, while 62% of married men reported that they had friends whom they saw regularly (see Table 15). These included friends with whom they drink or went out, or army buddies. In urban households, by contrast, all interviewees in both genders said they have, or foresaw having, time for their friends after marriage. A new option also emerged in the urban data as married couples reported going out together with mutual friends.

Table 15 Autonomy within marriage between rural and urban informants

		Rural		Urban	
Indicators	**Operational definition**	**Women**	**Men**	**Women**	**Men**
Autonomy within marriage	Existence of and time for friends				
	No	13 (72%)	3 (38%)	0	0
	Yes	5 (28%)	5 (62%)	13 (100%)	12 (100%)

In terms of **public participation,** *as measured by whether men or women attend community meetings*, we found that overall, there was no obvious difference between rural, urban, male and female interviewees (see Table 16). Rather, the interviews reflected an overall high level of non-participation in public meetings in both rural and urban settings. In rural areas, women were least likely to participate due to family priorities and male-dominated participation. We asked rural interviewees who lived along the Wu-Guang High Speed Railway whether they have attended or would attend a hypothetical Environmental Impact Assessment (EIA) community meeting regarding the construction of a large infrastructure project such as the High Speed Railway. We asked urban interviewees whether they have attended or would attend a hypothetical neighborhood meeting regarding the construction of a new subway station near their community. One 44 year-old rural grandmother was illiterate and could not understand any of the brochures relating to community meetings; she was taking care of her grandson when we spoke to her. Another rural woman said, *"My husband goes because I have to feed our children."* A rural man said, *"Mostly the men go. The women do not have experience."* This pair of statements highlights the exacerbation of the lack of female participation as rural women are relegated far into the private sphere. Furthermore, we found in both rural and urban settings, most of the time it was the community leaders, who were usually party members, who attended these meetings. For example, one woman said, *"I don't have the time to go. Also, only the party members go to these meetings."*

Table 16 Public participation between rural and urban informants

		Rural		Urban	
Indicators	**Operational definition**	Women	Men	Women	Men
Public Participation	whether men or women attend community meetings	N = 19	N = 11	N = 13	N = 12
	Go	32%	27%	54%	33%
	Not Go	47%	9%	31%	58%
	No answer	21%	55%	0	0%
	Depends	0	9%	15%	8%
		100%	100%	100%	100%

Findings

Family and Community: Cultural norms

Cultural norms are created and perpetuated within the family and the community. On the family level, economic development has exacerbated the differences between rural and urban interviewees in terms of financial autonomy, sharing of decision-making and sharing of division of household labor. Urban interviewees' tones of speech were active and optimistic: they are aware that they have alternative choices in life. In both indicators of *financial autonomy* and *sharing of household responsibilities*, urban interviewees perceived more options than their rural counterparts. For example, urban women can choose a partner who would share household responsibilities with them, or they can choose to perform traditional female roles of tending to the household while their husband is the primary breadwinner.

Urban women have a higher average income than their rural counterparts, and women's rights are proven to increase as their income rises. Furthermore, these urban women have financial and career plans for their lives and they are empowered, whether by their education or upbringing, to actualize these plans. By contrast, the rural women we interviewed had a much more passive and relenting tone (with the exception of an independently-minded divorced mother of two daughters), and fewer alternatives to choose from. Many tended to a small storefront, some to a family farm, and overall they have a much smaller combined family income. During our rural interviews, which were conducted during the daytime, husbands were rarely at home.

The family and community levels interact most noticeably as the household responsibilities of women affect their time left for friends outside of the family and their ability to participate in public meetings. Among urban interviewees, half of the interviewees share household labor, and all urban interviewees reported having time for their friends outside of the family. In sharp contrast, a majority of female rural interviewees reported that they do not have friends outside of the family or kinship network and/or do not have time to see their friends, either because of their household responsibilities, or because their friends are also married with children. These women's relative isolation from community-level networks renders other options of social activities unthinkable to them because the role prescription at the family level is powerfully dominant.

China's Agenda 21 explicitly states: "To achieve sustainable development objectives, community groups must rely on public support and participation" (20.1), and further, "[China must] establish a priority on women's participation in sustainable development research, data collection and information dissemination mechanisms" (20.11). Yet for all these regulatory norms, we find in our study an overall high level of non-participation in public meetings in both rural and urban settings, among men and women. In rural areas, women were least likely to participate due to family priorities and male-dominated participation. These findings indicate a failure of outreach activity on the state's part, especially for vulnerable individuals and the most affected communities who lack the economic and political clout to have a say in the process. This lack of outreach and knowledge dissemination reflects an associated lack of equity in the decision-making process. In Chapter 4, we see that, indeed, EIA reports of public projects are often unavailable to the general public, and are written with input by a small number of decision-makers.

In addition, the factors of unpaid household labor combined with a loss of control over key aspects of their lives, such as income and decision-making, and the isolation of the woman in the house, contribute to the devaluation of women, making women more susceptible to incidences of domestic violence (see the indicator for Reports of domestic violence, Table 14).

Interconnections at the State and Market Levels: Regulations regarding gender discrimination

Although urban women have more alternatives than their rural counterparts, there are still marked differences in their earnings and business and political leadership representation when compared to urban men. To be sure, there are a number of successful female businesswomen (some who are billionaires) in China; however, this number is only representative of these women, and not the population at large.

At the state level, laws and regulations are put in place to protect women's rights in the market-driven economy. For instance, the Constitution and other legal documents contain numerous provisions to promote gender equality in the workplace. Under *Article 42* of the *Labor Contract Law of the People's Republic of China*, pregnant women cannot be fired while on or after maternity leave. Under *Article 3* of the *Employment Promotion Law of the People's Republic of China*, "Workers seeking employment shall not be subject to discrimination based on factors such as ethnicity, race, gender, religious belief, etc." Furthermore, *Article 27* of the same law stipulates:

> The state shall ensure that women enjoy labor rights equal to those of men. When an employer recruits employees, it shall not refuse to recruit women or increase the thresholds for recruitment of women under the excuse of gender. When an employer recruits female employees, it shall not stipulate in the employment contract any content, which restricts female employees from getting married or bearing children.

However, these regulations mostly lack control instruments such as sanctions or incentives, which render them symbolic. Moreover, inconsistencies in regulatory rules often signal the opposite. One salient example is that Chinese women's retirement age is lower than that of men. While female blue-collar workers and professionals retire at the age of 50 and 55 respectively, men's retirement age is 60. The early retirement of women returns them to the caretaker role, while it is likely that retired men of good health may embark on a second career. A 52 year-old retired female railroad employee in Guangdong province said, *"Look at me, I'm retired now and I still have to take care of my grandson. I have never not had to take care of children!"* Furthermore, the World Bank's 2012 report on China cites the gender wage gap as one of the reasons for early

labor market withdrawal by urban women; that is, they do not see it as worthwhile to stay on a job that pays them less than their male counterparts, when they can retire early.

At the market level, certain traditional beliefs based on the dichotomy of masculine reason and feminine emotion about the types of jobs that are appropriate for each gender are persistent and shared. Several urban interviewees reflected that men are stronger than women because they are physically stronger, and are capable of moving heavy objects, even in white-collar jobs. Yet, in jobs where this physical strength might be an advantage, such as in nursing, Chinese men are heavily discouraged. In fact, according to a *China Daily* article on May 3, 2012, it is difficult to recruit male nurses in China's hospitals due to the social stigma of it being a caring job for women. On the other hand, it is not uncommon to see female migrant day laborers at urban construction sites. Moreover, according to the UN Inter-Agency Task Force on Rural Women (2011), women make up about 43 percent of the agricultural labor force in developing countries around the world (not to mention the double burden of housework), and China is no exception. In the current market-based economy, woman's physical ability to give birth to a child is also seen as a cost to the employer.

A 2004 survey conducted by the All China Federation of Trade Unions concluded: "Gender discrimination is the norm in today's workplace. The progress made in the early decades of the PRC has in many cases been abandoned in the years since economic reform began." This is also confirmed in our study conducted after seven years.

An urban interviewee reported that her father's company prefers to hire male employees because of their availability for overtime, safety concerns, and ease at going on business trips. Similarly, the rationale was widely accepted by the majority of our urban interviewees. They contended that men are more available for overtime and business functions (dinners oftentimes with sex-specific entertainment), as one interviewee said, *"Men do not need to think about the family as much as women do."* This view is institutionally entrenched as some female urban interviewees defended enterprises' discriminatory actions by saying that *"The nature of the [business] job makes it a better fit for men"* because women have safety issues, familial obligations, and biological needs.

Although this may be true for many families, this line of reasoning reduces real discrimination to the narrow worldview of a dichotomy of reason versus emotion; men versus women. To be sure, Chinese family, kinship and community networks all place a great amount of burden on young people to conform to traditional standards, which are the threads that tie together the social fabric of China. Young women in China also must grapple with the "work-life balance", on which the most recent U.S. social debate (2012) on women's issue centers; however, Chinese women's decisions are usually made for them by parents, as they must also fulfill a bevy of familial responsibilities such as "producing an heir to the [male] family line". With regard to work-life balance, young couples that have just given birth usually have one set of parents living in-house or helping with childcare to a great degree. Nevertheless, it is the mother of the child who is seen as the primary caretaker, who, if she has a fulltime job, will take on the double burden of work and childcare.

In a serialized Chinese TV show airing in September 2012, the father of a newborn is pardoned from caring for the baby by female colleagues, who say, *"How can he understand how to raise a newborn? He's a big man!"* Reiterations of these sentiments across communities tend to reinforce prejudices. Indeed, the space for exploration of a more expansive feminine or masculine identity is narrow. (As an aside, the TV show's traditional social stances on marriage and childcare reminded us of the 1950s US depicted in the American TV show *Mad Men*, which serves as a critical look of social issues in US history.) There are of course many exceptions to the above scenario in terms of Chinese marriages and child caring responsibilities, to which we might owe higher education,

economic prosperity, and international experience; however, it is difficult to remain a maverick (whether one is a man or woman) and remain in a traditional family and kinship network.

Anecdotes from some interviewees' workplace reported that companies gave the job of a woman on maternity leave to another permanent hire, and moved her to a lower-paying job when she returned, thus pushing her back on the career ladder. In job interviews, some companies have asked female interviewees if they plan to have children in the short term. It is also not unheard of for an enterprise's contract to contain a clause forbidding pregnancy, which directly violates *Article 27* of the *Employment Promotion Law*. Companies also circumvent the law by simply not hiring the women they interview. One urban interviewee said,

> I have a female friend who went through a grueling eight-hour interview hiring process, who was only told after the fact that the company was set on hiring men only. So that is how companies get around the anti-discrimination law.

Altering merely the regulative framework without having a solid normative and cultural foundation in place can exacerbate inequalities, because in order to comply with the law, companies make shallow attempts at complying with anti-discrimination laws, while at the same time there is a shared understanding among all actors (employers and employees, men and women) that no one will report acts of malfeasance because, as one urban interviewee said, *"That's just how the system works."*

Illustrations of the reinforcing cycle

In the two previous sections we have highlighted the interactions between the family and community levels and those between the market and state levels. In this section we give four examples arisen from interviewees' rationales to depict the prescriptions that convey cultural and normative forces and how they interact across all institutional levels to reinforce and perpetuate gender inequality (see Figure 11).

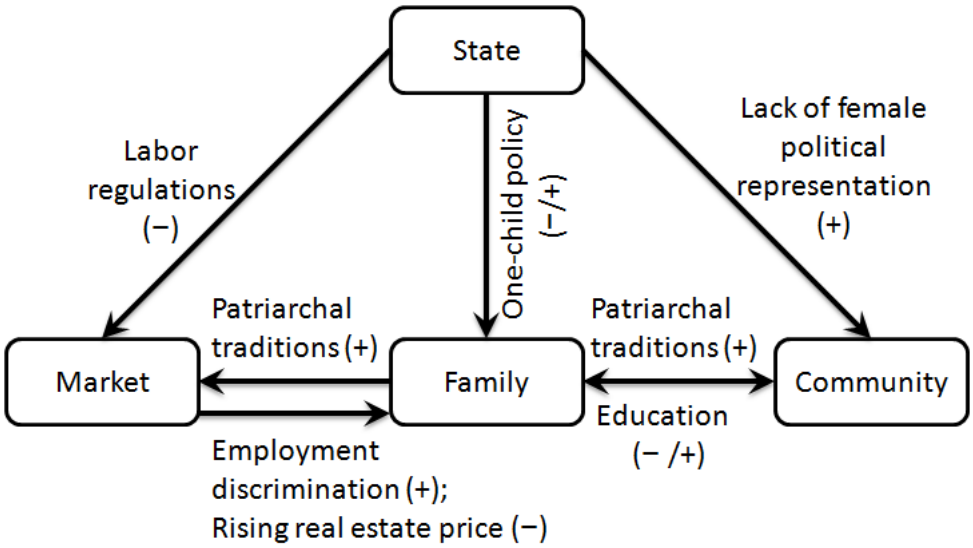

Figure 11 The reinforcing cycle across four institutional levels

Note: (+): positively reinforcing forces; (-): mediating forces

Market → Community → Family

In this example we show how gender preferences in the post-reform market and the educational system positively reinforce the family's son preferences. Several female urban interviewees explained their son preference in the following way. Employers' preference to hire men creates an incentive for son preference for expectant parents, and reassures parents who have a son to feel more secure about their child's future, whether in terms of employment or in terms of bodily rights. When a female urban interviewee in her 30s was asked of her preference for the sex of a child, she said,

> A boy! Because it is easier to bring him up in terms of his safety. With boys, a parent does not need to worry much (不用担心, bu yong dan xin), whereas for a girl, I will worry if she is ugly or if she is too pretty; I will have to worry if she has a boyfriend or if she doesn't have one; I will worry if she comes home too late.

Indeed, son preference becomes more marked as the market prefers to hire males. As several of our informants (including one educator) reported, boys have greater prospects to have high achievements in China.

Interviewees freely associated gender inequality with their own educational experiences. We were told that in middle and high school, educators begin reinforcing thinking about gender roles, actively telling boys that they are natural learners and leaders, while girls are told they are more emotional and might become leaders if they work hard enough. We asked the vice principal of a rural middle school in Hengyang, Hunan province what measures were being taken to promote gender equality in his school, and he said, *"Well, we have the hot water running for the female students because they are going through puberty, and health issues are very important."* When asked to suggest something besides health issues he came up blank. Here the educator sees 'gender equality' as equivalent to taking care of the female sex that has certain biological needs, thereby positively reinforcing gender inequality.

In universities, although the female enrollment rate is higher than the male rate (World Bank Report 2006), upon graduation, it is harder for Chinese women to find satisfactory jobs than for Chinese men. In the Third Survey of the Social Status of Women (2010), of female "high level talents", it was found that 81% had college degrees, while only 74% of male "high-level talents" had college degrees. However, 80.5% said men held the senior jobs in the workplace.

Discriminatory hiring practices and rationales associated therewith are institutionally cycled and reinforced across the family, community, marketplace and state levels, until they become objectified into accepted beliefs. This results in a skewed sex ratio at birth and unchanged hiring practices, which further reinforces gender inequality.

Family → Community → Market

In this example we highlight the traditional attitudes towards the female body and social mores associated therewith that are taught in the family and at school.

A strict hierarchical dualism is at the core of gender relations in China. Even for some of the young men who are eager to help out with housework, they may be doing so because, as one male interviewee put it, *"I do not want to see his wife's hands sullied or injured".* The woman is raised onto a pedestal of feminine purity, which is another extreme of gender relations. Suffice it to say, in China, the female sex is traditionally seen as the weaker sex due to biological differences and, in our opinion, the seeming lack of control over bodily rights, which

is exacerbated by a conservative attitude towards sex, the unpopularity of and lack of knowledge about female contraceptives (which, if adopted, would place control over safe sex with the female), and the lack of adequate sexual education in schools. Interviewees reported middle school teachers telling them to read a page in a biology book relating to the human anatomy, with no further explanation. Interviewees born in the 80s also reported having learning about sex through print media and TV.

Based on our interviews and workplace experience, single men and women are pressured by their families, coworkers, superiors, and the party state to find a suitable partner and enter into marriage. Single women are traditionally seen as 'unstable elements' in society. In both rural and urban settings, marriage is synonymous with childbearing. In the Confucian tradition, it is seen as unfilial to not produce offspring because the male line must continue. As a result, women devoted to their careers would be seen as 'untraditional' and failing in their social role as a wife and mother. One female interviewee said,

> As a man becomes older, his career will prosper. But as a woman gets older, she will have to give birth to children, and her career will plummet. Some women of course may relinquish having children so that their careers can improve.

The choice to improve one's career or have children is seen as a trade-off and as mutually exclusive, which has become a constant struggle for urban professional females (as discussed above regarding "work-life balance"), indicating conflicting role expectations. The cultural norms outlined here carry over to the marketplace, where employers – men and women who have grown up in the same environment as their employees – have shared beliefs about the 'appropriate' role of women. The reinforcing cycle begins anew with marriage, childbirth, and education.

State → Community → Family

In this example we show how the combination of a lack of substantial female political representation and accepted beliefs regarding women's leadership abilities based on hierarchical dualism influences people's ideas about female political leaders. Female representatives in the People's Congress (21%), female representation in the CCP (20%), and officers in the government are by and large at the deputy or secretarial level, with no female representation at the top politburo level. Parliamentary participation has remained at around 21% since the late 1970s. The low levels of substantial female political participation may be both a cause and an effect of the level of gender inequality in China today.

Historically in China, powerful female politicians tend to be made scapegoats after their reign. The following examples were given by a male interviewee in Wuhan, Hubei province: *"Empress Wu Ze Tian, the Dowager Empress Cixi, and Mao's wife and leader of the Gang of Four, Jiang Qing, all brought ruin to the country, and therefore, women are unfit political leaders."* These examples, and the resultant conclusion that women are unfit political leaders, are accepted beliefs in China. With the exception of one man in Qingyuan, Guangdong province, all rural male informants, regardless of education, believed that women should not be prominent in government because they do not 'naturally' fit that role. The reason versus emotion dichotomy is once again brought to the fore, as the unimpeachable reason of why women are unfit to make important decisions. Rather, we are told, women are more 'meticulous' and are better suited to making smaller decisions and doing the grunt work of male superiors. Ironically, it is not unheard of that male officials who pursue a higher degree while on the job will have their [female] secretaries write their papers and complete their homework for them, while they are the ones who receive the degree. Worldviews based on such dichotomies engender narrow-mindedness

and resistance to change. The lack of robust female political representation, and shared beliefs about women's ability to lead, positively reinforce gender inequality.

State + Market → Family

In the urban environment, the state's one-child policy and the market's rising real estate prices have coalesced to unexpectedly create a gender-equalizing mechanism in urban families, as urban parents begin to prefer to have daughters. This is partly because they know that they do not need to provide daughters with an apartment upon marriage, as those parents with sons are often pressured to do. A female urban interviewee in her 30s said,

> I prefer to have a girl because there are less societal and financial pressures on a girl. Boys have to think about buying a house for their future wives and have a difficult and frustrating time when dating.

On the other hand, the fact that daughters do not acquire an apartment upon marriage also makes them more vulnerable in marriage and divorce (*viz.* the 2011 Amendment to the Marriage Law regarding property ownership). Thus, the fact that parents of daughters do not make an investment in an apartment upon marriage because they see the in-laws as having that responsibility actually places their daughters at a disadvantage. However, financially capable parents are outfitting their daughters with their own apartments before or at marriage.

In urban areas, we found from our interviewees' responses that due to the one-child policy, both sexes are valued from a young age. For example, one female urban professional born in the 1980s said,

> I am also an only child and I've never had to do any housework growing up. If my future husband was treated as a precious treasure in his household, then so was I. So why must I serve him?

This gender role equalization may have been an unintended consequence of the one-child policy for the post-1980 generation. To be sure, there are still traditional mindsets among young people. For example, a 24 year-old female urban professional in Beijing said, *"I am pretty traditional in that I will take care of all household responsibilities unless I am very tired; then, I hope my husband will help."* However, this interviewee was an outlier in the urban data, and we could say that the state's one-child policy and the market's rising real estate prices have, to some extent, provided a counter-force against gender inequality in urban areas.

Discussion and Conclusion

By analyzing a total of 55 interviews, we show the complex landscape of gender inequality in rural and urban China in terms of perceived opportunities and choices regarding financial autonomy, sharing of decision-making, sharing of household responsibilities, autonomy within marriage, and public participation. We also find a persistent gender hierarchy that is embedded in cultural norms at all institutional levels. In the above four interactions in our model we see how reinforcing cultural scripts and accepted beliefs produce social roles that women and men take on. We demonstrate that economic development brings market forces into traditional Chinese society and complicates the effects of existing institutions. For example, the one-child policy, which has significantly and tragically reinforced son preference in many families, is now mediated by economic pressure in the urban area caused by rising real estate price and a shrinking family size.

While acknowledging that urban women have more opportunities than their rural counterparts due to their higher income level, it is necessary to separate the two concepts of gender and poverty, because although "inequalities in basic functionings generally tend to occur in situations of extreme scarcity … confining the analysis of gender inequality to these achievements alone serves to convey the impression that women's disempowerment is largely a matter of poverty" (Kabeer 1995). This conflation of disempowerment and lack of economic development is misleading because inequalities also exist in more prosperous situations, and it is necessary to consider more sophisticated achievements such as female political representation.

At the same time, the market introduces different role expectations that often conflicts with traditional Chinese social norms and cultures. Each of us is assigned multiple social roles from different institutional networks, domains or levels, such as the family, the school, the workplace, etc. When asked, *"In your opinion, how do people form their opinions, perceptions and decisions?"* urban interviewees cited online media (as young people often eschew state-run TV and news sources), conversations with colleagues, their formal education, and their parents, in order of influence. Mutually reinforcing mechanisms exert strong normative pressures on people that ultimately shape and objectify their social roles. However, when these social roles embody mutual conflicting logics, changes in cultural beliefs will occur. For example, when the urban workplace requires both men and women to maintain their networks, women are more likely to spend more of their own time with friends and coworkers and less time on housework.

On the other hand, market forces also reinforce the gender hierarchy by incorporating it into company practices such as in hiring, promotion, and payment practices. This is perpetuated by a deeply shared understanding between men and women of their gender role prescriptions. Razavi (2011, 68) asks, "Are gender hierarchies and biases also embedded within labor markets and in social arrangements and institutions for welfare provisioning?" Indeed, market-oriented reform depends on the cheap labor of female workers as well as women's return to the caretaking role in order to make up for the lack of a comprehensive welfare system. We can say that rapid economic development in China has served to further exacerbate gender hierarchies in some aspects while it also creates new gender roles for female working professionals.

In the results of the *reported sharing of household responsibilities*, we find that generational differences also play a role that can potentially explain the changing gender hierarchy at the family and community level. For example, some elderly male retirees in Beijing reported that their wives had provided the cooking and cleaning in their households for the entirety of their married lives, while younger male professionals reported that they shared or did the majority of the housework. It is likely that urbanization has brought younger and more educated individuals into the mega-cities that create novel networks and communities that share non-traditional cultural norms.

During our interviews we were sometimes faced with questions such as, *"Why are you asking these questions?"* and *"So there is gender inequality in China, but so what? There is nothing we can do about that,"* which indicate that the subject of gender inequality is a taboo in traditional Chinese culture. However, several younger and educated informants enjoyed discussing more with us. Through higher education, generational differences are beginning to be seen in the differences in thinking, with a shift towards shared decision-making, shared household labor, control over one's income, no sex preference of the child, time for friends, and mutual love and respect between husband and wife.

Education can importantly mediate and mitigate gender inequality in two ways. Education enables individuals to gather information, develop independent thinking, and become less susceptible to imposed norms

and cultural templates. Furthermore, education with principles of gender equality can greatly facilitate a shift in modern discourse that includes greater gender equality, mutual respect between men and women, and perhaps even a more expansive sense of identity.

In addition, our interviewees mentioned the importance of the Internet and micro-blogging websites in shaping their viewpoints and raising the awareness of international norms and practices regarding gender equality outside of traditional media. These new information channels offer new ideas and options, as well as participatory channels otherwise absent, where conflicting role requirements and logics exist, and thus facilitate change. We also think that the Internet provides a space for new communities with different cultural norms to form and alternative perspectives to be shared and supported and, over time, objectified. Because the state frowns upon large-scale gatherings, the Internet is a relatively more open place for connecting with others, especially for the Internet-literate youth, who have similar ideas and aspirations.

Because we assess the institutional reinforcing mechanisms of gender inequality from the individual level, the model we developed reflects individual perceptions about how external institutional forces shape their decisions and actions. Further research can be conducted on interactions between state discourse and actors in Chinese society with regard to gender inequality.

China is home to one in five of the world's women. Gender and Development theory recognizes women as agents of change rather than as passive recipients or victims of development. The theory stresses the need for a more organized, political voice. Chun (1996, 284) writes, "It becomes clear here that [gender politics], by reclaiming and constructing genuine citizenship…may have the potential to lead the way in China's general political reform." At the same time, the state is central to this change as a leading example and by enacting and truly implementing laws protecting women's rights, such as making provisions to combat domestic violence (which are currently absent in the legal framework).

By identifying the mutual reinforcing mechanisms underlying gender inequality in China, we observe positive changes. Regulations alone cannot create genuine gender equality and mutual respect between men and women. There are opportunities for the state to do more. We have identified that higher education and Internet channels serve as a counterforce that are beginning to weaken the reinforcing cycle of gender inequality. Enhancing the quality and content of the education system, as well as expanding Internet access nationwide can have fundamental and sustainable effects on promoting gender equality in China.

Appendix 5-1

Semi-structured interview template **English version**

Instructions: Using this template as a rough guideline, listen to the answers of the interviewees. Start with neutral questions. Using the interviewee's vocabulary, continue asking questions. Do not prompt the interviewee with sub-questions unless they have not arrived at that point in a few minutes. After each day's interviews, assess responses and modify interview template accordingly.

Demographic questions: Age: ____; Education: _____; Hometown: _____

1) Do you have children or grandchildren? How old are they?

2) What is your family make-up? Do you have a partner? Do you combine your salaries? Who makes the big decisions at home, such as the disbursement of family funds?

3) How do you schedule your days? What does a regular day look like for you?

4) Who are your main group of friends and do you spend time with them?

5) What are your responsibilities at home? At work?

6) Have you participated in or organized community meetings such as EIA public hearings before? What about your partner?

7) What is the division of labor at home? (Who does what?)

8) Do you think that you and your partner have equal responsibilities at home and at work?

9) How did you meet your partner?

10) Do you think men and women ought to have equal responsibilities and goals in life? In your perception, do women have the capability to accomplish the same things as men?

CHAPTER 6: ENVIRONMENTAL GOVERNANCE FOR INFRASTRUCTURE: EXPERT DISSCUSION & A CASE COMPARISON

Abstract

Public projects such as large-scale infrastructure projects strongly stimulate economic growth and long term prosperity. However, they are accompanied by heavy ecological and social costs, which demand urgent attention to environmental governance for public projects. The research in the field of environmental governance for public projects should move beyond solving violation problems and closing legal loopholes to focusing on the unique characteristics of this field. The paper draws on neo-institutionalism, develops an institutional framework of environmental governance, and conducts a comparative case analysis. The cases are: the California high-speed railway program, the Finnish Olkiluoto 3&4 nuclear stations, and the Wu-Guang high-speed railway project. The data was collected during 2011-2012 from field investigations of the two high-speed railway cases, interviews with experts involved in the cases, and an international workshop that discussed findings and synthesized the conclusions. The paper suggests that, while improving the environmental legal system, we need to recognize the limitations of the regulatory institutions and the consequent fragmentation that has negative effects on public projects. We need to enhance and speed up the development of normative institutions (e.g., professional ethics and capacity) and cultural institutions (e.g., civic attitude). Special emphasis should be placed on capacity building through the sharing of knowledge and information as well as sharpening professional skills, including communication and leadership.

Introduction

Where does social order come from?

Conceptualizing *environmental governance* as a new social order that needs to be established in China leads us to turn to this classic question in the field of institutionalism.

If we can answer this question, we can have a better understanding of how to establish a new social order that values ecosystems and natural resources, and redefines the relationship between societies and the natural environment on which they deeply depend. Institutional theory aims to answer this grand question. We adopt Richard Scott's framework (2008), which suggests that social orders (i.e., institutions) can be established through three different mechanisms at different levels (i.e., regulatory, normative, and cultural-cognitive levels) that are dominated by different groups of actors.

As we point out in Chapter 2, policies and policy making is path dependent and incremental. Successful revolutionary change is rare, even when the political system of a country is authoritative and powerful, possessing the majority of national resources. Political scientists mostly agree that stable political reforms can only be incremental. The radical change that China needs in the environmental arena seems very challenging. Fortunately, national political systems are not operating in a vacuum. They cannot be separated from society or international communities. Therefore, a new social order can emerge in other institutional realms and permeate into China's political systems.

If we conceptualize environmental governance as a new social order and define EIA as a major tool in establishing environmental governance for public projects, we need to clarify the relationship between EIA, an institutional system imported from international standards, and local existing institutions. The purpose is to understand how the governance mechanisms of EIA operate locally.

Governance mechanisms of EIA

EIA serves as a **pre-decision analysis** and aims to prevent environmental damages throughout the project lifecycle. To effectively fulfill this function, a complete process of EIA includes *post-decision evaluation and feedback, or EIA follow-up* (Arts, Caldwell, & Morrison-Saunders, 2001; Morrison-Saunders, Marchall, & Arts, 2007). Specifically, according to IAIA, the design of EIA process should include the following 10 components (IAIA & IEA, 1999):

1. Screening – to determine whether an EIA is required for a development project, and, if so, the level of detail of the EIA.
2. Scoping – to identify the important issues and impacts of the proposed development activity and to specify the terms of reference for EIA.
3. Examination of alternatives – to establish the preferred option through comparing alternatives that can achieve proposal objectives.
4. Impact analysis – to identify and predict likely environmental effects.
5. Mitigation and impact management – to specify the measures that mitigate predicted adverse effects.
6. Evaluation of significance – to acknowledge the limitations of the mitigation plan and determine the relative acceptability of the impacts that cannot be mitigated.
7. Preparation of environmental impact statement or report – to document the abovementioned process of impact analysis as well as the concerns of the interested and affected public.

8. Review of the statement or report – to examine the completeness (i.e., containing all required information), rigor, and quality (i.e., conducting satisfactory analysis) of the statement or report.
9. Decision making – to approve or reject the proposal and to establish the terms for its implementation.
10. Follow up – to monitor and evaluate the implementation of EIA and strengthen future EIA applications and mitigation measures.

These components embed control mechanisms in order to ensure the quality of the EIA process. For example, the examination of alternatives to the proposed project can ensure a wider search for solutions that meets the needs and are with minimum environmental costs and maximum benefits. Public participation is not explicitly spelled out in the list. It is a continuous mechanism that is embedded in the entire EIA process (as noted in Chapter 4) and serves as a critical governance mechanism. If implemented well, it has multiple important functions including defining the problems more effectively, acquiring more local knowledge, identifying socially acceptable solutions, ensuring more balanced decision-making, minimizing conflict and costly delays, facilitating implementation, and promoting social learning (Noble, 2009).

However, the design of EIA is to aid decision-making of development activities rather than to arrive at a definite conclusion in its own right (Weston, 2000). Its structure is thus relatively loosely-defined and expected to be integrated into existing decision-making processes. In principle, the EIA process should be integrated as early as possible in the decision-making process (IAIA & IEA, 1999). However, actual integration timing depends on the existing institutional system in which EIA is implemented. Similarly, the ways and timing of which the interested and affected community are informed and consulted are often a function of local practice (Bull, Petts, & Evans, 2010). As a result, the existing institutional system has critical effects on how EIA is defined and implemented. More often than not, EIA reflects the characteristics of local institutions rather than bringing in substantial changes.

Goal of the chapter

Moving forward from this viewpoint, it becomes apparent that cross national (or regional) comparisons are necessary for us to gain a deeper understanding of governance mechanisms for public projects. The institutional aspect compels us to look beyond the regulatory requirements of EIA because their operation and implementation is fundamentally a function of local institutions. At the same time, it directs our attention to opportunities for improvements that reside in the non-regulatory realm.

In this Chapter, we aim to understand how mechanisms at different institutional levels interact in the field of environmental governance for public projects. We compare the environmental governance of three projects with the institutional framework of environmental governance we have developed in Chapter 2. One is the case study in this research project: Wu-Guang HSR (see Chapter 4); the other two are the California High-Speed Railway (California HSR in short) and the Olkiluoto 3 and 4 Nuclear power plant projects (OL3 and OL4 in short) in Finland.

Research methods

In addition to analyzing extensive secondary archival materials including EIA documents, research reports, and newspaper articles relevant to the three projects, we solicited expert opinions through interviews, personal communications, and a workshop.

Interviews

From 2011 to mid-2012, we interviewed 9 Chinese experts (6 academic and 3 industry experts), and informally communicated with two government officials (one retired) about China's EIA of public projects. All of them worked in the field of EIA and/or project management. In addition, in August 2011, we interviewed 3 American experts in project planning and management, including preparation of EIA; two of them were at the managerial positions in California HSR. We also informally communicated with one Finnish expert who closely worked with the main actors in OL3. Handwritten transcripts were made during each interview and communication; only 3 interviews were tape-recorded upon the agreement of the interviewees. A few clarifying questions were communicated via emails.

Workshop

A highly diversified panel of experts was invited to intensively discuss the three cases in a workshop held on 26 March 2012. They included nine Chinese experts in the fields of environmental management, law, project management, railway industry, development, and policies from Mainland, Hong Kong, and Taiwan, as well as one American expert who was involved in California HSR and one Finnish expert who was involved in OL3. The entire discussion was recorded and transcribed. We then read all transcripts and interview notes repeatedly and produced case vignettes. Through the iterative process, we constantly compared the three cases and categorized key differences and elements based on the institutional framework.

Analysis

All case documents, archival materials, and interview and workshop transcripts were analyzed through an iterative process. At the first stage, we conducted a within-case analysis by laying out the EIA framework and actual process of implementing EIA. We then went through a cross-case comparison in the workshop through expert discussion without a prescribed framework in order to explore interesting differences and similarities from expert experience (i.e., implicit knowledge). The three cases were at different degrees of completion, but all had at least completed the process of the EIA preparation and approval. The case comparison was, therefore, based only on the EIA preparation of these three projects, not their EIA implementation and monitoring during the construction and operation phases. At the second stage, we furthered the cross-case comparison by reading and categorizing all documents and transcripts based on the institutional framework. By doing so, we integrated archival materials and expert knowledge to reveal important aspects of environmental governance for public projects under the same framework.

Wu-Guang HSR

We briefly summarize the case of Wu-Guang HSR for comparison. The readers can refer to Chapter 3 and 4 for more detailed analysis of EIA regulations, process, and EIA implementation of Wu-Guang HSR.

Project background

Building the most extensive high speed railway networks is an important national plan in China. It is significant because of its relevance to economic development, carbon reduction, and national security. Wu-Guang HSR was approved and listed in the "mid- and long-term railway network planning" in early 2004[42]. Construction began in June 2005 and operation started in December 2009. It has a length of 968 kilometers (601 miles), connecting Wuhan, the provincial capital of Hubei province, and Guangzhou, the provincial capital of Guangdong province, with a design speed of 350 km/hour and operating speed of 300 km/hour[43].

Regulation requirements and actors

China's EIA Law went into force in 2003 but it differs from international EIA in multiple aspects (see Chapter 3). The most salient differences include: full EIA reports are not required to be disclosed, the assessment of alternatives and social impacts is not required, the consequences of "make-up" EIAs are insignificant, and EIA enters the project process after the project proposal is approved.

The Ministry of Railways (MOR) is in charge of all high-speed railways through designated railway companies created to manage, construct, and operate each high-speed railway. Projects of national importance and cross regional boundaries like high-speed railways are subject to the review and approval of the Ministry of Environmental Protection (MEP).

Currently, the planning, land management, environmental protection authorities make project decisions separately (Wang et al., 2003). EIAs and feasibility studies are prepared by different organizations working separately in the process. The project owner decides when to outsource the EIA service and chooses the EIA institute certified by the MEP. There is no mechanism for EIA specialists to interact with the project team unless the project owner actively arranges this type of meeting.

In addition, it is unclear how the quality of EIA including the accuracy of data, the appropriateness of the assessment model, and the adequacy of EIA scope is ensured. The 2009 MEP Notification reported that 30 of the 75 licensed EIA institutes inspected by the MEP suffered from low quality of work and lack of proper management. Given the fact that, up to March 2012, there are 189 Class I and 981 Class II certified EIA institutes based on the MEP website. The 2009 inspection report implies that the MEP only inspected less than 10% of existing EIA institutes and a percentage as high as 40% of them were problematic. The problem is extremely pressing, but it remains unknown what other actors in the EIA process are able and allowed to check the accuracy and quality of EIA.

EIA process and public participation

Although relatively comprehensive EIA regulations and guidelines are in place, about 99% of all China's construction projects pass their EIAs (Chang, 2012). Similarly, although the EIA Law requires the project passes EIA inspection before it can operate, it is rare that a project is suspended because of a failure of passing inspection.

[42]Full content is available on the official website of the MOR (in Chinese): http://www.china-mor.gov.cn/tljs/tlgh/201012/t20101228_729.html, and an English introduction available on the website of the International Tunneling and Underground Space Association (ITA): http://www.ita-aites.org/cms/fileadmin/filemounts/general/pdf/HomePage/China_20-21_nov_2006_report.pdf, last access: 11 November 2011.

[43] It operated at a speed of around 330 km/h, which was reduced to 300 km/h after the Wenzhou train accident.

For example, China's Jiaoji Passenger Dedicated Line[44] began operation without completing EIA inspection. It had received and ignored three times the notices of sanction from the MEP asking to suspend the operation of the line since September 2009. However, the line did not stop operating.

Information about the EIA process and public participation of the case was absent. In May 2011, the author sent requests to the MEP for EIA reports of all 18 high-speed railways in operation (see Table 17) by both phone calls and website requests according to the Measures of Environmental Information Disclosure (Trial) released in 2007. Until July 2011, it was confirmed that the reports were the project owners' business secrets and were therefore unavailable. Nevertheless, the MEP agreed to send its approval comments on EIA reports to the author; however, the MEP's approval to the Wu-Guang HSR was absent. As we can see in Chapter 4, most respondents in our survey did not know about EIA or public participation in any form. It was safe to conclude that EIA of the case was not administered as required by the regulations.

Table 17 High speed railways in operation by 2011

No.	High speed rail		Length (km)	Year of completion	Investment (billion RMB)	Design speed
01	秦沈客运专线	Qinhuangdao-Shenyang passenger railway	404	2003	15	200
02	合宁客运专线	Hefei-Nanjing Passenger Railway	166	2008	25	250
03	京津城际铁路	Beijing–Tianjin Intercity Railway	120	2008	21.5	350
04	胶济客运专线	Qingdao-Jinan Passenger Railway	363	2008	9.6	250
05	石太客运专线	Shijiazhuang–Taiyuan High-Speed Railway	190	2009	13	250
06	合武铁路客运专线	Hefei–Wuhan high-speed railway	356	2009	16.8	250
07	甬台温铁路	Ningbo–Taizhou–Wenzhou Railway or Yongtaiwen Railway	282	2009	15.53	200-250
08	温福铁路	Wenzhou–Fuzhou Railway or Wenfu Railway	298	2009	17.48	200
09	武广客运专线	Wuhan–Guangzhou High-Speed Railway	1069	2009	116.6	350
10	郑西客运专线	Zhengzhou–Xi'an High-Speed Railway	457	2010	50.1	350
11	福厦铁路	Fuzhou–Xiamen Railway	273	2010	14.42	250
12	成灌快速铁路	Chengdu–Dujiangyan Intercity Railway	67	2010	6.99	200
13	沪宁城际铁路	Shanghai–Nanjing Intercity Railway	301	2010	39.45	350
14	昌九城际铁路	Nanchang–Jiujiang Intercity Railway	131	2010	6.5	200-250

[44] Details can be found in a news report on 21cbh.com: "First high-speed rail environmental offence to Jiaoji passenger dedicated line facing down" at http://www.21cbh.com/HTML/2011-5-16/3MMDAwMDIzODM3MA.html (in Chinese), accessed Oct 7, 2011.

No.	High speed rail		Length (km)	Year of completion	Investment (billion RMB)	Design speed
15	沪杭城际高速铁路	Shanghai-Hangzhou Intercity Railway	160	2010	44	350
16	长吉城际铁路	Changchun–Jilin Intercity Railway	108	2010	9.6	250
17	海南东环铁路	Hainan Eastern Ring Railway	308	2010	20	250
18	京沪高速铁路	Beijing–Shanghai High-Speed Railway	1318	2011	220.9	350
		Total	6371		662.47	

California High Speed Railway

Project background

The United States has studied the possibility of high-speed railways for a long time due to demand arising from the growing number of megacities. In California, a high concentration of population in Los Angeles and San Francisco, as well as a 400-mile distance between the two megacities, make the high-speed railway a sensible option of transportation. Based on the business plan of the California High-Speed Railway (California HSR) released in 2012, high-speed railway is the most efficient transportation mode for trips of 100 to 600 miles, comparing to automobile and aviation (p. 1-5).

The California HSR can operate up to 220 miles per hour (about 354 km/hr) and will be powered by 100% clean electric power from renewable resources. It is a large program comprising ten projects (or sections)[45] with an operational length of more than 800 miles (about 1287 km). It will be built in two phases. In Phase 1, it will connect San Francisco to Los Angeles/Anaheim with an express travel time of 2 hours and 40 minutes or less. In Phase 2, it will extend the line to Sacramento and San Diego. Construction is expected to begin next year. Based on the business plan, cost estimates are between $68.4 to 79.7 billion (Phase 1 completed in 2028, including inflation, 2011 dollars, p. 3-10~11)[46].

Regulatory requirements and actors

The California HSR program officially began in 1996. The California High-Speed Rail Authority (HSRA) was established, and was responsible for planning, designing, constructing, and operating the project. The Federal Railroad Administration (FRA) oversees the project. EIA is mandated by the National Environmental Policy Act (1969) for any project that receives federal funding, and the California Environmental Quality Act at the state level. According to the expert interviewed, there are few cases where projects do not comply with the environmental statutes.

The HSRA hires consultant companies to help with program and project preparation, including EIA. Interestingly, manager interviewees of the project said that they selected EIA experts based on word of mouth in

[45] The ten sections are: San Francisco-San Jose, San Jose-Merced, Merced-Fresno, Fresno-Bakersfield, Bakersfield-Palmdale, Palmdale-Los Angeles, Los Angeles-Anaheim, Los Angeles-San Diego, Sacramento-Merced, and Altamont Corridor.
[46] Estimated construction costs are $53.4 to 62.3 billion (low cost option and high-cost option, 2011 dollars).

their professional communities and associations. In other words, professional reputation rather than certain certifications and licenses directed the selection of EIA experts.

EIA process

EIA was conducted firstly for the entire program. The final decision of the EIA report, the Record of Decision, was approved by the HSRA and FRA in 2005. As mandated by the regulation, project alternatives including the "no project" alternative must be evaluated. In addition, up to eleven alternative alignments were evaluated (the 2008 Program EIA Report). The central valley alternative was selected because a higher population could be served, and impacts on wetlands, waterbodies, and the environment could be minimized. A list of sustainability and livability objectives was used to formulate impact mitigation measures including ways to minimize air and water pollution and energy use. Then, in 2007, EIA for each of the projects began.

Public engagement

The outreach effort was great. The HSRA actively engages with stakeholders including the public, business, and public agencies. At the program level, a total of four versions of EIA report were completed, 11 public hearings were held, and more than 5,000 comments were addressed (see Table 18). At the project level, the Fresno-Bakersfield section held 551 meetings with agencies and the public, and the Merced-Fresno section held 276 meetings before the final EIA report was completed[47].

Table 18 Outreach activities of program EIA of California HSR case (summarized from all versions of program EIA reports)

Program Level EIA **Versions of Program EIA**	**Activities of public involvement**	**Date**
Draft Program EIA Report	The *Notice of Availability* and the circulation of the report.	July 2007
	Newspaper announcements and postcards informing 8 public hearings in San Francisco, San Jose, Livermore, Oakland, Gilroy, Merced, Stockton, and Sacramento.	2007
	The Report and Notices distributed to about 3600 statewide contacts including government agencies and media.	July 2007
	The Report and Notice made available at the Authority's website and to city libraries.	
	A total of 1300 comments received.	
Final Program EIA Report	Final Report completed.	May 2008
	Town of Atherton litigation on the Final Report (a lawsuit challenging the Report).	2008
Revised Draft Program EIA Report	The circulation of a revised report based on the judgment in the litigation.	March 2010
	The *Notice of Availability* and the circulation of the Report.	March 4, 2010
	The Notice and Report available at the Authority's website.	March 4, 2010
	The Report distributed (either printed copies or a CD) to over 330 state and federal agencies, officials, individuals who previously commented.	March 8-12, 2010

[47] The information was based on the final EIA report of the two projects at the HSRA's website: http://www.cahighspeedrail.ca.gov/library.aspx

Program Level EIA **Versions of Program EIA**	**Activities of public involvement**	**Date**
	A *Notice of Completion* filed with the State Clearinghouse to initiate the 45-day public comment period.	March 11, 2010
	The Report made available to 16 libraries along with a notice of a public meeting in San Jose.	
	The *Notice of Availability* and *Notice of a Public Meeting* distributed to approximately 3,800 individuals on the program mailing list.	March 12, 2010
	The Notices published in 8 newspapers.	March 12, 2010
	Postcards of the Notices sent to over 50,000 individuals identified as part of on-going project-level engineering and environmental studies.	March 15, 2010
	Two Public hearings in San Jose.	April 7, 2010
	A total of 3755 comments received.	
	Court rulings in the Town of Atherton litigation on the Report.	November 2011
Partially Revised Draft Program EIA Report	The Report made available to the public through the Authority website	Jan. 5, 2012
	Either a printed copy or a CD along with a *Notice of Availability* sent to over 360 contacts including state, federal, and local agencies, and media.	Jan. 5, 2012
	A *Notice of Completion* was filed with the State Clearinghouse.	Jan. 6, 2012
	The Notices posted at 9 county clerk offices within the project area.	
	The Report and the Notice of Availability and of a Public Meeting made available to 16 libraries for public viewing.	
	The Notices distributed to over 24,000 individuals on the program mailing list.	Jan. 6, 2012
	The Notices published in 11 newspapers	Jan. 6, 2012
	A Public Meeting in San Jose	Feb. 9, 2012
	A total of 436 comments received	

Olkiluoto 3 & 4 Nuclear Power Plant projects in Finland

Finland is compelled to build nuclear power plants to quench its thirst for clean energy at the turn of the 21st century. It is especially interesting to see that the *social acceptance* of nuclear power projects in Finland is relatively high. The Finnish expert said that, based on the survey conducted and public hearings held by the nuclear power companies, the public's attitude toward building nuclear power plants is relatively supportive even after the Fukushima accident in 2011.

Project background

Finland's nuclear industry became inactive after incidents such as Three Mile Island (1979) and Chernobyl (1986). It has lost many of the industry practices and skills and has to face new technologies, which has created difficulties for new nuclear power projects. Teollisuuden Voima Oyj (TVO), a private power company, submitted an application for building OL3 in 2000 and OL4 in 2008. TVO owns OL1 and OL2. OL3 is the fifth nuclear

power plant built in Finland and the first to adopt the Generation III European Pressurized Reactor (EPR) technology with net electrical output of 1600 Megawatts.

Regulatory requirements and actors

Building a nuclear power facility in Finland is subject to relatively complex and strict regulatory requirements overseen by both domestic and international actors (e.g., EURATOM and IAEA). EIA is part of the process, which is entangled with safety requirements and assessments and is subject overall to ratification by the Parliament.

Three key domestic regulatory agencies are the Ministry of Employment and the Economy (MEE), the Ministry of Environment, and the Finnish Radiation and Nuclear Safety Authority, STUK (hereafter STUK). The MEE is responsible for overall management and supervision of nuclear issues and the nuclear energy sector. It is also the coordinating authority for EIA based on the Act on Environmental Impact Assessment Procedure. In addition to commenting on EIA, the Ministry of Environment is responsible for arranging international hearings and inviting international comments for both the EIA program and report in accordance to the UNECE Espoo Convention (signed in 1995 and effective in 1997).

STUK plays a unique role. It is an independent expert agency that is responsible for detailed nuclear regulations, supervision of nuclear safety and evaluations, and inspections on the activities of main project members (e.g., project owner, contractors, and manufacturers). To keep its independence and high professional level, STUK is under the jurisdiction of the Ministry of Social Affairs and Health rather than the MEE, and is evaluated by international expert organizations such as IAEA (International Atomic Energy Agency).

TVO was the sole actor responsible for EIA and its compliance with regulatory requirements. It hired a capable third party, Pöyry Energy Oy (Pöyry), in both OL3 and OL4. TVO formed an EIA project group to supervise Pöyry's work and its Manager of Quality and Environment served as the project manager of EIA. Pöyry was selected not because of official certifications like the ones in China, but because of its evident expertise and professional reputation in this field. Pöyry has prepared EIA's for all the ongoing nuclear projects in Finland.

EIA process

EIA was conducted in two stages. An EIA program was prepared, which was a plan for EIA to serve a function similar to scoping. The public was invited to present their opinions on its comprehensiveness. The MEE invited comments from other agencies and parties. Then in the second stage, an EIA report was prepared on the basis of the EIA program.

Similar to the American EIA, options such as "zero option" (i.e., no project alternative), as well as alternative locations, were assessed based on regulations. Perhaps due to the nature of nuclear power, a safety and risk analysis as well as impacts on health comprised an important part of the EIA. Two special characteristics of the Finnish EIA procedure are that ratification by the Parliament and international hearings are required. When TVO submitted its application for building OL3 and OL4, it submitted both the EIA report and feasibility study. This application needed to be ratified by the Parliament in order to be granted the "Decision-in-principle" that permits subsequent activities of construction. In addition, in accordance to the UNECE Espoo Convention, EIA of the nuclear power projects is subject to international assessment.

Public engagement

The public as well as relevant authorities were invited to comment on the draft EIA report. International communities were informed and their comments invited in both EIA stages. Take OL4 for example, where a total of 8 meetings with the audit group, public, and authorities were held in the entire process. As Table 19 demonstrates, the effort of outreach and communicating with the public was made via multiple channels including TV, newspapers, poster exhibition, and company press releases.

Table 19 The effort of outreach and public engagement for Olkiluoto 4 Nuclear Power Plant Unit (summarized from all versions of EIA program and reports)

Versions of EIA	Activities of public involvement	Date
Draft EIA Program	Internal briefings to the personnel of TVO.	March 30, 2007
	Public hearing; some 120 people attended.	April 10, 2007
	The first audit group meeting discussing possible impacts, open to the public	April 24, 2007
	Public announcement of the EIA procedure published in newspapers and the website of the Ministry of Employment and the Economy (MEE).	June 8-9, 2007
	EIA procedure and information provided in the corporate press releases and magazine (Ytimekas).	April, July, Oct., Dec. 2007
	Posters exhibiting EIA procedures at the Olkiluoto Visitor Center and the Eurajoki municipal hall.	Throughout the procedure
	Outreach: TVO coffee event	June 9, 2007
	EIA program was displayed at the municipal government offices of adjacent regions as well as on the website of the MEE and TVO.	June 12-Aug. 31, 2007
	Public event; some 30 people attended.	June 13, 2007
	Outreach: TVO coffee event	June 16, 2007
	Internal briefings to the personnel of TVO.	Aug. 17, 2007
	TVO's EIA project presented on Ganal TV for 15 minutes, twice a day throughout Sept.	Sept. 2007
	The MEE statement on EIA program published on its website.	Sept. 2007
	Resident survey via mails with a summary of EIA program.	Sept.-Oct. 2007
	The second audit group meeting discussing results of impact assessment and authorities' statements, open to the public	Oct. 11, 2007
	Public hearing; some 100 people attended.	Oct. 11, 2007
	Small group meetings for authorities and representatives of society and business and interviews.	Oct. 16, 2007
	Public event; some 20 people attended.	Oct. 18, 2007
	Notification of international hearing sent to neighboring countries with a Swedish or English translation of the EIA program.	
	Internal briefings to the personnel of TVO.	Nov. 1, 2007
Draft EIA Report	Final Report completed and distributed to the audit group by mail.	Dec. 2007
	The third audit group meeting discussing the draft report, open to the public	Dec. 12, 2007
	Internal briefings to the personnel of TVO.	Jan. 3, 2008
	Final report submitted to the MEE.	Feb. 14, 2008
	A public notice of the report published on newspapers.	Feb. 19-20, 2008
	The notice and the report available on the MEE website.	Feb. 19, 2008
	The report available for public viewing in the local government offices.	Feb. 19-April 21, 2008
	International communities invited to comment.	By April 28, 2008
	Public hearing.	March 11, 2008

Versions of EIA	Activities of public involvement	Date
	Public event: presenting final EIA report	Spring 2008
	A meeting with the MEE discussing remaining issues to be dealt with.	June 26, 2008

Data source: EIA Report of Olkiluoto Nuclear Power Plant by a Fourth Unit (2008); Supplement to the EIA Report (2008); EIA Report for the Olkiluoto 4 Nuclear Power Plant Unit-Statement by the Contact Authority (2008).

Case comparison

In EIA practices, governance issues surround the following questions (based on expert interviews):

1. Who decides the scope of EIA?
2. Who is responsible for EIA report?
3. What process is used to validate data, assessment model, assumptions, and outcome of EIA and ensure that scientific and professional principles are followed?
4. Who makes the final decision after weighing between economic, social, and environmental factors?
5. What process is used to follow up and ensure the promised plan is implemented?

For complex and technically sophisticated public projects, assessing environmental impacts throughout a project's lifecycle requires much more than knowledge of environmental management and the ecological system. A high level of project knowledge and experience as well as local knowledge is necessary in order to identify activities that are likely to cause significant impacts and to warrant that no necessary assessments are overlooked. For this reason, an EIA whose scope is determined from a single perspective is inherently flawed at best, ineffective at worst.

Since EIA requires input from multiple disciplines, it is important to address the following questions: Who can be held responsible for the report? What approach and process the governments or project owners use to select experts who are capable and can be held responsible for the report? Similarly, examining and reviewing EIA reports also requires a high level of knowledge. Who should be involved in assuring that appropriate models are used for each assessment area (e.g., water quality, air, radioactive release dispersion)? Are there managerial approaches (i.e., review and approval processes) or peer review being used in the model selection and input parameters?

Given these qualities of EIA practices, we particularly look at which mechanisms are used in the system to address these issues in the case comparison.

Regulatory level

China's regulatory system has been plagued by the issue of self-regulation (Tang, Lo, Cheung, & Lo, 1997). The question "How does the government oversee a government owned and invested project in a legitimate, credible, and accountable manner?" remains unanswered. Traditionally, the government plays a dominant role in the sector of public projects. Moreover, decision-making is strictly top-down. Therefore, the Chinese version of EIA hardly affects project decisions (Wang, 2006) partially because main governance mechanisms embedded in international version of EIA are taken out. For example, China's EIA lacks the scoping step and begins when main decisions

have been made. In the cases of California HSR and OL3 & 4, the EIA process has two stages and scoping is transparently performed at the first stage.

The second contrast in the regulatory process is how EIA experts work with other project team members, including the project owners, planners, and designers. In China, EIA is a separate process. Its responsible entity is the EIA institute contracted with the project owner. On the contrary, in the other two cases, EIA is implemented within the project team and EIA experts are part of the team. The project owner is the sole responsible entity for the feasibility and EIA reports and also for the implementation of EIA. The integration indicates that EIA is a continuous and on-going process throughout project construction and operation. The project team members who participate in formulating mitigation and monitoring measures can actually implement them and, whenever necessary, modify them. In this arrangement, there is a high level of knowledge exchange and accumulation within the project team.

More interestingly, in the case of OL3 & 4, the Finnish government also plays a role of coordinator according to the Finnish regulations. The MEE and the Ministry of Environment invite and coordinate the comments from government agencies and international community respectively. This becomes a salient contrast to the California HSR case in which the proposing agency, HSRA, had to actively communicate with many governmental agencies one by one. This is certainly less efficient and more time-consuming.

Normative level

We consider professionals as the most crucial agent at the normative level in the field of public projects because of the importance of their professional expertise and knowledge. For the same reason, their professional work and authority needs to be put under proper scrutiny.

In China, the EIA report of high-speed railways needs to be reviewed and approved by the MEP. The MEP needs to review many EIA reports of large projects every month. It is difficult for the MEP to check details such as data accuracy and assumptions embedded in the models used to assess environmental impacts. According to the interviewees, usually, an expert panel is organized to review the reports. However, often, there is insufficient time for the selected experts to examine the report in depth. The fact that experts themselves have different opinions of the same issue also creates problems for project owners and their doubts towards the process. This indicates a need for project participants to acquire capacities of handling debates.

Another mechanism is that the MEP inspects several EIA institutes (i.e., less than 10% of existing EIA institutes) and their reports periodically. The MEP announces the names of the EIA institutes that fail to pass the inspection and sometimes revokes their licenses as described earlier. Similarly, the National Audit Office of China and the Resources and Environmental Protection Audit under the Department of Agriculture have been assigned the responsibility for environmental auditing since 1998. However, they only focus on financial audit of areas other than infrastructure. Until the recent three years they begin to audit on construction management of railways and highways but auditing on EIA implementation remains rudimentary. These inspections are helpful but the scope is limited compared to the large number of projects that need EIA in China. The cost of expanding the scope of the inspection can be quite high.

More importantly, monitoring and inspection mechanisms are nearly absent after the EIA report is approved. Although EIA inspection before project operation is mandated in the EIA Law, it differs from EIA follow-up and monitoring in its focus. Merely checking whether the measures specified in the report are

implemented is insufficient. This assumes the initial report is properly done and assessment is accurate. Substantive issues such as "What is the environmental performance (e.g., energy consumption, carbon emission, waste disposal) of the project? What is the situation of the citizens who are relocated and whose land is acquired?" need to be addressed.

Time and human resource constraints seem to lead to the sacrifice of EIA quality. In many Western countries, the public, including professionals, citizens, and environmental groups, are invited to oversee the process. This is a strong mechanism of examining EIA at different stages that utilizes multiple sources of knowledge and human resources. Nevertheless, it certainly requires time and resources. On the other hand, based on the interviews, professional reputation and the word of mouth in the professional community serve an important drive for professionals to perform their best without official certifications and inspections in the case of California HSR and OL3 & 4. This normative force, which we may call "professionalism", meaning the moral and obligatory principles regarding how members in the profession should behave, is embedded in the role system and professional identities in a society (Scott, 2008b). Where this force comes from and how to forge it is an area worthy of further study.

Cultural-cognitive level

We consider the public as the dominant actor at the cultural-cognitive level because they comprise the majority of the society. As Chapter 4 reports, the Chinese public lacked an understanding of their roles and rights in the EIA process and environmental decision-making, as well as the impact on their lives caused by the project. The public also had a passive attitude towards participating in public projects. Fortunately, the public recognized the importance of the project to wider social and economic development.

On the contrary, the case of California HSR perhaps presented a negative effect of overemphasis on the individual's rights and benefits. Interviewees were particularly frustrated by a few individuals who ignored experts' knowledge and great efforts put into many alternative options of the projects and only argued about their own losses and compensation. The expert interviewees considered the public participation here to be too open and lacked control, so that individuals with only self-interests were able to delay a project that could deliver important social benefits. They stated that the professionals' role was devalued in the institutional arrangement.

The case of OL3 & 4 seemed to provide an ideal example. The process is not open to the public unlimitedly. A limited number of public hearings were held and public comments were invited on a few occasions, all within specified time limits. Conflicts also arose and were handled. There were protests from the public in certain regions that forced the project owner to give up the region as potential sites. The interviewee stated that the complexity of nuclear power project was difficult for the majority of the public to comprehend. But a high level and high quality of education system has an undeniable contribution to the public's understanding regarding the necessity of the project and its benefits to the society.

Capacity building

The case comparison points out the importance of capacity-building in making the entire EIA process work properly. The Chinese government has recognized this point and has long ago initiated capacity-building. However, the effort is relatively concentrated on the MEP and its related agencies. At the same time, the speed of capacity building is behind of that of building new projects. The financial and capacity constraints are especially pressing when the agencies and EIA institutes handle a large amount of projects simultaneously.

At the same time, the EIA professional training system in China has been newly created and managed by the MEP. It is in development and is attempting to establish professional standards. This differs from many developed nations where professional training systems are already mature and much less controlled by the government. For instance, in the United States, professional communities, associations, unions, and universities all play critical roles in training capable engineers and managers. In this system, normative forces come from wider professional communities and organizations. In Finland, an outstanding education system contributes not only to fine citizenship but also fosters talent.

At the cultural-cognitive level, the public's values and perceived relationship between the society and nature deeply affect how they react to environmental issues and what they consider their responsibilities to be as a citizen. In this study, we only use education levels as a proxy for this complex concept. We acknowledge that the capacity of the public is a concept that needs to be better defined (see Chapter 4). However, in the context of EIA, we consider it more important to observe the effort of public engagement as a social learning process.

We recognize that professionals such as teachers and researchers can importantly shape the public's attitude and beliefs by providing interpretations of reality, and by promoting a new value or behavior model with their knowledge authority. As we point out in Chapter 4, the potential and benefit of public engagement is greatest when public participation begins early and proceeds in an iterative and continuous way. When the public is involved from the stage of project planning and design, the public develops sufficient capacity and a sense of commitment that empowers them to manage their environment and monitor the implementation of environmental protection at lower costs compared to external enforcement and monitoring (Noble, 2009). The characteristic of public participation is salient in the cases of California HSR and OL3 & 4 but completely missing in the case of Wu-Guang HSR. The discussion is summarized in Table 20 below.

Table 20 Case comparisons under the institutional framework

Dimensions	Wu-Guang HSR	California HSR	OL3 & 4
Institutional levels			
Regulative			
Requirements & standards	EIA was less strict than international standards (see Chapter 3).	EIA was in line with international standards; The project was subject to California Environmental Quality Act.	EIA was in line with international standards; The project was subject to the UNECE Espoo Convention.
Integration	Environmental professionals worked separately.	Environmental professionals worked with the owner team.	Environmental professionals worked with the owner team.
Role of government	Project owner, supervisor.	Project owner, supervisor.	Project supervisor, coordinator.
Normative			
The degree to which professionals' performance was scrutinized	Low.	High.	Very high.
The actors that scrutinized the performance	Government agencies; Small number of selected experts.	Government agencies; Professional communities (e.g., associations); The public.	Government agencies; Professional communities (e.g., associations); The public; International communities.

Dimensions	Wu-Guang HSR	California HSR	OL3 & 4
Cultural- cognitive			
The public's understanding of their role and right in EIA	Very low.	High.	High.
The public's understanding of project impacts	Low.	High.	High.
The public's appreciation of collective benefits of the projects	Relatively high.	Medium (some individuals insisted on their own rights).	Relatively high.
Capacity: Knowledge, skills, information			
Regulative	The MEP's capacity was less sufficient and reliable (when reviewing many projects simultaneously).	The governmental agency outsourced the technical tasks of which capacity was insufficient.	The governmental agency's capacity was credible and reliable (especially STUK).
Normative	Professionals' training system was newly established and their performance was less consistent and reliable; Professional communities play little role in shaping professionalism.	Professionals' training system was institutionalized and their performance was reliable; Professional communities play an important role in maintaining professionalism.	Professionals' training system was institutionalized and their performance was reliable; Professional
Cultural-cognitive			
Efforts and channels of distributing project information &related knowledge	Absent	High & multiple channels	High & multiple channels
Level of public education	Low	-	High
Outcome of EIA	Unknown environmental impacts including social impacts; Unknown EIA content and implementation; Unresolved issues.	Partial causes of the lengthy project delay	EIA completed on time; social acceptance is high.

Conclusion

Regulatory and coercive approaches can gain immediate effects on curbing undesirable activities. However, effective and efficient environmental governance for public projects requires much more than developing strict and comprehensive regulations. The unintended outcome of formal processes can be observed in the case of California HSR. The U.S. environmental regulations and laws have proliferated over the years to the point that public works are often unable to be delivered in a timely manner. Particularly, the complex environmental process in the U.S. is vulnerable to challenge and litigation. Formal processes, as experts in the workshop agreed, can be taken advantage of by self-interested actors to slow down the project or used by opponents to their favor. It is apparent that regulations with good intentions are unable to demand cooperative behavior. Informal processes, on the other hand, can have the strength of "soft power" in shaping attitude and values that permeate society.

Environmental issues are complicated and ambiguous in nature. They are further complicated by the characteristics of public projects, which are long and dynamic processes full of uncertainty. Public projects are affected by multiple economic, environmental, and social factors and, therefore, require flexibility and mutual adjustments from many involved parties. To facilitate the cooperation and negotiation of multiple parties from the government, business, professional, and the public, we need talents with strong management and communication skills.

More importantly, we call for more attention paid to the "*time*" dimension. Over the course of larger projects, causality of problems is not always clear and cause and effect are often separated by longer time and space. Similarly, environmental issues normally lack explicit and short cause-and-effect chains. The characteristics indicate that environmental issues of projects should be managed at the same time pace as other project issues: from a perspective of project lifecycle. This can be achieved by including designated professionals in the project management team in charge of the entire project. Fundamentally, environmental governance needs to be integrated into the entire project lifecycle.

For a long process like the EIA process to operate properly, certain institutionalized routines have to be established to reduce the demand for external monitoring and supervision, which is often very costly. To do this, this study emphasizes the importance of professional education and training that cultivates "professionalism" and normative forces of professional groups. Professionals are individuals who internalize work routines *and* principles (Stinchcombe, 1990). China produces many capable engineers each year. However, professionals with principles differ from capable engineers. How to cultivate professionalism thorough China's education and training system is a pressing issue that deserves more attention.

In addition, to motivate firms to adopt environmentally friendly activities, experts suggest that these activities should be connected to firms' competitive power, or "green power". It is not merely a rhetorical strategy. Michael Porter, a leading expert on company strategy and national competitiveness, has pointed out how to turn environmental requirements to the competitive advantage of a company or nation (Porter & Linde, 1995b). China has implemented the strategy by heavily investing in clean and renewable energy technologies. A similar strategy should be implemented in transforming traditional sectors such as public projects and construction into sources of China's competitiveness in international markets. This requires scholars and practitioners to work together to identify what the "green power/competitiveness" is for companies in the sector of public projects and how to cultivate it.

Finally, expert opinions and our case comparison point to an important governance mechanism that is missing in China's public project: public participation. The focus of public participation should be firstly placed at the function of social learning and empowerment. The difficulty of doing this could be the transformation of the relationship between the government and the public, which indicates the changing role of the government from "managing" the public to "serving and empowering" the public. How to realize the transformation requires further studies.

CLOSING REMARKS

The study has provided a more holistic view of environmental governance for public projects through an institutional lens. It has examined the topic from the perspectives of (1) EIA regulations, (2) public participation in Wu-Guang HSR, (3) gender inequality, and (4) expert discussions and case comparison. By doing this, it has looked at the regulatory, normative, and cultural-cognitive layers of environmental governance for public projects. This broader institutional framework has usefully demonstrated the complex nature and broad influence of the research topic and generates important implications for educators, researchers, politicians, and practitioners.

China's environmental issues need everyone's efforts and input. It is definitely not a good use of our talents and resources if we simply create layers and layers of hierarchical mechanisms in monitoring, supervising, and sanctioning undesirable activities. Each of us should be motivated and enabled to follow good principles and perform desirable activities. Only then can the cost of environmental governance be minimized and green competitiveness be maximized.

If this presumption is agreed, the usefulness of the institutional framework developed in this report is clear. It reveals many opportunities of improvement in non-governmental, non-regulatory sectors. It points out that individuals have environmental responsibilities and different social roles that can contribute to environmental governance in many ways. It also identifies research needs and opportunities in this area, such as:

1. How to facilitate the cooperation and negotiation of multiple parties from the government, business, professional, and the public? How to cultivate talents with strong management and communication skills in this area?

2. How to integrate environmental governance into project governance, particularly throughout the entire project lifecycle? How to ensure environmental professionals work closely with the project management team?

3. How to cultivate "professionalism" thorough China's education and training system?

4. What is the "green competitiveness" of companies in the sector of public projects? How to cultivate it?

5. How to integrate gender equality into decision-making and the balancing of preferences in the government, companies, and society at large (including in formal education)?

6. How to properly implement public participation that addressing social learning and empowerment? To do this, how will the relationship between the government and the public as well as their roles transform?

This research work has several shortcomings. The major one is the insufficiency of the preliminary data of the Chinese cases. Although about 9 Chinese experts kindly talked to the main author and their interview comments were quite consistent, we could make stronger and deeper assessments on current EIA quality with EIA reports and records of monitoring and inspection, and develop a deeper understanding of the difficulties of implementing EIA and environmental practices. Fortunately, we gained great support from the foreign experts of the other cases, which permits an interesting case comparison to conclude the study.

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