FINANCIAL MANAGEMENT ASSESSMENT FOR PROJECT ENTITIES

A. Summary

1. The financial management capacity of the executing and implementing agencies for the Chemical Industry Energy Efficiency and Emission Reduction Project in the People's Republic of China (PRC), as well as of the subproject companies, was assessed and their financial statements over the last 5 years were analyzed according to the project financial management and analysis guidelines of the Asian Development Bank (ADB).[1] The following companies were assessed: China National Chemical Group (ChemChina), the executing agency; China Haohua Chemical Group (CHC), the implementing agency; Beijing Zhonghao Huatai Energy Technology (Huatai), CHC's new energy service company (ESCO); and the subproject companies Dezhou Shihua Chemical (DSC) and Zhonghao Chenguang Research Institute of Chemical Industry (CGY). The assessment was based on (i) relevant information and documents submitted by these companies, (ii) their responses to a financial management assessment questionnaire, (iii) information gathered from interviews with their key financial staff, and (iv) a critical review of external audit reports.

2. ChemChina was incorporated in May 2004 after China National BlueStar and CHC merged with the State Council approval. A large state-owned enterprise (SOE) under the central government, ChemChina is administered directly by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) of the PRC.[2] ChemChina is based in Beijing and holds a diversified portfolio of over 100 chemical manufacturers in six lines of business: (i) new chemical materials and specialized chemicals, such as innovative catalysts; (ii) basic chemicals; (iii) oil processing and refinery products; (iv) agrochemicals; (v) rubber products; and (vi) chemical industry equipment manufacture and provision of turnkey solutions for industries. Pirelli, the world's fifth-largest tire maker, was recently acquired for €7.71 billion. ChemChina is steering the group's business and is responsible for its development under the guidance of the board of directors. ChemChina itself as a management company has a lean organization with few staff organized in 10 offices and departments.

3. According to this assessment, ChemChina, CHC, and the subproject companies have the systems and procedures they need for proper financial management and reporting, and adequate accounting systems to implement the project. ChemChina and its subsidiaries practice accrual accounting and follow the PRC's business accounting standards, which conform to International Accounting Standards (IAS). Their accounting procedures accord with Ministry of Finance (MOF) regulations and policies, which are effective and adequate for the project. ChemChina, CHC, and DSC have also been part of multilateral development bank projects.[3] Since none of those were ADB projects, however, these companies are

[1] ADB. 2005. *Financial Management and Analysis of Projects*. Manila.
[2] SASAC, founded in 2003 consolidating various industry-specific ministries, manages 117 SOEs under the central government. It appoints their top executives, approves mergers and asset sales, and drafts laws related to SOEs.
[3] CHC is implementing a €66.9 milllion loan project under the European Investment Bank's China Climate Change Framework Loan for the PRC, for the retrofitting of the ammonia production chain at the Henan Yuhua Development Company. The loan took effect in April 2014. DSC implemented a loan project under a World Bank financial intermediation loan through Huaxia Bank involving a switch to ionic membrane technology at a plant producing 160,000 tons of caustic soda a year. Of the loan amount of CNY400 million, the World Bank provided $10.1 million, and Huaxia Bank, CNY68.2 million. The loan agreement was signed in December 2009 and implemented between December 2009 and December 2010. The project was completed on time. The loan is expected to be fully paid by the end of 2015.

unfamiliar with ADB's procurement and disbursement guidelines and procedures. The financial management capacity of ChemChina, CHC, and the subproject companies is summarized in Table 1.

Table 1: Summary of Financial Management Capacity and Risk Assessment of Executing and Implementing Agencies and Subborrowers

Risks	Risk Assessment*	Proposed Mitigation Measures/Comments
Project implementation experience of ChemChina and CHC	L	ChemChina and CHC have significant project implementation experience. They have implemented industrial energy efficiency and emission reduction projects supported by the World Bank and the European Investment Bank, and are therefore familiar with multilateral development bank procedures.
Accounting policies and procedures	M	ChemChina, CHC, and CHC subsidiaries have all adopted the Accounting Standards for Business Enterprises (ASBSE), which were approved by MOF in 2007 and are consistent with IAS on a project accounting level. ChemChina and CHC have established comprehensive and integrated systems for budgeting, accounting, cash, and asset management using computerized enterprise resource planning software. ChemChina, CHC, and Huatai staff that will be part of the project will need to undergo capacity training in ADB disbursement and procurement requirements and procedures before the project.[a]
Funds flow/Disbursement arrangements	L	The funds will be transferred to the revolving escrow fund account and directly disbursed to subproject companies. ADB loan proceeds will thus be ring-fenced from other CHC funds.
Staffing	M	ChemChina, CHC, DSC, and CGY accounting personnel have sufficient work experience and adequate financial skills. The accounting departments are adequately staffed. Huatai will hire experienced finance personnel and can rely on CHC support and controls in day-to-day project implementation.
Internal audit	L	The institutional setup for internal audit at the executing and implementing agencies and the subproject companies complies with the Interim Measures on the Administration of Internal Auditing of Central Enterprises, issued by SASAC in 2004. ChemChina and CHC both have independent internal audit departments separate from their finance departments, with responsibility for auditing and supervising all the subsidiary companies in the group. The subproject companies also have their own internal audit departments. Each internal audit department is adequately staffed with qualified personnel and its head reports directly to the general

Risks	Risk Assessment*	Proposed Mitigation Measures/Comments
		manager of the company.
External audit	L	ChemChina and CHC both undergo annual external audit by certified public accountant firms designated by SASAC on a rotating basis. The project will also be audited by the government after its completion, as part of the government's project acceptance procedures.
Monitoring and reporting	M	Huatai will take charge of project monitoring and reporting, subject to CHC's and ChemChina's review and endorsement and with support from CCB. Current monitoring and reporting practices at CHC are in line with ADB standards.
Information systems	L	ChemChina and CHC use SAP enterprise resource planning software. Huatai will use this same software, and pattern its information systems after these companies' systems, with the approval of the CHC finance department.
Overall Financial Management Risk (before mitigation actions)	M	Implementing the foregoing mitigation actions will reduce the project's overall financial management risk from moderate to low.

ADB = Asian Development Bank, CCB = China Construction Bank, CGY = Zhonghao Chenguang Research Institute of Chemical Industry, CHC = China Haohua Chemical Group, ChemChina = China National Chemical Group, DSC = Dezhou Shihua Chemical, H = high, Huatai = Beijing Zhonghao Huatai Energy Technology, IAS = International Accounting Standards, L = negligible or low, M = moderate, MOF = Ministry of Finance, SASAC = State-owned Assets Supervision and Administration Commission of the State Council, SOE = state-owned enterprise.

[a] ADB's PRC Resident Mission disbursement unit conducted a half-day custom-tailored training session in disbursement for CHC, Huatai, and the subproject companies during the fact-finding mission for the proposed project. But if the project is implemented, CHC, Huatai, and subproject company staff should attend financial management and disbursement training at ADB before taking part in the project.

B. China National Chemical Group: Executing Agency

4. **Introduction.** ChemChina is the largest chemical enterprise in the PRC in terms of sales, equity, and assets. It comprises 106 industrial firms and 24 research and development (R&D) organizations developing new technologies and materials, and thus consolidating ChemChina's innovative edge. In 2014, the group ranked 276th among the Fortune 500 companies, with total assets of CNY273 billion, and sales revenues of CNY244 billion. The group has 140,000 employees.

5. ChemChina's holdings include two large groups of companies: the BlueStar Group, created in 1984 and specializing in new chemical materials and animal nutrition, and CHC, which is discussed at length below. In addition, five other business groups are engaged in chemical industry equipment design and manufacturing, agrochemicals, rubber industries, petrochemical refining and processing, and research and design.

6. **Financial management system.** ChemChina uses the accrual accounting in compliance with the PRC's Accounting Standards for Business Enterprises (ASBEs). On 15

February 2006, MOF issued a new set of ASBEs, with one basic standard and 38 specific standards. The ASBEs are consistent with International IAS in most respects.[4] In 2009, they became mandatory for all large and medium-sized enterprises in the PRC, regardless of industry. ChemChina, a large company[5] and a central SOE administered by SASAC, adopted the new ASBEs as early as 2008.

7. ChemChina has complete accounting procedures for budgeting, asset and cash management, and transaction recording and processing. A rigorous budgeting system is uniformly applied throughout the group. The budget contains both financial and physical indicators against which actual performance, monitored monthly, is compared. These same accounting systems and procedures will be used in the project. ChemChina also has a comprehensive asset management system based on clearly defined principles, rules, and guidelines. The corporation uses computerized accounting software following the ASBEs to produce the necessary financial reports. A special system administrator and a system operator are in place to safeguard the confidentiality, integrity, and availability of data.

8. **Staffing and capacity of finance department.** 10 qualified personnel are responsible for financial management at the headquarters and consolidated reporting for the group. Most of the group's financial professionals—more than 1,700 of them—work for subsidiaries. Financial staff must hold at least a valid accounting professional certificate. A separate division in the finance department manages the corporation's interest and exchange rate risks. This division is well versed in various hedging strategies and the use of hedging instruments, and experienced in protecting the corporation against such risks.

9. **Staffing and capacity of supervision and audit department.** ChemChina's supervision and audit department handles internal audit at the headquarters. It audits (i) financial revenues and expenditures, (ii) asset management, (iii) benefits of departing executives, and (iv) project implementation. It also drafts internal audit rules for the ChemChina group and inspects audit work assigned to subsidiaries. This department has 23 employees, all of whom have at least a bachelor's degree and are qualified audit professionals. The group as a whole employs 180 internal auditing staff. ChemChina will arrange the internal audit of the project accounts, with the necessary staff support from CHC and the subproject companies.

10. **Financial standing and performance.** According to its audited consolidated financial statements, ChemChina experienced a period of high growth between 2009 and 2013. Total assets soared in value from CNY168 billion to CNY273 billion, mainly because of the growth of current assets, and total owner's equity increased from CNY33.1 billion to CNY41.9 billion. During the same period, gross revenue rose from CNY108 billion to CNY244 billion, and earnings before interest, taxes, depreciation, and amortization (EBITDA), from CNY10.3 billion to CNY18.8 billion. The past 2 years, however, have seen a slowdown due to sluggish demand and overcapacity in the PRC's chemical industry, particularly the basic chemicals subsector. ChemChina still had net profits of CNY686 million in 2011, but it accrued net losses of CNY1.5 billion in 2012 and CNY0.96 billion in 2013.

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[4] A detailed comparison of the ASBEs with the IAS can be found on the website of the accounting firm Deloitte: http://www.deloitte.com/view/en_cn/cn/ab75912aff1fb110VgnVCM100000ba42f00aRCRD.htm.

[5] Defined as a company with sales of over CNY300 million ($48 million) and assets of over CNY400 million ($64 million).

11. ChemChina has sustained a high investment ratio amid decelerating domestic growth, mainly because of (i) rising demand in specialized and fine chemicals, and (ii) the need to transform industries and adopt more environmentally sustainable processes. In the current industrial slowdown, the high investment ratio is an added financial burden on the corporation. However, since its operations still generate positive cash flows, short-run losses do not represent a serious risk. ChemChina will eventually meet the new, more stringent environmental regulations and standards, and will continue to be a strong player in the PRC chemical industry sector.

12. ChemChina's financial standing remains solid despite the losses in the past 2 years. As a central SOE, it may file a request for capital injection if its liabilities-to-assets ratio becomes too high. SASAC support can improve its debt service capacity. In addition, ChemChina has maintained its AAA credit rating and has credit lines exceeding CNY400 billion ($64.5 million) with some of the PRC's large commercial banks.[6]

Table 2: Chemical Industry Enterprises Compared

Company	**Sales** (CNY billion)	**Total Assets** (CNY billion)	**Equity** (CNY billion)	**Current Ratio**	**Liabilities-to-Assets Ratio** (%)	**Interest Coverage Ratio**
Yuntianhua	55.90	65.7	9.7	0.70	85.25	2.32
Sinochem International	46.81	28.9	14.1	1.19	51.11	3.86
ChemChina	**244.04**	**272.5**	**41.9**	**0.82**	**84.63**	**1.99**
CHC	14.60	27.1	5.0	0.66	81.54	1.28
Yangmei Chemical	25.09	25.1	6.3	0.61	74.78	2.69
Wanhua Chemical Group	20.24	31.1	11.8	0.78	62.17	3.63
Inner Mongolia Elion Energy	14.39	22.7	9.9	0.89	56.42	2.32
Zhejiang Longsheng Group	14.09	19.0	9.9	1.62	47.61	6.13

CHC = China Haohua Chemical Group, ChemChina = China National Chemical Group.
Source: Asian Development Bank estimates; companies' published 2013 annual reports.

13. Table 2 compares the key financial ratios for ChemChina with those for its peers, including CHC. At the end of 2013, ChemChina had a current ratio of 0.82, within the medium sectoral range. Its interest coverage ratio of 1.99 was slightly lower than that for other chemical companies. Considering its large-scale operations, short-term liquidity is very unlikely to pose a substantial risk to ChemChina.

14. Key financial performance indices of ChemChina's past financial performance, based on its audited financial statements from 2012 to 2013 and the related credit rating reports in 2013, are summarized in Table 3.

[6] ChemChina has received a triple-A rating from Lianhe Credit Rating, one of the six major Chinese credit agencies, because of the corporation's (i) economies of scale and scope advantages, (ii) leading position in R&D, (iii) ownership of listed companies, (iv) large EBITDA and interest coverage ratio, and (v) financial backing from SASAC.

Table 3: Key Financial Data for the China National Chemical Group, 2009–2013
(CNY million, unless stated otherwise)

Item	2009	2010	2011	2012	2013
Sales revenue	108,035.0	140,224.0	179,196.1	201,694.5	244,036.2
Net operating income	11.7	733.9	919.5	(3,823.6)	(5,055.9)
Earnings before tax	1,234.0	2,035.0	2,145.3	580.7	619.8
Net income	(48.8)	718.3	686.5	(1,456.5)	(962.6)
Current assets	69,875.7	73,706.4	99,758.8	112,811.7	124,258.1
Trade accounts receivable	7,628.7	8,172.6	12,942.6	15,023.7	25,583.3
Fixed assets	54,397.3	58,985.4	78,121.0	79,413.3	79,240.1
Total assets	167,599.0	179,612.0	248,030.9	267,420.5	272,510.7
Current liabilities	85,788.4	93,762.5	128,764.4	146,960.8	151,338.4
Long-term liabilities	49,546.0	53,038.9	81,000.6	80,015.9	79,284.2
Shareholders' equity	33,100.8	32,815.1	38,265.9	40,443.8	41,888.1
EBITDA	10,210.8	12,284.2	15,619.7	18,299.9	18,777.6
Interest expense	3,696.7	4,102.5	5,980.9	8,568.1	9,439.6
Growth index of sales (2009 = 100)	100.0	129.8	165.9	186.7	225.9
Growth index of assets (2009 = 100)	100.0	107.2	148.0	159.6	162.6
Months of sales in receivables	0.8	0.7	0.9	0.9	1.3
Current ratio	0.8	0.8	0.8	0.8	0.8
Interest coverage ratio	2.8	3.0	2.6	2.1	2.0
Total liabilities–assets ratio (%)	80.3	81.7	84.6	84.9	84.6
Operating income margin (%)	0.0	0.5	0.5	-1.9	-2.1
Net profit margin (%)	1.1	1.5	1.2	0.3	0.3
Net profit–total assets ratio (%)	0.7	1.1	0.9	0.2	0.2
Net profit–equity ratio (%)	3.7	6.2	5.6	1.4	1.5

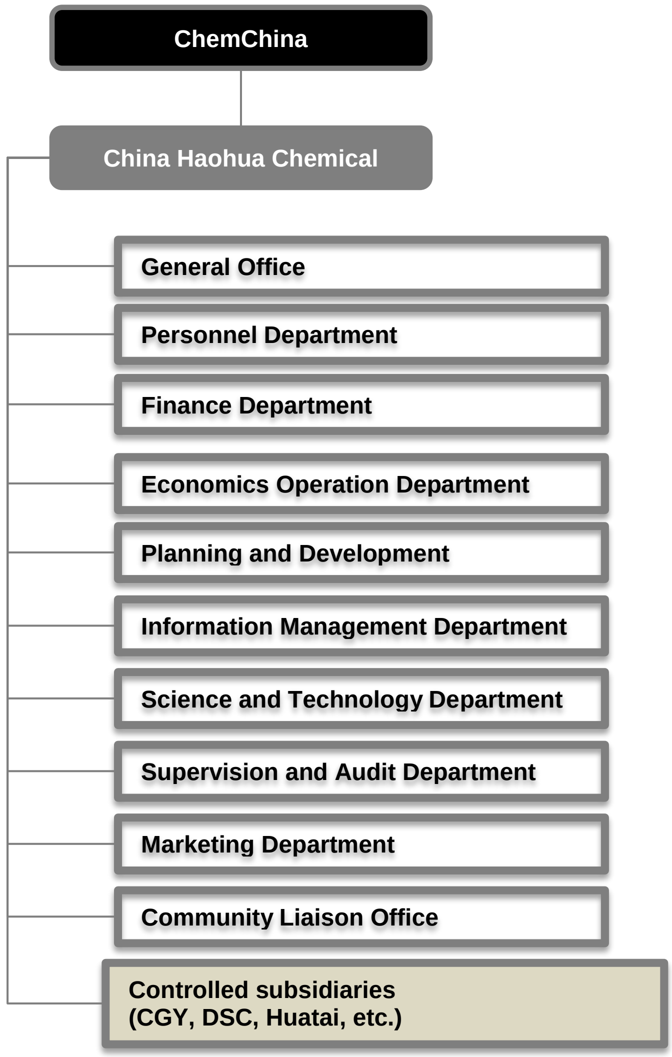
EBITDA = earnings before interest, taxes, depreciation, and amortization.
Source: Asian Development Bank, based on China National Chemical Group's audited financial reports for 2009–2013.

C. China Haohua Chemical Group: Implementing Agency

15. **Introduction.** With State Council approval, CHC was established in 1993 with registered capital of CNY4.22 billion. In 2004, it merged with ChemChina and is now ChemChina's key subsidiary. Over the past 20 years, a period of strong growth for CHC, the company has become a leader in the chlor-alkali chemicals, fluorine chemicals, and fine chemicals subsectors.[7] CHC has 16 industrial plants and four trading companies. In addition, it recently established its wholly owned ESCO, which the implementation of this loan is expected to develop into a platform for disseminating innovative energy efficiency and emission reduction technologies. CHC has a total staff of more than 15,000. In 2013, the company had total assets of CNY27.09 billion, net assets of CNY5 billion, and sales revenue of CNY14.6 billion. Figure 1 shows how CHC is organized.

[7] Fine chemicals are complex, single, pure chemical substances typically used as starting materials for specialty chemicals such as pharmaceuticals. Heavy chemicals, in contrast, are produced and handled in large lots and are often in a crude state. Successful suppliers must produce according to exacting specifications, typically in multipurpose chemical manufacturing complexes.

Figure 1: Administrative Organogram of China Haohua Chemical Group



CGY = Zhonghao Chenguang Research Institute of Chemical Industry, ChemChina = China National Chemical Group, DSC = Dezhou Shihua Chemical, Huatai = Beijing Zhonghao Huatai Energy Technology.
Source: Asian Development Bank.

16. **Role and financial management responsibilities during loan implementation.** As the project implementing agency, CHC will sign the revolving escrow fund account management agreement with China Construction Bank, supervise the day-to-day administration of the revolving fund, and ensure sound financial governance. CHC will delegate the actual work to Huatai and provide support in its execution only when needed. In addition, it will have review and endorsement responsibilities. CHC will have the following financial management duties: (i) cause Huatai to prepare, control, and sign loan withdrawal applications; (ii) cause Huatai and the subproject companies to prepare, control, and approve financial and physical progress reports; (iii) monitor fund use; (iv) prepare consolidated financial statements of all project components; and (v) cause Huatai to prepare, control, and approve progress reports and semiannual reports to be submitted to ADB and ChemChina.

17. **Financial management system.** As regulated by SASAC and required by its parent company, ChemChina, CHC has created a comprehensive and effective financial management system that complies with all related regulations. The accounting procedures and practices of CHC and its subsidiaries are aligned with the regulations and policies issued by ChemChina and MOF. CHC's financial management system is mainly embodied in its Capital and Financial Management Handbook, its Overall Budget Management Guidelines, and a number of other management procedures, which are updated from time to time. That system will be used in CHC's wholly owned ESCO and the subproject companies. CHC uses SAP enterprise resource planning software, with fully integrated accounting, budgeting, project management, procurement, and materials management modules.

18. The accounting work necessary for the proposed project is basically project, instead of corporate, based. With China Construction Bank to help record transactions as onlending bank, trustee of the ADB loan proceeds, and manager of the revolving escrow fund account, and the project's adoption of the ASBEs in accordance with CHC's financial management system, there is high confidence that ADB's required quality of accounting and consistency of accounting standards and procedures with the IAS will be met.

19. CHC's assets management system is laid out in the company's Capital and Financial Management Handbook. All investments are first classified, according to payback period, into short-term and long-term investments. Short-term investments, mainly securities, have a payback period of less than 1 year. As the term implies, long-term investments—project, equity, and debt investments—have a longer payback period. All long-term investments proposed by CHC's subsidiaries must be approved by CHC's senior management, on the basis of feasibility study reports, as must CHC's own long-term investments. Subsidiaries also cannot make short-term investments in risky securities, such as stocks, futures contracts, and foreign currency transactions, without CHC approval. In addition, CHC's investment scale and that of its subsidiaries must meet annual budget requirements. When an asset or a subsidiary company is to be acquired or disposed of, it must first be appraised by the company itself or by external experts. The company's asset appraisal, asset transfer, and fixed asset acquisition and construction processes are described in its asset management guidelines. These asset management practices are in line with the requirements set by the SASAC. CHC has likewise confirmed, in its responses to the financial management assessment questionnaire, that key equipment under the project, such as mirror troughs, stands, and steam turbines, will be covered by property insurance. This means that project assets will be properly safeguarded.

20. **Staffing and capacity of finance department.** CHC's finance department has seven adequately qualified employees. All staff of the department must (i) hold at least a bachelor's degree, with a major in financial management and accounting; (ii) be proficient in written and spoken English; (iii) have proven office software skills; (iv) have prior experience in accounting work; and (v) have obtained professional qualifications, such as a certified public accountant license, before taking up any professional post. The department manages the finances and prepares consolidated financial statements for the group of companies. A division under the department manages the group's foreign exchange and interest rate risks.

21. **Staffing and capacity of supervision and audit department.** CHC also has a supervision and audit department in charge of internal control inspection and supervision. The department is adequately empowered to carry out its duties independently. Its four internal auditors, plus auditors from CHC's subsidiaries, perform the tasks assigned to the

department. The institutional setup, functional duties, and auditing methodologies, procedures, and standards of the department conform to the Interim Measures on the Administration of Internal Auditing of Central Enterprises issued by the SASAC in 2004. The department will carry out a yearly internal audit of the subproject companies (Huatai and DSC in the first batch). These companies, as well as CHC's wholly owned ESCO, have likewise signified their willingness to accommodate special project audits on the use of ADB funds, if so required by CHC or ADB.

22. **Financial standing and performance.** Like other companies in the PRC's chemical industry, CHC has faced tough times in recent years because of weak demand and the need for industrial restructuring, as reflected in its financial statements from 2009 to 2013. Its net income turned negative in 2013 and its current ratio deteriorated. In 2012, China Haohua Chemical General Corporation was spun off to take charge of the group's chlor-alkali business.[8] The spin-off led to a slowdown in CHC's operating activities and sales growth. But sales continued to grow, indicating that CHC's products still enjoy a competitive advantage amid the market reversals. Besides, CHC operates in a segment of the PRC's chemical industry that is poised for significant future growth. The group's scale and scope of operations, and its ownership of highly advanced R&D centers, have given it a sustainable competitive advantage in the PRC market.

23. Between 2009 and 2013, CHC's capital structure was significantly leveraged, with a liabilities-to-assets ratio of over 80% but below 85%—a level of debt financing considered acceptable for large-scale SOEs in the PRC. In 2013, CHC had CNY27.1 billion worth of assets and CNY14.6 billion in sales revenue. Its interest coverage ratio has remained above 1.3. Moreover, the company has established a strong R&D position in the organofluorine and chlor-alkali subsectors. For these reasons, CHC has maintained its AA credit rating and large financing capacity with no need for any guarantee from ChemChina. Key financial performance indices of CHC, based on its financial statements for 2010–2013, are summarized in Table 4.

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[8] CHC still owns some chlor-alkali enterprises, including five (DSC among them) in the polyvinyl chloride subsector.

Table 4: Key Financial Data for China Haohua Chemical, 2009–2013
(CNY million, unless stated otherwise)

Item	2009	2010	2011	2012	2013
Sales revenue	21,168.0	24,580.8	28,890.9	12,796.4	14,601.6
Net operating income	(720.5)	(418.5)	(212.6)	(506.1)	(835.0)
Earnings before tax	114.7	168.9	145.8	595.9	(580.7)
Net income	(11.1)	41.1	(55.8)	402.8	(694.1)
Current assets	16,587.2	18,199.7	19,209.1	10,999.5	11,067.6
Trade accounts receivable	1,552.2	1,580.0	1,596.5	695.5	750.3
Fixed assets	14,909.8	15,610.6	18,941.3	10,097.6	11,979.2
Total assets	39,475.5	43,703.6	47,951.1	26,085.8	27,086.0
Current liabilities	21,292.1	24,570.3	28,632.5	12,829.5	16,743.5
Long-term liabilities	10,357.6	11,329.6	11,286.1	7,447.5	5,341.7
Shareholders' equity	7,825.8	7,803.7	8,032.5	5,808.8	5,000.9
EBITDA	1,782.3	2,432.4	2,712.3	2,391.8	1,188.2
Interest expense	835.5	1,284.1	1,713.5	1,061.7	925.0
Growth index of sales (2009 = 100)	100.0	116.1	136.5	60.5	69.0
Growth index of assets (2009 = 100)	100.0	110.7	121.5	66.1	68.6
Months of sales in receivables	0.9	0.8	0.7	0.7	0.6
Current ratio	0.78	0.74	0.67	0.86	0.66
Interest coverage ratio	2.1	1.9	1.6	2.3	1.3
Total liabilities–assets ratio (%)	80.2	82.1	83.2	77.7	81.5
Operating income margin (%)	(3.4)	(1.7)	(0.7)	(4.0)	(5.7)
Net profit margin (%)	(0.1)	0.2	(0.2)	3.1	(4.8)
Net profit–total assets ratio (%)	(0.0)	0.1	(0.1)	1.5	(2.6)
Net profit–equity ratio (%)	(0.1)	0.5	(0.7)	6.9	(13.9)

EBITDA = earnings before interest, taxes, depreciation, and amortization.
Sources: Asian Development Bank estimates; China Haohua Chemical Group annual reports for 2009 to 2013.

24. **External auditor.** CHC's current external auditor, assigned by SASAC, is Baker Tilly China Certified Public Accountants.[9] The external auditor's reports for the past 5 years have been reviewed. None of them presented a qualified opinion. Baker Tilly audited CHC's financial statements for 2012 and 2013; before 2012, CHC was part of China Haohua Corporation.

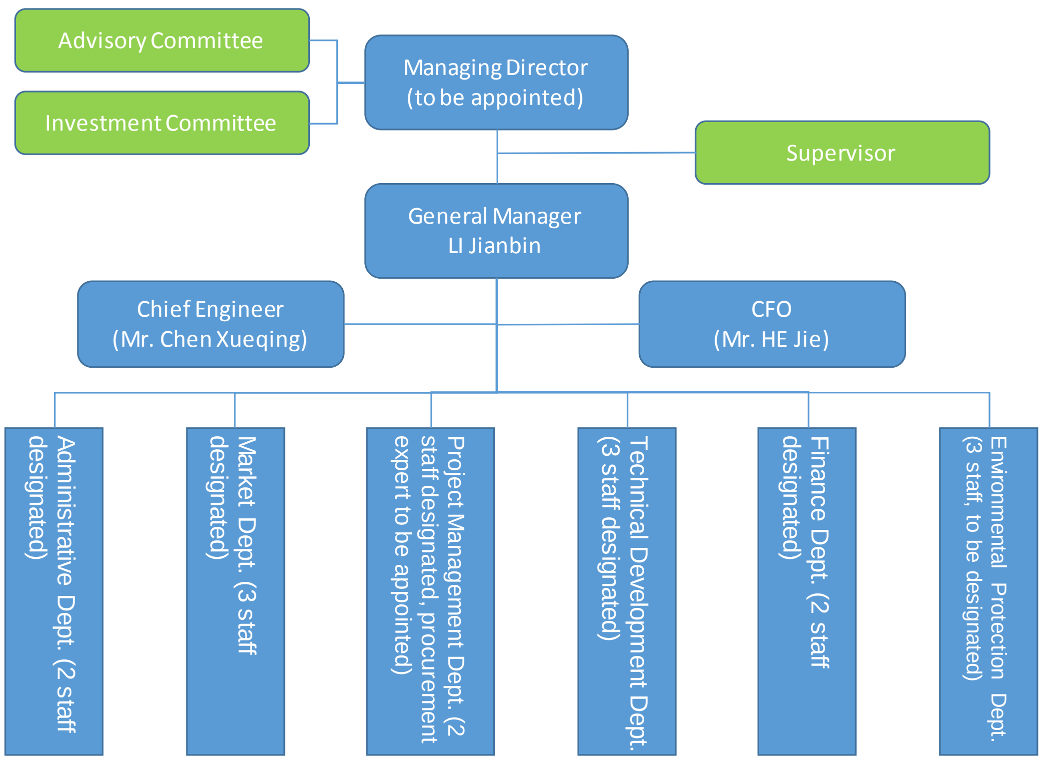
D. Beijing Zhonghao Huatai Energy Technology: China Haohua Chemical's Energy Service Company

25. **Introduction.** Huatai was set-up by CHC in August 2014 as its wholly owned home ESCO to implement the loan and eventually become the group's platform for disseminating energy efficiency and emission reduction technology. During project implementation, Huatai

[9] http://www.bakertillychina.com/

will act as (i) project management office (PMO), and (ii) ESCO organizing financing for and implementing the CGY subproject in the first batch of subprojects. Huatai now has a registered capital of CNY34 million. According to its business plan, (i) Huatai's registered capital will increase to CNY50 million by August 2015, thus fulfilling the requirement for financing CGY's subproject; (ii) the ESCO will be fully staffed by June 2015; (iii) by then, Huatai will have set up a finance department with at least one finance director and two qualified accountants; and (iv) Huatai will use the financial management system and accounting software now used by all CHC subsidiaries. Huatai will be subject to internal audit by CHC.

Figure 2: Organization Structure of Beijing Zhonghao Huatai Energy Technology



CFO = Chief Finance Officer.

26. Since Huatai was established only in 2014 and has not yet engaged in major business operations, no performance data were available for review. The subproject to be financed according to an ESCO financing model will be selected from among the industrial enterprises in the ChemChina group; payment collection is therefore believed to carry no risk. Moreover, the ESCO model will allow the exercise of a put option to advance payment for energy savings.

27. The financial strength and management capacity of Huatai will be strengthened during loan implementation by means of the following: (i) allocation to Huatai throughout the term of the loan of at least 40% of the difference between ADB's interest rate and the rate on the subloans to subborrowers, to increase the ESCO's equity; (ii) Huatai's fulfillment of its duties in the implementation of the ADB loan, as PMO; (iii) implementation of the second subproject in the first batch as an ESCO project, with Huatai as subborrower of the ADB loan; and (iv) allocation of up to 10% of the interest rate differential for the hiring of external

consultants to prepare feasibility studies of potential future subprojects. The total allocation to Huatai from the interest rate differential is estimated at CNY30 million over a period of 10 years.[10]

E. Dezhou Shihua Chemical: Subborrower for Subproject 1

28. **Introduction.** DSC, a wholly owned subsidiary of CHC, will be the subborrower for the first subproject. DSC was established in August 2007 with CNY650 million in registered capital. It is headquartered at 6 Hua'nan Road, Decheng District, Dezhou City, Shandong Province. DSC is a large industrial enterprise in the chlor-alkali subsector producing caustic soda and polyvinyl chloride (PVC). Its two main production lines have an annual production capacity of 400,000 tons of ionic membrane caustic soda and 360,000 tons of PVC resin. It also has a 45 megawatt combined heat and power plant, which was expected to operate in 2015 and to produce electricity and steam for the industry's own use, in place of externally procured energy resources. Excess electricity will be fed into the grid and the steam from the plant will be sold to other industries within the industrial park. A salt mine acquired by DSC in 2012 will supply salt for caustic soda production, from 2015 onward. Moreover, DSC has experience in implementing projects funded by multilateral development banks. In 2011, it renovated its caustic soda manufacturing plant under a World Bank loan (footnote 3). It is now preparing for ISO 14001 certification.

29. **Financial management capacity.** DSC has 19 financial professionals in its finance department and three internal auditors in its auditing and supervision department. The company's internal financial controls are deemed sound and complete. As a member of the CHC group, it uses the same financial management, budgeting, asset management, and financial reporting systems, and follows the same accounting policies, as the other companies in the group.

30. **Historical financial performance.** DSC's operating performance in the last few years has been relatively good despite the difficult market situation. From 2009 to 2013, its sales revenue doubled and its asset scale nearly quadrupled. The large capital investments made by the company in recent years have pushed up its liabilities-to-assets ratio to 72.9%. DSC's average interest coverage ratio in 2013 was 2.22 times and its current ratio since 2011 was below 1. In 2013, the current ratio was 0.87, indicating the likelihood of short-term liquidity problems. DSC's profitability was largely reduced by the rapid increase in its management expenses due to the relocation of the plant to a new site. But since the company can borrow from local banks for its short-term working capital needs and can count on CHC's guarantee support for emergency funding, DSC's financial standing is still considered solid. The loss in profitability is expected to be temporary, in particular as DSC's PVC gains in competitiveness with the implementation of mercury-free PVC technology, and sells at a premium. Moreover, the value of its intangible assets is expected to increase once the new technology is proven. DSC's key financial performance indicators are shown in Table 5.

[10] Assuming a 10-year swap rate of 2.03% (as of 10 April 2015) and an indicative rate of 4.82% for the subloan (90% of the prime lending rate regulated by the People's Bank of China). With this additional equity capital, Huatai can develop into one of the largest ESCOs in the PRC. Since loan repayment will take up the last 5 years of the term of the ADB loan and since energy efficiency projects in the chemical industry typically have long payback periods, this assessment takes a conservative view and does not forecast the use of the ADB loan to finance subprojects in the last 5 years, although energy efficiency subprojects with shorter payback period are not unheard of.

Table 5: Key Financial Data for Dezhou Shihua Chemical, 2009–2013
(CNY million, unless stated otherwise)

Item	2009	2010	2011	2012	2013
Sales revenue	917.3	1,071.8	1,081.5	1,728.6	2,259.1
Net operating income	9.5	1.7	(14.8)	(38.3)	29.6
Earnings before tax	15.2	9.0	4.7	402.4	35.6
Net income	10.7	2.7	3.1	303.3	22.5
Current assets	568.3	1,199.2	581.9	1,729.0	1,435.6
Trade accounts receivable	116.1	88.5	73.0	56.8	51.9
Fixed assets	325.0	336.1	235.7	1,240.7	1,543.4
Total assets	953.3	1,712.5	2,426.5	3,745.2	3,773.6
Current liabilities	487.6	959.3	619.7	1,675.6	1,649.0
Long-term liabilities	5.6	6.2	1,106.6	1,072.8	1,100.3
Shareholders' equity	460.1	747.0	700.1	996.8	1,024.3
EBITDA	59.9	61.8	60.9	570.5	190.7
Interest expense	8.1	5.0	6.2	46.6	74.5
Growth index of sales (2009 = 100)	100.0	116.8	117.9	188.4	246.3
Growth index of assets (2009 = 100)	100.0	179.6	254.5	392.9	395.9
Months of sales in receivables	1.5	1.0	0.8	0.4	0.3
Current ratio	1.17	1.25	0.94	1.03	0.87
Interest coverage ratio	7.4	12.3	9.9	12.2	2.6
Total liabilities–assets Ratio (%)	51.7	56.4	71.1	73.4	72.9
Operating income margin (%)	1.0	0.2	-1.4	-2.2	1.3
Net profit margin (%)	1.2	0.3	0.3	17.5	1.0
Net profit–total assets ratio (%)	1.1	0.2	0.1	8.1	0.6
Net profit–equity ratio (%)	2.3	0.4	0.4	30.4	2.2

EBITDA = earnings before interest, taxes, depreciation, and amortization.
Sources: Asian Development Bank estimates; Dezhou Shihua Chemical annual reports for 2009 to 2013.

F. Zhonghao Chenguang Research Institute of Chemical Industry: Subborrower for Subproject 2

31. **Introduction.** A wholly owned subsidiary of CHC with around 3,000 employees, CGY will host the second subproject, which will be financed with $20 million from the ADB loan and will be implemented through the home ESCO. CGY was established in 1965 with headquarters in Fushun County, Zigong City, Sichuan Province. In 1999, it was transformed into an important R&D and production base for polymer-composite materials. CGY specializes in R&D and production of new organofluorine and organic silicon materials, and has products in 20 categories and over 200 varieties, which are widely used in the aerospace, aviation, automobile, electronics, petroleum, chemical, and textile industries. By 2014, it had established production lines with an annual production capacity of 38,000 metric tons per annum (tpa) of chlorodifluoromethane (HCFC-22), an intermediate product for its fluoropolymer production; 23,000 tpa of polytetrafluoroethylene (PTFE);[11] and 7,000 tpa of

[11] PTFE is a synthetic fluoropolymer of tetrafluoroethylene with many applications. The best-known brand name for a PTFE-based product is Teflon, a registered trademark of DuPont, which discovered the compound.

fluororubber. CGY also operates a small plasma pyrolysis plant to incinerate fluoroform (HFC-23), an unwanted by-product of its HCFC-22 production.

32. As part of the CHC group, CGY uses the same financial management and accounting systems used by all other companies in the group. CGY has 25 financial professionals in its finance department and four internal auditors in its auditing and supervision department. The company's internal financial controls are also sound and complete.

33. CGY has performed well in the past 5 years. In 2009–2013, its sales revenue grew by 134%, and its asset scale, by about 50%. Because of its good performance and the Clean Development Mechanism (CDM) revenues from GHG emission reductions generated by the trial HFC-23 plasma pyrolysis project before the end of 2012, its liabilities-to-assets ratio declined from 74% in 2009 to 45% in 2012 and to 42% in 2013. CGY has maintained a high interest coverage ratio ranging between 4 and 17 during the past 5 years. Its current ratio since 2011 has exceeded 1; in 2013, it was 1.19. CGY's profitability, while reduced by the discontinuation of the CDM revenues in 2013 and the market slowdown, is still positive, with a net profit margin of 4.3%. Table 6 summarizes CGY's key financial performance indicators for 2009–2013.

Table 6: Key Financial Data for Zhonghao Chenguang Research Institute of Chemical Industry, 2009–2013
(CNY million, unless stated otherwise)

CGY	2009	2010	2011	2012	2013
Sales revenue	777.1	1,108.1	2,015.1	1,924.7	1,816.0
Net operating income	8.8	37.0	612.1	291.7	113.0
Earnings before tax	32.2	61.6	505.6	301.0	121.5
Net income	32.1	61.2	448.1	264.6	78.1
Current assets	581.3	710.7	964.3	1,038.5	897.3
Trade accounts receivable	68.4	49.3	118.7	78.9	79.3
Fixed assets	1,181.7	1,316.2	1,375.5	1,593.7	1,727.1
Total assets	1,763.0	2,026.9	2,339.8	2.632.2	2,624.4
Current liabilities	957.8	1,023.6	922.9	959.0	752.2
Long-term liabilities	349.0	485.9	462.1	236.0	354.9
Shareholders' equity	456.2	517.4	954.8	1,437.2	1,517.2
EBITDA	105.4	165.9	639.1	466.0	290.2
Interest expense	23.4	40.1	37.4	47.2	39.4
Growth index of sales (2009 = 100)	100.0	142.6	259.3	247.7	233.7
Growth index of assets (2009 = 100)	100.0	115.0	132.7	149.3	148.9
Months of sales in receivables	1.1	0.5	0.7	0.5	0.5
Current ratio	0.61	0.69	1.04	1.08	1.19
Interest coverage ratio	4.5	4.1	17.1	9.9	7.4
Total liabilities–assets Ratio (%)	74.1	74.5	59.2	45.4	42.2
Operating income margin (%)	1.1	3.3	30.4	15.2	6.2
Net profit margin (%)	4.1	5.5	22.2	13.7	4.3
Net profit–total assets ratio (%)	1.8	3.0	19.2	10.1	3.0
Net profit–equity ratio (%)	7.0	11.8	46.9	18.4	5.1

CGY = Zhonghao Chenguang Research Institute of Chemical Industry, EBITDA = earnings before interest, taxes, depreciation, and amortization.
Sources: CGY's audited financial statements, 2010–2013.

G. Conclusion and Recommendations

34. CHC and DSC have managed foreign-funded projects, including projects funded by multilateral development banks like the World Bank and the European Investment Bank. A World Bank loan was implemented at DSC in 2011. The projects were completed on time. CHC has established a home ESCO with over 20 full-time staff, which will serve as PMO. The staff of CHC's planning and finance department will also be responsible for ADB project management, supervising and guiding the variously skilled PMO staff in performing their functions. Adequate capacity building would therefore smooth the way for project implementation.

35. According to the financial management assessment, ChemChina, CHC, and DSC have sufficient financial management capacity to implement the project. To facilitate project implementation, the following are suggested:

(i) Develop a complete manual of financial policies and procedures for Huatai consistent with CHC's financial management system, to guide staff in carrying out project activities and to ensure staff accountability;
(ii) Develop training programs and carry out training, particularly in ADB's procurement and disbursement policies and procedures; and
(iii) Back up all accounting systems data regularly, and carry out appropriate measures to ensure the security of the backup data.

H. Financial Projections

36. Financial projections prepared for ChemChina, CHC, Huatai, and DSC, on the basis of the assumed operating parameters, indicate that the debt service coverage ratio and other ADB financial covenants would be met during project operation.

1. China National Chemical Group

37. The projected financial statements for ChemChina are based on its historical development and the prospects for its future development. 5-year financial projections for 2014–2018 were prepared for the company's balance sheet, income statement, cash flow statement, and financial ratios (see summary in Table 7). While sales revenue rose by 26% yearly on average in the 5 years up to 2013, it is expected to increase at a conservative rate of 11% per year in 2013–2018, from CNY244.04 billion to CNY416.76 billion. Operating expenses are expected to increase by 9% yearly, compared with the previous average increase of 16%. Management expenses are likely to grow by 7%, versus 13% in 2009–2013. Average interest expenses are projected to stay at 5%; depreciation and amortization as a percentage of gross fixed assets, to maintain their 2009–2013 average; and assets and liabilities, to grow in the same way they grew in the 5 years up to 2013.

38. Given these assumptions, ChemChina's net profit is projected to grow to CNY28.58 billion in 2018. Current and fixed assets are also assumed to increase in proportion to operating revenues. Gross fixed assets will grow from CNY132.14 billion in 2014 to CNY174.44 billion in 2018, and total assets, from CNY289.92 billion in 2014 to CNY429.90 billion in 2018.

2. China Haohua Chemical Group

39. The projected financial statements for CHC (Table 8) are likewise based on the group's historical development. Growth in annual sales revenue, from CNY14.60 billion in 2013 to CNY30.67 billion in 2018, is foreseen. Operating costs are likely to increase from CNY13.51 billion to CNY23.81 billion, and net profit is expected to grow significantly to CNY3.32 billion in 2018. Current and fixed assets are also assumed to increase in proportion to operating revenues. From 2014 to 2018, gross fixed assets are projected to increase from CNY18.75 billion to CNY36.93 billion, and total assets, from CNY29.76 billion to CNY50.87 billion.

40. In terms of financial performance, a reduction in the group's debt–equity ratio and improvement in its debt service ratio, capital structure, and asset liquidity can be expected. Financial performance may therefore improve as the group focuses more on intensive, rather than extensive, growth.

Table 7: Financial Projections for China National Chemical Group, 2014–2018
(CNY million, unless stated otherwise)

ChemChina	Financial Projection				
	2014	2015	2016	2017	2018
Sales	271,606	302,291	336,442	374,451	416,755
Operation costs	247,760	269,964	294,158	320,519	349,243
Gross profit	23,846	32,327	42,284	53,932	67,511
Net operating income	24,205	32,041	41,280	52,127	64,814
EBITDA	10,026	10,650	11,313	12,018	12,767
Interest expense	6,137	12,763	20,714	30,188	41,415
Net Profit	4,603	9,572	15,535	22,641	31,061
Current assets	136,903	155,103	179,892	212,454	245,147
Trade accounts receivable	28,187	31,934	37,038	43,742	52,326
Gross fixed assets	132,142	141,720	151,934	162,826	174,442
Net Fixed-assets	80,178	81,128	82,088	83,060	84,044
Current liabilities	159,868	168,877	178,395	188,449	199,070
Short term debt	81,785	86,378	91,229	96,353	101,764
Long term debt	68,232	72,970	78,038	83,457	89,253
Total debt	150,016	159,348	169,267	179,810	191,017
Total liabilities	245,681	261,723	278,812	297,017	316,411
Total Shareholder's Equity	46,491	56,063	71,598	94,240	125,301
Total assets	292,172	317,786	350,411	391,257	441,712
Growth index of sales (2013 = 100)	111	124	138	153	171
Growth index of assets (2013 = 100)	107	117	129	144	162
Current ratio	0.86	0.92	1.01	1.13	1.28
Months of sales in receivables	1.25	1.27	1.32	1.4	1.51
Operating ratio(Operating exp/sales rev)	0.91	0.89	0.87	0.86	0.84
Ratio of long-term debt to equity	1.47	1.30	1.09	0.89	0.71
EBITDA Interest Coverage Ratio	2.41	3.01	3.65	4.34	5.08
Net profit margin	1.7%	3.2%	4.6%	6.0%	7.5%
Return on Net Fixed-Assets	6%	12%	19%	27%	37%
Total Liabilities-Asset Ratio	84%	82%	80%	76%	72%
Net profit Rate of Equity	10%	17%	22%	24%	25%

ChemChina = China National Chemical Group, EBITDA = earnings before interest, taxes, depreciation, and amortization, exp = expense, rev = revenue.
Note: PPTA team.

Table 8: Financial Projections for China Haohua Chemical Group, 2014–2018
(CNY million, unless stated otherwise)

CHC	Financial Projection				
	2014	2015	2016	2017	2018
Sales	16,938	19,648	22,792	26,438	30,668
Operation costs	15,133	16,949	18,983	21,261	23,813
Gross profit	1,805	2,699	3,808	5,177	6,856
Net operating income	1,603	2,590	3,818	5,335	7,199
EBITDA	761	884	1,033	1,214	1,431
Interest expense	159	897	1,827	2,988	4,424
Net Profit	119	673	1,370	2,241	3,318
Current assets	11,870	13,351	15,679	19,054	23,716
Trade accounts receivable	805	905	1,063	1,292	1,608
Gross fixed assets	18,745	22,202	26,301	31,162	36,928
Net Fixed-assets	14,212	16,860	20,002	23,729	28,151
Current liabilities	17,581	18,460	19,383	20,352	21,369
Short term debt	11,406	13,780	16,648	20,112	24,297
Long term debt	3,233	3,233	3,233	3,233	3,233
Total debt	14,639	17,013	19,880	23,345	27,530
Total liabilities	24,636	27,482	30,656	34,197	38,147
Total Shareholder's Equity	5,120	5,793	7,164	9,404	12,722
Total assets	29,756	33,275	37,820	43,601	50,869
Growth index of sales (2013 = 100)	116	135	156	181	210
Growth index of assets (2013 = 100)	110	123	140	161	188
Current ratio	0.68	0.72	0.81	0.94	1.11
Months of sales in receivables	0.57	0.55	0.56	0.59	0.63
Operating ratio(Operating exp/sales rev)	0.89	0.86	0.83	0.80	0.78
Ratio of long-term debt to equity	0.63	0.56	0.45	0.34	0.25
EBITDA Interest Coverage Ratio	2.11	2.93	3.69	4.40	5.03
Net profit margin	0.7%	3.4%	6.0%	8.5%	10.8%
Return on Net Fixed-Assets	1%	4%	7%	9%	12%
Total Liabilities-Asset Ratio	83%	83%	81%	78%	75%
Net profit Rate of Equity	2%	12%	19%	24%	26%

CHC = China Haohua Chemical Group, EBITDA = earnings before interest, taxes, depreciation, and amortization, exp = expense, rev = revenue.
Note: PPTA team. .

3. Dezhou Shihua Chemical

41. The financial projections for DSC are essentially based on the impact of the DSC subproject on the company's financial statements, in combination with financial projections for the existing facility plus specific additional revenue sources from 2015 onward, notably: (i) additional revenues from the sale of steam and electricity from the plant's combined heat and power plant in excess of the plant's own consumption to industrial users within the industrial park in which DSC is located (steam) and to the grid (electricity); (ii) avoided costs from external procurement of electricity, with the combined heat and power plant of DSC operating from 2015 onward and replacing the current heat-only boiler; and (iii) avoided costs

from external procurement of salt, as the salt mine in which DSC invested recently starts producing salt for DSC's caustic soda plant from 2015 onward.

42. The assessment indicates that the subproject is financially viable. The financial operations of the subproject company in 2014–2030 were projected on the basis of the major assumptions discussed below. The capital investment program pertains only to the ADB-funded subproject. Annual investment outlays were adjusted with the help of the annual escalation factors used in ADB projects. The projections assume an exchange rate of CNY6.24 = $1.00. After subproject completion, no further capital expenditures are expected to be made during the life of the subproject. The estimated economic life of the subproject is 15 years, with a residual value assumed for the civil works and land use rights.

43. Under the proposed loan, ChemChina and CHC will support DSC in maintaining sound financial management systems, including minimum balances that will ensure smooth cash flow and the timely settlement of the subproject construction liabilities and future debt servicing. DSC will maintain a debt service coverage ratio of at least 1.2 and a debt–equity ratio of no more than 80:20. The financial covenants of ADB are expected to be satisfied during the life of the subproject. The average DSCR is forecast to be largely adequate throughout, and the debt–equity ratio, to be within the prescribed maximum limit.

44. **Revenues.** The DSC subproject is to be implemented in two phases, with each phase establishing a production capacity of 200,000 metric tons of mercury-free PVC. Phase 1 of the subproject is expected to be completed by January 2017; Phase 2, by 2018. By 2019, DSC should be producing, at 90% capacity, 360,000 tpa of PVC, equally distributed between two half-year periods, from January to June and from July to December.

45. Although mercury-free PVC is expected to be sold at a premium after the subproject, the PVC sale price was nonetheless assumed to remain at the current level for 5 more years before it starts rising again. This assumption was made in view of the sluggish growth in the PVC industry due to persistent production overcapacity, which is expected to be reversed only after the 13th Five-Year Plan period in 2021–2025. Potential carbon offset income from a nationwide carbon market, reportedly set to be established during the 13th plan period, was not considered.

46. **Operating, maintenance, and other expenses.** Energy and utility costs were inflated on the basis of an energy cost escalation factor of 1% per year. As the PVC industry accounts for more than 80% of calcium carbide use in the PRC, and PVC prices have remained stable because of overcapacity and weak demand, no increase in the price of calcium carbide is expected. Other operation and maintenance costs and chemicals were duly inflated in accordance with ADB's cost escalation factors.

47. **Debt service for long-term debt and taxes.** The ADB loan for the DSC subproject is projected to have a term of 10 years, including a grace period of 3 years. Loan repayment will be based on the annual interest on the subloan from the escrow fund, pegged at 90% of the reference rate set by the People's Bank of China for commercial bank loans with the same terms as the subloans.[12]. The loan from the domestic state-owned bank will carry an interest rate estimated at 5.90%, the regulated long-term loan interest rate. The net income from the subproject will be subject to income tax of 25% during the years of operation. DSC will retain

[12] The People's Bank of China sets three reference rates: a 1-year, an up to 5-years, and a beyond 5 years rate. Depending on the loan term CHC and CCB will choose the applicable reference rate.

after-tax profit, and no dividends will be paid. Other local taxes, including a value-added tax (VAT) of 17% on sales and a construction tax and education surcharge of 10% on VAT. For capital cost, 17% VAT on equipment value has been adopted. Repayment and interest expenses on existing long-term debt are based on prevailing loan terms.

48. On the basis of the above-mentioned conditions and assumptions, the projected financial statements for DSC show that annual sales revenue is expected to grow from CNY2.26 billion in 2013 to CNY2.27 billion in 2018. From 2014 to 2018, operating costs are projected to increase from CNY2.28 billion to CNY4.11 billion. DSC's net profit is foreseen to grow significantly to CNY185 million in 2018. Current and fixed assets are also assumed to increase in proportion to operating revenues. From 2014 to 2018, gross fixed assets will increase from CNY1.89 billion to CNY3.99 billion, and total assets, from CNY4.26 billion to CNY6.07 billion.

Table 9: Financial Projections for Dezhou Shihua Chemical, 2014–2018
(CNY million, unless stated otherwise)

DSC	**Financial Projection**				
	2014	2015	2016	2017	2018
Sales	2,393	2,440	2,847	3,366	4,272
Operation costs	2,280	2,355	2,741	3,239	4,103
Gross profit	82	86	106	126	170
Net operating income	290	371	473	536	659
EBITDA	97	100	99	91	155
Interest expense	88	148	204	224	267
Net Profit	62	104	143	158	191
Current assets	1,880	1,781	1,909	1,931	2,572
Trade accounts receivable	62	56	95	130	211
Gross fixed assets	1,893	2,260	2,791	3,708	3,985
Net Fixed-assets	1,674	1,929	2,300	3,006	3,058
Current liabilities	1,930	1,711	2,027	1,850	2,276
Total liabilities	3,172	3,381	4,117	4,,041	4,409
Total Shareholder's Equity	1,086	1,190	1,333	1,491	1,682
Total assets	4,258	4,571	5,450	5,532	6,091
Growth index of sales (2013 = 100)	258	266	310	367	466
Growth index of assets (2013 = 100)	447	479	572	580	639
Current ratio	0.97	1.04	0.94	1.04	1.13
Months of sales in receivables	0.31	0.27	0.40	0.46	0.59
Operating ratio(Operating exp/sales rev)	0.97	0.96	0.96	0.96	0.96
EBITDA Interest Coverage Ratio	2.98	3.71	4.79	5.90	4.24
Net profit margin	2.6%	4.2%	5.0%	4.7%	4.5%
Return on Net Fixed-Assets	4%	5%	6%	5%	6%
Total Liabilities-Asset Ratio	74%	74%	76%	73%	72%
Net profit Rate of Equity	6%	9%	11%	11%	11%

DSC = Dezhou Shihua Chemical, EBITDA = earnings before interest, taxes, depreciation, and amortization, exp = expense, rev = revenue.
Note: The Financial Projections are estimated by ADB Consultant.

49. **Projected financial performance.** The projections (Table 9) indicate that in the future DSC's debt–equity ratio will stay below 1.0 and improvements will be attained in the debt service ratio, the capital structure (from 2.6 times in 2013 to 4.33 times on average between 2014 and 2018), and asset liquidity. DSC's financial performance should therefore improve.

4. Beijing Zhonghao Huatai Energy Technology

50. Financial projections for CHC's home ESCO, Huatai, were prepared for 2018 to 2029. Huatai will be able to obtain cash revenues or increase its equity capital through three channels (Table 10).

51. First, it will have access to debt financing. It can implement energy performance contracting (EPC)–type projects by borrowing ADB funds from the revolving escrow account and providing matching equity. Huatai has been chosen to implement CGY's subproject, using the EPC model, by borrowing $20 million from the revolving fund. The following basic conditions stated in the EPC agreement were considered in projecting the financial benefits to Huatai from this first-batch EPC subproject. Huatai will:

(i) invest its equity, which is expected to be increase by June 2015 to CNY50 million—20% of the total investment cost of the subproject—in the subproject, together with the ADB funds borrowed;

(ii) over a period of 10 years (including construction), enjoy a 90% share of the energy-saving benefits, to be fixed in year 4 after both CGY and Huatai have tested the subproject's energy-saving effect; and

(iii) have a put option and execute that option to sell the subproject assets to CGY in year 5 at a price equivalent to 85% of all unpaid future energy-saving benefit receivables.[13]

52. Regarding the ADB funds borrowed, Huatai will provide matching equity in accordance with ADB's prescribed 80:20 debt–equity capital structure and the CNY10 million minimum size of an EPC project in the chemical industry. (For future EPC subprojects, the financial projections assume the following ratio: 35% ADB loan, 35% domestic loan, and 30% Huatai equity.) If the equity is insufficient, Huatai will postpone implementing the EPC subproject until it has the equity required for the minimum project size. If there is sufficient equity but not enough ADB funds in the revolving escrow account, Huatai will make up the shortfall in funding with more domestic loans.

53. For future EPC subprojects, it is assumed that (i) Huatai will earn a return on equity of at least 10% for all the capital it invests in the subprojects; (ii) each subproject will be constructed within a year, the normal construction period for an energy efficiency project; and (iii) both the ADB subloan and the domestic loan will have loan terms of 6 years (including construction) and energy-saving benefits will be shared over a period of 5 years. An implied rate of return can therefore be used in calculating Huatai's energy-saving benefits. The interest rate for Huatai's ADB subloan or domestic loan will be the same as that for DSC, since both Huatai and DSC will seek a guarantee from ChemChina or CHC when applying for a domestic loan. Consequently, a 14% return on equity invested in future EPC projects can be assumed.

[13] Huatai confirmed, after its initial negotiation with CGY in April 2015, that these conditions are conservative and that it can achieve them.

54. Second, as agreed on by ADB and CHC, and approved by the National Development and Reform Commission, 60% of the interest rate differential can be channeled to Huatai to increase its equity or cover its business development costs. Since the financial projections estimate Huatai's annual operating costs, including business development costs, separately and assume that they will be covered by other revenues, all 60% of the interest rate differential accumulated from EPC as well as non-EPC subprojects financed with the ADB loan can, in effect, be regarded as part of available equity that Huatai can invest in future EPC projects. An estimated CNY40 million in interest rate differential is expected to be generated in the first 10 years of the ADB loan term and attributed to Huatai.[14]

55. Third, where ChemChina as a group has core technology advantage, Huatai can earn revenues from consulting, engineering, or subcontracting for energy efficiency and emission reduction projects with no ADB funding support. At least CNY5 million in consulting revenues are very likely in 2015, and revenues from this are forecast to grow at a moderate 10% yearly to CNY17.26 million by 2029.

56. A review of the operating plan of Huatai indicates that annual general management and marketing expenses, in addition to project-related costs, will total CNY2 million. This total will increase by CNY0.5 million per year from 2016 to 2022 and reach CNY5 million by the end of that period. After that, these expenses will rise by CNY1 million yearly to CNY12 million by 2029.

57. In accordance with the national incentive policies for ESCOs, Huatai is expected to enjoy preferential tax treatment: exemption from business tax and VAT, exemption from income tax for the first 3 years after the EPC revenues are generated, and 50% reduction in income tax for the next 3 years. Huatai must construct deals for EPC subprojects using the national standard EPC agreement template to qualify for the incentive policies. But the full energy-saving benefits do not go to Huatai—a practice that is considered conservative, given recent policy trends.

58. The financial projections for Huatai show that, with CHC and ADB providing strong support by allowing Huatai to have priority use of the ADB funds in the revolving escrow account and agreeing to inject 60% of the interest rate differential as equity expansion and 10% as project development cost, Huatai will grow fast and continue to maintain a solid financial standing. Its current ratio will always be larger than 3.58, and its interest coverage ratio will range between 2.76 and 11.86. Its debt–equity ratio will vary with the subproject implementation schedule. At its highest, in 2024, the last year when Huatai can use the ADB funds for subproject financing, the debt–equity ratio will be 3.28. This ratio is still within the designed acceptable range (at least 20% of equity). By the end of 2029, Huatai's equity will triple to over CNY165 million, making it one of the largest ESCOs in the PRC, with substantial experience in implementing energy efficiency projects in the chemical industry.

[14] The total interest differential amount projected to amount to about CNY60 million. It was projected by comparing the 10-year swap London Interbank Offer Rate with 90% of the currently prevailing 6-months prime lending rate. It is proposed that at least 60% of this interest differential will be used to increase the equity of the CHC's home energy service company amounting to CNY40 million, which would almost double the ESCO's equity capital. With this, the ESCO would become one of the largest in the PRC in terms of equity capitalization.

Table 10: Financial Projections for Beijing Zhonghao Huatai Energy Technology, 2014–2018
(CNY million, unless stated otherwise)

	Financial Projection				
	2015	2016	2017	2018	2019
Sales		17.8	33.1	34.0	74.6
Operation costs		3.4	5.3	5.8	7.6
Gross profit		14.4	27.8	28.2	67.0
Net operating income		14.8	27.4	33.5	61.7
EBITDA				7.2	7.3
Interest expense		(0.4)	5.1	(5.4)	21.8
Net Profit		(0.4)	5.1	(5.4)	19.7
Current assets	24.8	27.9	45.9	32.7	82.3
Trade accounts receivable		1.1	2.3	2.3	5.7
Gross fixed assets		102.0	154.2	175.3	139.1
Net Fixed-assets		87.2	116.7	111.4	37.2
Current liabilities		4.3	1.8	4.8	
Short term debt					
Long term debt	76.8	112.9	124.8	142.8	40.7
Total debt	76.8	112.9	124.8	142.8	40.7
Total liabilities	76.8	117.2	126.6	147.7	40.7
Total Shareholder's Equity	50.0	50.1	57.1	54.6	78.8
Total assets	126.8	167.3	183.6	202.2	119.5
Current ratio				6.8	infinite
Months of sales in receivables				0.8	0.9
Operating ratio(Operating exp/sales rev)				17.0%	10.1%
Ratio of long-term debt to equity	153.6%	225.3%	218.7%	261.7%	51.6%
EBITDA Interest Coverage Ratio				467.3%	850.0%
Net profit margin				-15.8%	26.5%
Return on Net Fixed-Assets				-4.8%	53.1%
Total Liabilities-Asset Ratio	60.6%	70.1%	68.9%	73.0%	34.0%
Net profit Rate of Equity	0.0%	-0.9%	8.9%	-9.8%	25.0%

EBITDA = earnings before interest, taxes, depreciation, and amortization, ESCO = energy service company, exp = expense, rev = revenue.
Note: PPTA team.