SOCIALIST REPUBLIC OF VIETNAM
MINISTRY OF CONSTRUCTION

LOCAL WATER SUPPLY AND WASTEWATER SECTOR SURVEY

FINAL REPORT (APPENDICES)

January 2015

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NIPPON KOEI CO. LTD.
SEWERAGE BUSINESS MANAGEMENT CENTRE
DOGAN, INC.
WATER AGENCY INC.
NIHON SUIDO CONSULTANTS CO., LTD.

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FINAL REPORT

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Appendix 1-1

Population Projection for Whole Country

(Gray) : Expected data

Country Data

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Whole Country	66,017	67,242	68,450	69,645	70,825	71,996	73,157	74,307	75,456	76,597	77,631	78,621	79,538	80,467	81,436	82,392	83,311	84,219	85,119	86,025	86,933	87,840	88,773	89,609	90,654	91,583	92,513	93,449	94,394	95,354	96,179	97,000	97,819	98,640	99,466	100,129	100,782	101,424	102,055	102,678	103,117	103,586	104,078	104,583	105,092	105,388	105,724	106,091	106,482	106,887	107,004	107,187	107,433	107,739	108,102	108,165	108,261	108,387	108,538	108,707	108,707
Urban	12,880	13,228	13,588	13,961	14,426	14,938	15,420	16,835	17,465	18,082	18,725	19,299	19,873	20,725	21,601	22,332	23,046	23,746	24,673	25,585	26,516	27,888	28,356	28,890	29,834	30,763	31,704	32,670	33,661	34,671	35,654	36,646	37,660	38,696	39,747	40,743	41,754	42,770	43,802	44,839	45,804	46,800	47,803	48,830	49,866	50,818	51,783	52,769	53,773	54,790	55,674	56,584	57,531	58,513	59,521	60,378	61,243	62,128	63,017	63,920	63,920
Rural	53,136	54,015	54,863	55,683	56,399	57,057	57,737	57,472	57,992	58,515	58,906	59,321	59,665	59,742	59,835	60,060	60,265	60,472	60,446	60,440	60,417	59,952	60,417	60,719	60,820	60,820	60,809	60,779	60,733	60,683	60,525	60,353	60,159	59,943	59,720	59,387	59,028	58,653	58,253	57,838	57,312	56,786	56,275	55,753	55,226	54,570	53,940	53,321	52,708	52,097	51,330	50,603	49,903	49,226	48,581	47,787	47,018	46,260	45,521	44,787	44,787

Reference: Population projection for Vietnam 2009-2049
General Statistics office of Vietnam

Population Projection for Each Province

▨ (Gray) : Expected data

Provincial Data

x						1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
x^2						4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######																
Special Urban																																																													
01.HaNoi						2,431	2,493	2,556	2,622	2,685	2,768	2,853	2,928	3,000	3,071	3,133	3,185	3,229	6,382	6,472	6,589	6,726	6,844	6,899	7,019	7,108	7,200	7,294	7,392	7,494	7,576	7,654	7,730	7,804	7,875	7,933	7,990	8,046	8,101	8,155	8,189	8,231	8,277	8,328	8,383	8,386	8,411	8,433	8,451	8,465	8,476	8,483	8,486	8,486	8,482	8,475	8,463	8,448	8,430	8,408	8,382
79.HoChiMinhcity						4,640	4,748	4,852	4,957	5,073	5,275	5,454	5,619	5,809	6,008	6,231	6,483	6,725	6,946	7,196	7,378	7,518	7,682	7,830	8,043	8,182	8,317	8,449	8,581	8,713	8,819	8,925	9,032	9,141	9,252	9,333	9,415	9,497	9,579	9,661	9,722	9,785	9,848	9,912	9,975	9,999	10,037	10,071	10,100	10,123	10,142	10,155	10,164	10,167	10,166	10,159	10,148	10,131	10,109	10,083	10,051
subtotal						7,071	7,241	7,408	7,579	7,758	8,043	8,307	8,548	8,809	9,079	9,364	9,668	9,954	13,328	13,668	13,967	14,244	14,526	14,729	15,062	15,290	15,517	15,743	15,973	16,207	16,395	16,579	16,762	16,945	17,127	17,266	17,405	17,543	17,680	17,816	17,911	18,016	18,125	18,240	18,358	18,384	18,448	18,504	18,550	18,588	18,617	18,638	18,650	18,653	18,648	18,634	18,611	18,579	18,539	18,490	18,433
Class 1 Urbans																																																													
92.CanTho						1,740	1,759	1,778	1,796	1,817	1,831	1,846	1,860	1,874	1,138	1,149	1,161	1,172	1,181	1,189	1,195	1,203	1,214	1,250	1,272	1,286	1,301	1,318	1,336	1,355	1,370	1,387	1,404	1,422	1,441	1,456	1,471	1,486	1,502	1,517	1,529	1,541	1,553	1,565	1,577	1,593	1,605	1,617	1,629	1,640	1,651	1,662	1,672	1,682	1,692	1,701	1,711	1,720	1,728	1,737	1,745
48.DaNang						637	649	662	674	687	706	723	740	761	785	806	826	848	869	895	927	951	974	960	981	997	1,014	1,031	1,048	1,065	1,080	1,095	1,109	1,123	1,138	1,148	1,159	1,170	1,182	1,194	1,203	1,212	1,221	1,230	1,239	1,245	1,252	1,258	1,263	1,268	1,273	1,277	1,280	1,283	1,286	1,287	1,289	1,289	1,290	1,289	1,288
31.HaiPhong						1,608	1,625	1,642	1,660	1,677	1,692	1,709	1,725	1,741	1,758	1,773	1,789	1,807	1,824	1,840	1,858	1,880	1,904	1,922	1,945	1,963	1,982	2,001	2,020	2,041	2,056	2,072	2,087	2,101	2,116	2,127	2,137	2,147	2,157	2,165	2,169	2,175	2,182	2,191	2,200	2,198	2,200	2,202	2,202	2,202	2,201	2,199	2,196	2,192	2,187	2,181	2,175	2,167	2,159	2,150	2,140
46.ThuaThienHue						999	1,011	1,023	1,036	1,049	1,052	1,056	1,060	1,064	1,069	1,073	1,077	1,081	1,085	1,088	1,091	1,103	1,115	1,117	1,124	1,134	1,143	1,153	1,161	1,170	1,179	1,188	1,198	1,209	1,220	1,228	1,236	1,244	1,252	1,260	1,265	1,271	1,277	1,283	1,288	1,297	1,303	1,309	1,315	1,320	1,325	1,330	1,335	1,339	1,344	1,348	1,352	1,355	1,359	1,362	1,365
40.NgheAn						2,715	2,753	2,791	2,829	2,865	2,871	2,877	2,882	2,885	2,890	2,896	2,900	2,905	2,912	2,915	2,929	2,942	2,952	2,997	3,017	3,046	3,074	3,101	3,129	3,156	3,180	3,205	3,231	3,257	3,284	3,306	3,327	3,345	3,362	3,377	3,387	3,398	3,411	3,424	3,439	3,450	3,459	3,468	3,475	3,481	3,487	3,491	3,494	3,496	3,497	3,498	3,497	3,495	3,492	3,488	3,483
68.LamDong						856	891	928	966	1,005	1,031	1,051	1,068	1,085	1,104	1,126	1,145	1,161	1,175	1,189	1,204	1,219	1,235	1,262	1,280	1,298	1,316	1,333	1,351	1,368	1,385	1,401	1,418	1,435	1,452	1,467	1,481	1,495	1,509	1,523	1,535	1,546	1,558	1,569	1,581	1,593	1,603	1,614	1,623	1,633	1,642	1,650	1,659	1,666	1,674	1,681	1,687	1,693	1,699	1,705	1,710
56.KhanhHoa						959	978	997	1,016	1,035	1,050	1,064	1,077	1,091	1,104	1,115	1,125	1,138	1,149	1,158	1,165	1,172	1,183	1,202	1,215	1,227	1,239	1,250	1,262	1,273	1,283	1,294	1,305	1,316	1,327	1,336	1,345	1,354	1,363	1,371	1,378	1,384	1,391	1,398	1,404	1,411	1,417	1,422	1,428	1,432	1,437	1,441	1,445	1,448	1,452	1,455	1,457	1,459	1,461	1,463	1,464
52.BinhDinh						1,394	1,413	1,431	1,450	1,465	1,466	1,468	1,471	1,473	1,476	1,478	1,480	1,482	1,486	1,487	1,492	1,498	1,502	1,514	1,520	1,529	1,539	1,549	1,559	1,570	1,579	1,589	1,600	1,610	1,621	1,630	1,638	1,647	1,656	1,664	1,671	1,678	1,684	1,690	1,695	1,706	1,712	1,719	1,725	1,731	1,737	1,742	1,748	1,753	1,758	1,762	1,767	1,771	1,775	1,779	1,783
66.DakLak						1,398	1,502	1,605	1,703	1,793	1,861	1,912	1,955	1,996	1,636	1,659	1,678	1,697	1,715	1,736	1,754	1,772	1,797	1,829	1,851	1,875	1,899	1,923	1,948	1,973	1,998	2,022	2,047	2,072	2,097	2,119	2,141	2,162	2,184	2,205	2,222	2,239	2,256	2,272	2,289	2,311	2,328	2,344	2,360	2,375	2,390	2,405	2,419	2,432	2,446	2,458	2,470	2,482	2,493	2,504	2,514
19.ThaiNguyen						1,005	1,021	1,030	1,039	1,048	1,056	1,064	1,071	1,080	1,089	1,099	1,107	1,113	1,120	1,125	1,131	1,139	1,150	1,167	1,180	1,192	1,203	1,214	1,226	1,237	1,247	1,257	1,266	1,275	1,284	1,291	1,297	1,304	1,310	1,315	1,319	1,323	1,327	1,332	1,337	1,337	1,339	1,341	1,342	1,342	1,342	1,342	1,341	1,339	1,337	1,334	1,331	1,328	1,324	1,319	1,314
36.NamDinh						1,821	1,838	1,856	1,874	1,892	1,887	1,880	1,873	1,866	1,859	1,851	1,839	1,830	1,826	1,828	1,830	1,834	1,837	1,859	1,866	1,877	1,888	1,899	1,911	1,923	1,934	1,944	1,954	1,964	1,973	1,981	1,989	1,996	2,002	2,009	2,010	2,013	2,017	2,022	2,028	2,030	2,032	2,034	2,035	2,036	2,036	2,036	2,035	2,034	2,032	2,030	2,027	2,024	2,020	2,016	2,011
25.PhuTho						1,212	1,225	1,238	1,251	1,264	1,270	1,276	1,281	1,286	1,292	1,297	1,302	1,306	1,312	1,317	1,320	1,328	1,336	1,348	1,356	1,365	1,375	1,385	1,396	1,407	1,416	1,425	1,433	1,441	1,448	1,454	1,460	1,465	1,471	1,476	1,478	1,482	1,486	1,490	1,494	1,495	1,496	1,498	1,498	1,499	1,498	1,498	1,497	1,495	1,493	1,491	1,488	1,485	1,481	1,477	1,472
77.BaRiaVungTau						709	730	753	776	805	830	858	881	899	919	939	956	970	984	999	1,012	1,026	1,039	1,057	1,073	1,087	1,100	1,114	1,127	1,139	1,151	1,163	1,174	1,186	1,197	1,207	1,216	1,226	1,235	1,245	1,252	1,259	1,267	1,274	1,282	1,288	1,293	1,299	1,304	1,309	1,313	1,317	1,321	1,324	1,327	1,329	1,331	1,333	1,334	1,335	1,335
22.QuangNinh						942	958	974	991	1,007	1,024	1,039	1,054	1,068	1,082	1,096	1,109	1,123	1,135	1,146	1,155	1,167	1,177	1,200	1,213	1,225	1,237	1,249	1,262	1,275	1,285	1,296	1,306	1,315	1,325	1,333	1,341	1,348	1,356	1,363	1,367	1,372	1,378	1,384	1,391	1,392	1,396	1,399	1,401	1,403	1,405	1,406	1,407	1,407	1,406	1,406	1,404	1,403	1,400	1,398	1,395
subtotal						17,996	18,353	18,708	19,061	19,409	19,625	19,822	19,997	20,169	19,200	19,355	19,493	19,630	19,773	19,911	20,063	20,234	20,414	20,684	20,893	21,101	21,310	21,520	21,736	21,952	22,143	22,338	22,532	22,726	22,923	23,083	23,238	23,389	23,541	23,684	23,785	23,893	24,008	24,124	24,244	24,345	24,437	24,522	24,600	24,672	24,737	24,795	24,847	24,892	24,930	24,962	24,987	25,005	25,016	25,021	25,019
Class 2 Urbans																																																													
75.DongNai						1,845	1,882	1,920	1,959	2,000	2,054	2,094	2,132	2,176	2,221	2,264	2,315	2,373	2,433	2,500	2,575	2,658	2,721	2,693	2,752	2,800	2,846	2,891	2,935	2,980	3,018	3,057	3,095	3,135	3,175	3,207	3,239	3,270	3,301	3,331	3,356	3,381	3,407	3,432	3,457	3,474	3,493	3,511	3,527	3,542	3,556	3,568	3,579	3,588	3,596	3,603	3,608	3,612	3,614	3,615	3,614
38.ThanhHoa						3,338	3,376	3,414	3,449	3,475	3,468	3,464	3,458	3,450	3,443	3,436	3,428	3,417	3,409	3,404	3,406	3,414	3,427	3,417	3,419	3,431	3,446	3,463	3,482	3,504	3,523	3,541	3,558	3,574	3,589	3,602	3,614	3,624	3,634	3,643	3,643	3,645	3,649	3,655	3,663	3,668	3,670	3,672	3,672	3,672	3,671	3,669	3,666	3,662	3,657	3,652	3,645	3,638	3,630	3,620	3,610
30.HaiDuong						1,609	1,620	1,631	1,641	1,651	1,657	1,663	1,668	1,674	1,680	1,686	1,690	1,695	1,701	1,707	1,713	1,724	1,735	1,743	1,753	1,762	1,772	1,783	1,795	1,807	1,818	1,827	1,837	1,845	1,853	1,859	1,865	1,871	1,877	1,883	1,885	1,888	1,891	1,895	1,899	1,900	1,901	1,902	1,902	1,902	1,901	1,899	1,897	1,895	1,892	1,888	1,884	1,880	1,874	1,869	1,863
82.TienGiang						1,582	1,587	1,594	1,600	1,608	1,614	1,620	1,627	1,634	1,643	1,650	1,655	1,662	1,668	1,673	1,678	1,683	1,693	1,702	1,712	1,723	1,733	1,741	1,749	1,755	1,761	1,768	1,775	1,783	1,791	1,797	1,803	1,808	1,814	1,819	1,823	1,826	1,830	1,833	1,835	1,839	1,842	1,844	1,846	1,848	1,849	1,850	1,851	1,851	1,851	1,851	1,850	1,849	1,848	1,846	1,844
64.GiaLai						851	882	913	946	982	1,026	1,066	1,093	1,119	1,147	1,175	1,201	1,226	1,251	1,281	1,302	1,322	1,343	1,365	1,387	1,407	1,428	1,449	1,469	1,490	1,510	1,530	1,549	1,569	1,589	1,607	1,626	1,644	1,663	1,681	1,698	1,714	1,731	1,749	1,766	1,782	1,798	1,814	1,830	1,845	1,860	1,875	1,890	1,905	1,919	1,933	1,946	1,960	1,973	1,986	1,999
89.AnGiang						1,970	1,991	2,011	2,033	2,055	2,062	2,074	2,086	2,096	2,107	2,118	2,126	2,134	2,143	2,148	2,149	2,152	2,154	2,200	2,214	2,231	2,247	2,262	2,277	2,291	2,302	2,313	2,326	2,339	2,352	2,362	2,372	2,382	2,390	2,398	2,404	2,411	2,417	2,424	2,431	2,435	2,439	2,443	2,446	2,449	2,451	2,452	2,453	2,453	2,453	2,453	2,451	2,449	2,447	2,444	2,440
60.BinhThuan						952	976	1,001	1,027	1,051	1,064	1,078	1,093	1,109	1,122	1,133	1,142	1,152	1,162	1,169	1,175	1,182	1,194	1,206	1,214	1,223	1,233	1,244	1,255	1,266	1,277	1,288	1,299	1,310	1,320	1,329	1,338	1,348	1,357	1,366	1,373	1,380	1,387	1,393	1,399	1,409	1,416	1,423	1,429	1,435	1,441	1,447	1,452	1,458	1,463	1,467	1,472	1,476	1,480	1,484	1,488
96.CaMau						1,042	1,062	1,081	1,102	1,124	1,134	1,145	1,155	1,165	1,174	1,183	1,189	1,195	1,202	1,207	1,210	1,212	1,217	1,234	1,246	1,258	1,269	1,279	1,288	1,296	1,304	1,311	1,320	1,328	1,337	1,343	1,350	1,356	1,362	1,368	1,372	1,376	1,381	1,385	1,390	1,392	1,395	1,398	1,400	1,402	1,403	1,404	1,405	1,406	1,406	1,405	1,404	1,403	1,402	1,400	1,398
54.PhuYen						740	752	764	777	791	800	808	817	825	832	838	844	850	857	862	867	871	877	884	889	895	902	908	914	920	925	931	937	944	950	955	961	966	971	977	981	985	989	993	996	1,002	1,006	1,010	1,014	1,018	1,021	1,025	1,028	1,031	1,034	1,037	1,040	1,043	1,046	1,048	1,051
34.ThaiBinh						1,752	1,761	1,770	1,779	1,788	1,789	1,790	1,791	1,791	1,791	1,791	1,787	1,784	1,783	1,783	1,785	1,786	1,787	1,791	1,793	1,798	1,803	1,808	1,813	1,819	1,824	1,828	1,832	1,836	1,840	1,843	1,846	1,849	1,851	1,852	1,850	1,850	1,850	1,852	1,854	1,852	1,852	1,851	1,849	1,848	1,845	1,843	1,840	1,837	1,834	1,830	1,826	1,822	1,818	1,813	1,807
subtotal						15,680	15,888	16,098	16,312	16,523	16,668	16,802	16,920	17,038	17,161	17,273	17,377	17,487	17,607	17,734	17,860	18,003	18,147	18,235	18,379	18,528	18,679	18,828	18,977	19,128	19,262	19,394	19,528	19,663	19,796	19,904	20,014	20,118	20,220	20,318	20,385	20,456	20,532	20,611	20,690	20,754	20,813	20,867	20,916	20,960	20,999	21,033	21,062	21,086	21,105	21,119	21,128	21,132	21,131	21,125	21,115
Others																																																													
02.HaGiang						550	564	578	590	606	619	632	644	656	669	682	693	705	716	725	734	746	758	771	781	790	801	812	824	837	848	859	870	880	889	899	908	917	926	936	944	953	961	970	979	986	994	1,001	1,009	1,016	1,023	1,030	1,036	1,043	1,049	1,055	1,061	1,066	1,072	1,077	1,082
04.CaoBang						489	489	490	491	492	494	496	499	501	503	505	507	509	511	511	513	514	515	524	527	531	535	539	544	549	553	557	561	565	569	572	575	578	581	584	586	588	590	593	595	597	599	600	602	603	604	606	606	607	608	608	609	609	609	609	609
06.BacKan						254	260	265	271	276	278	281	283	284	287	288	290	292	294	295	297	299	301	305	308	310	313	316	318	321	323	326	328	330	333	335	336	338	339	341	342	343	344	345	346	347	348	348	349	349	349	349	349	349	349	349	348	348	347	346	345
08.TuyenQuang						639	649	659	668	677	684	690	696	702	708	712	716	719	724	725	730	733	739	748	753	758	764	770	777	783	789	795	800	805	809	813	817	820	824	828	830	833	835	838	841	842	844	845	846	847	848	848	849	849	848	848	847	846	845	843	842
10.LaoCai						550	563	575	586	599	607	617	626	634	574	581	590	598	607	616	627	638	647	653	662	671	680	690	700	711	721	730	739	748	756	764	772	780	788	796	803	810	817	824	831	837	844	850	856	861	867	872	877	882	887	892	896	900	904	908	912
11.DienBien															423	439	453	466	479	491	501	511	519	520	527	532	539	546	555	564	573	580	588	595	601	608	614	621	628	635	641	648	654	660	667	673	679	685	691	696	702	707	713	718	724	729	734	739	744	749	753
12.LaiChau						536	550	563	577	594	617	639	662	685	351	357	361	364	368	371	381	390	398	397	402	407	412	418	425	432	439	445	451	456	461	467	472	478	483	489	494	499	505	510	515	520	525	530	535	540	545	549	554	558	563	567	572	576	581	585	589
14.SonLa						812	833	855	877	887	910	931	953	975	995	1,015	1,034	1,051	1,067	1,079	1,099	1,119	1,134	1,155	1,174	1,192	1,210	1,228	1,246	1,265	1,281	1,297	1,313	1,328	1,342	1,356	1,370	1,383	1,396	1,409	1,421	1,433	1,445	1,457	1,470	1,478	1,487	1,497	1,506	1,514	1,522	1,530	1,537	1,544	1,551	1,556	1,562	1,567	1,572	1,576	1,580
15.YenBai						648	656	665	673	682	688	694	700	707	714	720	725	732	738	742	751	759	764	769	776	782	789	796	804	811	818	825	831	837	842	848	853	858	863	868	871	875	880	884	889	891	895	898	900	903	905	908	910	911	913	914	916	917	917	918	918
17.HoaBinh						719	730	742	752	760	771	783	797	811	827	844	859	873	778	786	793	800	806	815	822	828	835	843	850	858	865	871	877	882	887	892	896	900	904	908	910	913	915	918	921	922	923	924	925	925	925	925	924	923	922	920	918	916	913	910	907
20.LangSon						679	689	695	700	706	708	711	713	717	721	724	726	728	731	733	736	741	744	756	762	769	775	781	787	793	799	804	809	815	820	825	829	832	836	839	841	843	845	847	850	851	853	854	854	855	855	855	854	854	853	852	850	849	847	844	842
24.BacGiang						1,431	1,451	1,468	1,477	1,496	1,503	1,509	1,516	1,523	1,530	1,537	1,543	1,549	1,555	1,557	1,564	1,575	1,589	1,591	1,600	1,611	1,622	1,633	1,644	1,655	1,666	1,675	1,685	1,694	1,702	1,710	1,717	1,724	1,730	1,736	1,740	1,744	1,748	1,753	1,757	1,760	1,763	1,765	1,766	1,768	1,768	1,769	1,768	1,768	1,767	1,765	1,763	1,761	1,758	1,754	1,751
26.VinhPhuc						1,048	1,062	1,076	1,086	1,094	1,104	1,114	1,124	1,134	1,145	1,157	1,166	1,174	994	1,000	1,008	1,011	1,021	1,037	1,045	1,053	1,062	1,072	1,083	1,095	1,105	1,114	1,122	1,130	1,137	1,144	1,150	1,157	1,163	1,169	1,174	1,179	1,185	1,190	1,196	1,198	1,202	1,205	1,208	1,211	1,213	1,215	1,217	1,218	1,219	1,220	1,220	1,220	1,220	1,219	1,218
27.BacNinh						916	925	932	938	943	951	959	968	975	983	991	1,000	1,009	1,018	1,027	1,041	1,060	1,080	1,073	1,085	1,097	1,108	1,120	1,133	1,145	1,156	1,166	1,177	1,187	1,196	1,205	1,213	1,220	1,228	1,236	1,242	1,248	1,254	1,261	1,268	1,271	1,276	1,280	1,284	1,287	1,290	1,293	1,295	1,297	1,298	1,299	1,300	1,300	1,300	1,299	1,298
33.HungYen						1,033	1,043	1,052	1,062	1,071	1,079	1,086	1,092	1,097	1,104	1,111	1,116	1,121	1,126	1,129	1,138	1,140	1,146	1,160	1,168	1,175	1,183	1,192	1,202	1,213	1,223	1,231	1,239	1,246	1,253	1,259	1,265	1,270	1,275	1,281	1,284	1,287	1,291	1,295	1,299	1,301	1,303	1,305	1,306	1,307	1,308	1,308	1,308	1,307	1,307	1,305	1,304	1,301	1,299	1,296	1,293
35.HaNam						764	772	779	787	793	794	793	793	792	792	791	790	788	787	786	786	787	790	791	792	795	798	801	805	810	813	817	820	823	825	828	830	832	834	836	836	837	838	839	841	841	842	842	842	842	842	842	841	841	840	839	837	836	835	833	831
37.NinhBinh						856	866	874	881	885	887	889	890	891	892	894	895	896	898	900	901	908	916	909	910	913	917	921	926	932	937	941	945	948	950	953	955	957	959	961	960	960	961	963	964	963	963	962	961	960	959	957	955	953	951	948	945	942	939	935	931
42.HaTinh						1,248	1,253	1,259	1,264	1,271	1,268	1,265	1,261	1,256	1,252	1,248	1,244	1,239	1,234	1,228	1,228	1,229	1,231	1,233	1,232	1,236	1,240	1,246	1,252	1,259	1,265	1,271	1,278	1,284	1,291	1,297	1,303	1,308	1,313	1,317	1,318	1,320	1,323	1,327	1,332	1,337	1,341	1,344	1,347	1,350	1,353	1,356	1,358	1,361	1,363	1,365	1,367	1,369	1,371	1,372	1,374
44.QuangBinh						746	758	771	784	796	802	808	815	820	825	830	835	839	844	845	849	853	858	863	866	872	878	885	891	898	904	910	916	922	928	934	938	943	948	952	955	958	961	965	968	972	975	978	980	983	985	987	988	990	991	992	993	994	995	995	995
45.QuangTri						535	545	555	565	575	578	581	584	586	589	590	592	594	597	599	602	605	608	611	614	618	623	628	633	638	643	648	654	659	665	670	675	680	685	690	694	698	702	706	710	716	721	725	730	734	738	743	747	751	756	760	764	768	772	776	780
49.QuangNam						1,322	1,335	1,348	1,362	1,376	1,383	1,389	1,394	1,399	1,403	1,407	1,411	1,414	1,418	1,423	1,427	1,438	1,450	1,442	1,447	1,454	1,462	1,470	1,478	1,487	1,495	1,504	1,512	1,521	1,529	1,532	1,537	1,545	1,554	1,563	1,568	1,572	1,577	1,581	1,585	1,593	1,598	1,603	1,608	1,612	1,616	1,621	1,625	1,628	1,632	1,635	1,639	1,642	1,645	1,647	1,650
51.QuangNgai						1,149	1,160	1,170	1,181	1,192	1,194	1,198	1,201	1,203	1,207	1,210	1,213	1,215	1,217	1,217	1,219	1,222	1,228	1,230	1,231	1,235	1,240	1,246	1,254	1,261	1,269	1,276	1,282	1,288	1,294	1,299	1,304	1,309	1,315	1,321	1,325	1,329	1,333	1,336	1,338	1,345	1,349	1,353	1,357	1,360	1,364	1,367	1,370	1,373	1,376	1,379	1,381	1,383	1,386	1,388	1,390
58.NinhThuan						467	477	487	498	507	517	526	533	538	544	548	551	556	561	566	568	570	577	584	588	593	598	603	609	614	620	625	631	636	641	646	651	656	661	666	670	674	677	681	685	690	694	698	702	706	709	713	717	720	723	727	730	733	736	739	742
62.KonTum						280	288	297	307	317	328	339	350	362	374	386	397	408	421	432	442	452	462	471	482	492	503	513	524	535	545	556	567	577	588	598	608	618	628	638	647	656	666	675	684	694	703	712	721	730	739	747	756	765	773	781	790	798	806	814	822
67.DakNong															403	424	441	457	474	491	505	516	543	532	542	552	561	570	580	590	599	608	617	625	634	642	650	659	667	675	682	689	696	703	711	717	724	731	737	743	749	755	761	766	772	777	782	787	792	797	801
70.BinhPhuoc						533	551	573	608	652	683	708	733	755	777	800	819	838	858	875	888	902	913	925	938	950	961	972	983	994	1,003	1,013	1,022	1,031	1,040	1,048	1,055	1,062	1,070	1,077	1,082	1,088	1,093	1,099	1,105	1,108	1,112	1,116	1,119	1,122	1,124	1,127	1,128	1,130	1,131	1,131	1,132	1,132	1,131	1,130	1,129
72.TayNinh						910	924	939	954	968	983	997	1,007	1,018	1,029	1,038	1,046	1,053	1,061	1,067	1,073	1,081	1,090	1,105	1,118	1,130	1,140	1,150	1,159	1,167	1,174	1,181	1,190	1,198	1,208	1,214	1,220	1,226	1,232	1,237	1,241	1,245	1,249	1,253	1,257	1,260	1,262	1,264	1,266	1,267	1,269	1,269	1,269	1,269	1,269	1,268	1,267	1,265	1,263	1,261	1,258
74.BinhDuong						639	659	679	700	721	779	846	910	973	1,037	1,109	1,204	1,307	1,403	1,513	1,620	1,691	1,748	1,768	1,869	1,930	1,989	2,047	2,106	2,166	2,213	2,260	2,310	2,363	2,418	2,458	2,497	2,537	2,575	2,614	2,645	2,678	2,711	2,744	2,777	2,794	2,817	2,838	2,857	2,874	2,889	2,902	2,913	2,923	2,930	2,935	2,939	2,940	2,939	2,937	2,932
80.LongAn						1,251	1,265	1,280	1,295	1,311	1,327	1,343	1,357	1,369	1,382	1,393	1,405	1,418	1,428	1,436	1,443	1,450	1,458	1,479	1,491	1,503	1,514	1,525	1,535	1,544	1,552	1,561	1,570	1,580	1,590	1,598	1,606	1,614	1,621	1,628	1,634	1,639	1,645	1,650	1,655	1,661	1,665	1,670	1,674	1,677	1,681	1,684	1,686	1,689	1,691	1,692	1,694	1,695	1,696	1,696	1,696
83.BenTre						1,282	1,287	1,291	1,295	1,299	1,298	1,295	1,289	1,283	1,278	1,273	1,269	1,265	1,260	1,256	1,257	1,258	1,259	1,263	1,267	1,272	1,277	1,282	1,286	1,290	1,294	1,298	1,302	1,307	1,312	1,315	1,318	1,321	1,324	1,328	1,330	1,331	1,333	1,334	1,334	1,338	1,339	1,340	1,341	1,342	1,343	1,343	1,343	1,343	1,343	1,343	1,342	1,342	1,341	1,340	1,339
84.TraVinh						935	943	951	959	969	972	975	979	983	986	990	994	997	1,001	1,003	1,007	1,012	1,015	1,021	1,027	1,035	1,042	1,049	1,056	1,062	1,067	1,073	1,078	1,084	1,091	1,095	1,099	1,103	1,107	1,110	1,112	1,114	1,116	1,119	1,121	1,122	1,124	1,125	1,125	1,125	1,125	1,125	1,124	1,123	1,122	1,120	1,119	1,116	1,114	1,111	1,108
86.VinhLong						990	996	1,001	1,006	1,012	1,013	1,015	1,016	1,017	1,019	1,020	1,022	1,023	1,024	1,025	1,027	1,029	1,034	1,038	1,045	1,052	1,058	1,064	1,069	1,073	1,076	1,079	1,084	1,089	1,095	1,099	1,102	1,105	1,108	1,111	1,112	1,114	1,115	1,116	1,117	1,119	1,120	1,120	1,120	1,120	1,120	1,120	1,119	1,118	1,116	1,115	1,113	1,111	1,109	1,106	1,103
87.DongThap						1,489	1,510	1,533	1,557	1,568	1,581	1,592	1,604	1,614	1,627	1,640	1,647	1,655	1,663	1,667	1,670	1,673	1,676	1,700	1,708	1,719	1,730	1,741	1,752	1,762	1,771	1,780	1,789	1,798	1,808	1,815	1,821	1,828	1,835	1,841	1,846	1,850	1,854	1,858	1,862	1,866	1,869	1,872	1,874	1,876	1,877	1,878	1,878	1,879	1,878	1,878	1,876	1,875	1,873	1,870	1,868
91.KienGiang						1,392	1,422	1,453	1,480	1,504	1,523	1,541	1,560	1,579	1,599	1,620	1,638	1,655	1,672	1,689	1,700	1,712	1,726	1,743	1,759	1,776	1,792	1,807	1,821	1,833	1,845	1,858	1,872	1,886	1,901	1,912	1,924	1,935	1,946	1,956	1,964	1,972	1,980	1,988	1,996	2,005	2,012	2,018	2,025	2,030	2,036	2,041	2,045	2,049	2,053	2,056	2,059	2,061	2,063	2,065	2,066
93.HauGiang															750	752	753	755	756	758	760	768	770	779	786	793	800	806	811	816	821	826	831	836	841	845	849	853	857	860	863	866	868	871	874	876	878	879	881	882	883	884	884	885	885	885	884	884	883	882	881
94.SocTrang						1,150	1,156	1,162	1,169	1,178	1,193	1,210	1,225	1,237	1,250	1,259	1,266	1,276	1,285	1,293	1,298	1,300	1,302	1,320	1,329	1,339	1,349	1,358	1,366	1,372	1,379	1,387	1,394	1,403	1,411	1,418	1,424	1,430	1,436	1,442	1,445	1,449	1,453	1,457	1,461	1,465	1,469	1,471	1,474	1,476	1,478	1,480	1,482	1,483	1,484	1,484	1,484	1,484	1,484	1,483	1,483
95.BacLieu						710	716	724	732	738	750	764	777	789	801	813	824	836	848	857	863	871	873	878	889	900	909	916	923	929	934	940	946	953	960	965	970	974	978	982	985	988	991	994	996	998	999	1,000	1,001	1,002	1,002	1,002	1,001	1,000	999	998	996	994	991	988	985

Reference: Population projection for Vietnam 2009-2049
General Statistics office of Vietnam

Urban Population Projection for Each Province

(Gray) : Expected data

Urban

x	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Special Urban																																																										
01.HaNoi															2,653	2,749	2,892	2,940	2,997	3,096	3,194	3,291	3,408	3,529	3,653	3,777	3,901	4,029	4,160	4,292	4,420	4,555	4,690	4,828	4,966	5,098	5,233	5,370	5,510	5,654	5,792	5,931	6,074	6,220	6,381	6,521	6,667	6,820	6,980	7,145	7,286	7,430	7,604	7,587	7,567	7,544
79.HoChiMinhcity															6,021	6,240	6,563	6,673	6,802	7,026	7,248	7,485	7,604	7,723	7,842	7,937	8,033	8,129	8,227	8,327	8,400	8,474	8,547	8,621	8,695	8,750	8,807	8,863	8,921	8,978	8,999	9,034	9,064	9,090	9,111	9,128	9,140	9,147	9,151	9,149	9,143	9,133	9,118	9,098	9,074	9,046
subtotal																																																												
Class 1 Urbans																																																											
92.CanTho															783	812	854	868	885	914	943	972	1,006	1,042	1,079	1,115	1,152	1,190	1,228	1,267	1,310	1,324	1,337	1,352	1,365	1,376	1,387	1,398	1,409	1,419	1,433	1,444	1,455	1,466	1,476	1,486	1,495	1,505	1,514	1,523	1,531	1,540	1,548	1,555	1,563	1,570
48.DaNang															777	805	847	861	864	883	897	913	928	943	959	972	986	998	1,011	1,024	1,033	1,043	1,053	1,064	1,075	1,083	1,091	1,099	1,107	1,115	1,120	1,126	1,132	1,137	1,142	1,146	1,149	1,152	1,155	1,157	1,159	1,160	1,161	1,161	1,160	1,160
31.HaiPhong															849	879	925	940	959	990	1,021	1,053	1,090	1,129	1,168	1,208	1,248	1,289	1,330	1,373	1,414	1,457	1,500	1,544	1,588	1,630	1,674	1,718	1,762	1,808	1,853	1,897	1,943	1,982	1,982	1,981	1,979	1,976	1,973	1,968	1,963	1,957	1,951	1,943	1,935	1,926
46.ThuaThienHue															391	405	426	434	442	457	471	485	503	520	539	557	575	594	613	633	652	672	692	712	732	752	772	792	813	834	854	875	896	917	941	962	983	1,006	1,029	1,054	1,074	1,096	1,116	1,145	1,175	1,176
40.NgheAn															375	389	409	416	424	438	452	465	482	499	517	534	552	570	588	607	625	644	663	683	702	721	740	759	779	799	819	839	859	880	902	922	943	964	987	1,010	1,030	1,051	1,070	1,098	1,126	1,128
68.LamDong															450	467	491	499	509	526	542	559	579	599	620	641	662	684	706	729	751	773	796	820	843	865	889	912	935	960	983	1,007	1,031	1,056	1,083	1,107	1,132	1,158	1,185	1,213	1,237	1,262	1,285	1,319	1,353	1,355
56.KhanhHoa															461	478	503	511	521	538	555	572	592	613	635	656	678	700	723	746	768	792	815	839	863	886	909	933	957	982	1,007	1,031	1,055	1,081	1,109	1,133	1,159	1,185	1,213	1,242	1,266	1,291	1,313	1,315	1,316	1,318
52.BinhDinh															413	428	450	457	466	481	497	512	530	549	568	587	607	626	647	667	687	708	729	751	772	793	814	835	857	879	901	922	944	967	992	1,014	1,037	1,060	1,085	1,111	1,133	1,155	1,177	1,208	1,239	1,241
66.DakLak															416	432	454	462	470	486	501	517	535	554	573	593	612	632	653	674	694	715	736	758	780	800	821	843	865	887	909	931	953	976	1,002	1,024	1,047	1,070	1,096	1,122	1,144	1,166	1,188	1,219	1,251	1,252
19.ThaiNguyen															288	298	314	319	325	336	346	357	370	383	396	410	423	437	451	466	480	494	509	524	539	553	568	583	598	613	628	643	659	675	692	708	723	740	757	775	790	806	821	843	864	866
36.NamDinh															322	333	351	356	363	375	387	399	413	428	443	458	473	488	504	520	536	552	569	585	602	618	634	651	668	685	702	719	736	754	774	791	808	827	846	866	883	901	918	941	966	967
25.PhuTho															209	216	227	231	236	243	251	259	268	277	287	297	307	317	327	337	347	358	369	379	390	401	411	422	433	444	455	466	477	489	502	513	524	536	549	562	573	584	595	610	626	627
77.BaRiaVungTau															498	516	543	552	562	581	599	618	640	662	686	709	732	756	781	805	829	855	880	906	932	957	982	1,008	1,034	1,061	1,087	1,113	1,140	1,174	1,178	1,182	1,186	1,189	1,192	1,194	1,196	1,198	1,200	1,201	1,201	1,202
22.QuangNinh															594	616	648	659	671	694	715	737	764	791	818	846	874	903	932	962	990	1,020	1,051	1,082	1,113	1,142	1,172	1,203	1,234	1,252	1,253	1,256	1,259	1,261	1,263	1,264	1,265	1,266	1,266	1,266	1,265	1,264	1,262	1,260	1,258	1,255
subtotal																																																											
Class 2 Urbans																																																											
75.DongNai															829	859	904	919	937	968	998	1,029	1,066	1,103	1,142	1,181	1,220	1,260	1,300	1,342	1,382	1,424	1,466	1,509	1,553	1,594	1,636	1,679	1,722	1,767	1,811	1,854	1,899	1,944	1,995	2,039	2,084	2,132	2,182	2,234	2,278	2,323	2,367	2,428	2,491	2,494
38.ThanhHoa															355	368	387	394	401	415	428	441	457	473	489	506	523	540	557	575	592	610	628	647	665	683	701	719	738	757	776	794	813	833	855	873	893	913	935	957	976	995	1,014	1,040	1,067	1,069
30.HaiDuong															324	335	353	359	366	378	390	402	416	431	446	461	476	492	508	524	539	556	572	589	606	622	639	655	672	690	707	724	741	759	779	796	814	832	852	872	889	907	924	948	972	973
82.TienGiang															229	237	250	254	259	267	276	284	294	305	315	326	337	348	359	371	382	393	405	417	429	440	452	464	476	488	500	512	524	537	551	563	576	589	603	617	629	641	654	670	688	689
64.GiaLai															366	379	399	406	413	427	441	454	470	487	504	521	538	556	574	592	610	628	647	666	685	703	722	741	760	780	799	818	838	858	880	900	920	941	963	986	1,005	1,025	1,045	1,071	1,099	1,101
89.AnGiang															610	632	665	676	689	712	734	756	783	811	840	868	897	926	956	986	1,016	1,047	1,078	1,110	1,141	1,172	1,203	1,234	1,266	1,299	1,331	1,363	1,396	1,430	1,467	1,499	1,532	1,567	1,604	1,642	1,675	1,708	1,740	1,785	1,831	1,834
60.BinhThuan															460	476	501	509	519	536	553	570	590	611	633	654	676	698	721	743	766	789	812	836	860	883	906	930	954	979	1,003	1,027	1,052	1,077	1,105	1,130	1,155	1,181	1,209	1,238	1,262	1,287	1,329	1,332	1,336	1,339
96.CaMau															257	267	281	285	291	300	310	319	331	342	354	366	379	391	404	416	429	442	455	468	482	495	508	521	535	549	562	575	589	604	619	633	647	662	677	693	707	721	735	754	773	774
54.PhuYen															199	206	217	220	225	232	239	247	255	264	274	283	292	302	312	322	331	341	351	362	372	382	392	402	413	424	434	444	455	466	478	489	500	511	523	535	546	557	567	582	597	598
34.ThaiBinh															173	180	189	192	196	202	209	215	223	231	239	247	255	263	272	280	289	298	306	315	324	333	342	351	360	369	378	387	397	406	417	426	436	446	456	467	476	485	495	507	520	521
subtotal																																																										
Ohters																																																										
02.HaGiang															92	95	100	102	103	107	110	114	118	122	126	130	135	139	144	148	153	157	162	167	171	176	181	185	190	195	200	205	210	215	220	225	230	235	241	247	252	257	261	268	275	275
04.CaoBang															86	90	94	96	98	101	104	107	111	115	119	123	127	131	135	140	144	148	153	157	162	166	170	175	179	184	189	193	198	203	208	212	217	222	227	233	237	242	247	253	259	260
06.BacKan															47	49	52	52	53	55	57	59	61	63	65	67	70	72	74	77	79	81	84	86	89	91	93	96	98	101	103	106	108	111	114	116	119	122	124	127	130	132	135	138	142	142
08.TuyenQuang															94	98	103	105	107	110	114	117	121	125	130	134	139	143	148	153	157	162	167	172	177	181	186	191	196	201	206	211	216	221	227	232	237	242	248	254	259	264	269	276	283	284
10.LaoCai															130	135	142	145	147	152	157	162	168	173	180	186	192	198	204	211	217	224	231	237	244	251	257	264	271	278	285	292	299	306	314	321	328	335	343	351	358	365	372	382	392	392
11.DienBien															74	76	80	81	83	86	88	91	94	98	101	105	108	112	115	119	122	126	130	134	138	141	145	149	153	157	160	164	168	172	177	181	185	189	193	198	202	206	210	215	221	221
12.LaiChau															53	55	58	59	60	62	64	66	68	71	73	76	78	81	84	86	89	92	94	97	100	102	105	108	111	114	116	119	122	125	128	131	134	137	140	144	146	149	152	156	160	160
14.SonLa															149	154	162	165	168	174	179	184	191	198	205	212	219	226	233	241	248	255	263	271	278	286	293	301	309	317	325	332	340	349	358	366	374	382	391	401	408	416	424	435	447	447
15.YenBai															144	149	157	160	163	168	174	179	185	192	199	205	212	219	226	233	240	248	255	262	270	277	284	292	300	307	315	322	330	338	347	354	362	371	379	388	396	404	412	422	433	434
17.HoaBinh															118	122	128	131	133	137	142	146	151	157	162	168	173	179	185	191	196	202	208	214	221	226	232	238	245	251	257	263	270	276	283	290	296	303	310	317	324	330	336	345	354	354
20.LangSon															141	146	153	156	159	164	169	174	181	187	194	200	207	214	220	227	234	241	249	256	263	270	277	285	292	300	307	314	322	330	338	346	353	361	370	379	386	394	401	412	422	423
24.BacGiang															146	151	159	162	165	170	176	181	188	194	201	208	215	222	229	236	243	251	258	266	273	281	288	296	303	311	319	326	334	342	351	359	367	375	384	393	401	409	417	427	438	439
26.VinhPhuc															225	233	245	249	254	262	270	279	289	299	309	320	330	341	352	363	374	386	397	409	420	432	443	455	466	479	490	502	514	527	540	552	564	577	591	605	617	629	641	658	675	675
27.BacNinh															242	250	263	268	273	282	291	300	310	321	333	344	355	367	379	391	402	415	427	440	452	464	476	489	502	515	527	540	553	566	581	594	607	621	635	650	663	676	689	707	725	726
33.HungYen															136	141	149	151	154	159	164	169	175	181	188	194	200	207	214	221	227	234	241	248	255	262	269	276	283	290	298	305	312	320	328	335	343	350	359	367	374	382	389	399	409	410
35.HaNam															75	78	82	83	85	87	90	93	96	100	103	107	110	114	117	121	125	129	132	136	140	144	148	152	156	160	164	167	171	176	180	184	188	193	197	202	206	210	214	219	225	225
37.NinhBinh															161	167	175	178	182	188	194	200	207	214	222	229	237	244	252	260	268	276	284	293	301	309	317	326	334	343	351	360	368	377	387	396	404	414	423	433	442	451	459	471	483	484
42.HaTinh															184	190	200	203	207	214	221	228	236	244	253	261	270	279	288	297	306	315	324	334	344	353	362	371	381	391	401	410	420	430	441	451	461	472	483	494	504	514	524	537	551	552
44.QuangBinh															128	132	139	141	144	149	154	158	164	170	176	182	188	194	200	206	213	219	226	232	239	245	252	258	265	272	279	285	292	299	307	314	321	328	336	344	350	357	364	374	383	384
45.QuangTri															168	174	183	186	189	196	202	208	215	223	231	239	246	255	263	271	279	288	296	305	314	322	331	339	348	357	366	375	384	393	403	412	421	431	441	451	460	469	478	491	503	504
49.QuangNam															264	274	288	293	298	308	318	328	339	351	364	376	388	401	414	427	440	453	467	480	494	507	521	534	548	563	576	590	604	619	635	649	663	679	695	711	725	739	753	773	793	794
51.QuangNgai															178	184	194	197	201	208	214	221	229	237	245	253	262	270	279	288	297	306	315	324	333	342	351	360	370	379	389	398	408	417	428	438	447	458	468	479	489	499	508	521	535	535
58.NinhThuan															204	212	222	226	231	238	246	253	262	272	281	291	300	310	320	330	340	350	361	371	382	392	403	413	424	435	446	456	467	479	491	502	513	525	537	550	561	572	582	598	613	614
62.KonTum															145	150	158	160	163	169	174	180	186	193	199	206	213	220	227	234	241	248	256	263	271	278	285	293	301	308	316	324	331	339	348	356	364	372	381	390	397	405	413	424	435	435
67.DakNong															72	75	79	80	82	84	87	90	93	96	100	103	106	110	114	117	121	124	128	132	136	139	143	147	150	154	158	162	166	170	174	178	182	186	190	195	199	203	207	212	217	218
70.BinhPhuoc															147	152	160	163	166	171	177	182	189	195	202	209	216	223	230	238	245	252	260	267	275	282	290	297	305	313	321	328	336	344	353	361	369	377	386	395	403	411	419	430	441	441
72.TayNinh															166	172	181	184	188	194	200	206	214	221	229	237	245	253	261	269	277	286	294	303	311	320	328	337	345	354	363	372	381	390	400	409	418	428	438	448	457	466	475	487	499	500
74.BinhDuong															453	469	494	502	512	529	545	562	582	603	624	645	666	688	710	733	755	778	801	824	848	870	894	917	941	965	989	1,013	1,037	1,062	1,090	1,114	1,138	1,165	1,192	1,220	1,244	1,269	1,293	1,326	1,360	1,362
80.LongAn															251	260	274	279	284	293	303	312	323	334	346	358	370	382	394	407	419	431	444	457	470	483	496	509	522	536	549	562	575	589	604	618	632	646	661	677	690	704	717	736	755	756
83.BenTre															126	130	137	139	142	147	151	156	162	167	173	179	185	191	197	203	209	216	222	229	235	242	248	254	261	268	274	281	288	295	302	309	316	323	331	339	345	352	359	368	377	378
84.TraVinh															154	159	168	170	174	179	185	191	197	204	212	219	226	233	241	249	256	264	272	280	288	295	303	311	319	328	336	344	352	360	370	378	386	395	404	414	422	430	439	450	462	462
86.VinhLong															157	163	171	174	177	183	189	195	202	209	216	223	231	238	246	254	261	269	277	286	294	301	310	318	326	334	343	351	359	368	377	386	394	403	413	423	431	439	448	459	471	472
87.DongThap															296	307	323	328	334	345	356	367	380	394	408	421	435	450	464	479	493	508	523	539	554	569	584	599	615	631	646	662	678	694	712	728	744	761	779	797	813	829	845	867	889	890
91.KienGiang															454	471	495	503	513	530	547	563	583	604	625	646	668	690	712	735	757	780	803	826	850	872	896	919	943	968	991	1,015	1,039	1,065	1,092	1,116	1,141	1,167	1,195	1,223	1,247	1,272	1,296	1,329	1,363	1,365
93.HauGiang															150	155	163	166	169	175	180	186	192	199	206	213	220	227	235	242	249	257	265	272	280	288	295	303	311	319	327	335	343	351	360	368	376	385	394	403	411	419	427	438	450	450
94.SocTrang															251	260	273	278	283	292	302	311	322	333	345	357	369	381	393	405	418	430	443	456	469	482	494	507	520	534	547	560	574	588	603	616	630	644	659	675	688	702	715	734	753	754
95.BacLieu															226	234	246	250	255	263	272	280	290	300	311	321	332	343	354	365	376	387	399	411	422	434	445	457	469	481	493	504	517	529	543	555	567	580	594	608	620	632	644	660	678	678

Reference: The 2009 Vietnam Population and Housing Census: Complete Results

Population Projection for Each Capital City

(Gray) : Expected data

Capital

x				1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
x^2				4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	4E+06	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######	######																
Capital city																																																										
Special Urban																																																											
01.HaNoi	Hanoi																		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	0	0	0	0	0	0	0	0	0	0	0
79.HoChiMinhcity	Ho Chi Minh City																		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	0	0	0	0	0	0	0	0	0	0	0
subtotal																																																										
Class 1 Urbans																																																										
92.CanTho	Can Tho																		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	0	0	0	0	0	0	0	0	0	0	0
48.DaNang	Da Nang																		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	0	0	0	0	0	0	0	0	0	0	0
31.HaiPhong	Haiphong																		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	0	0	0	0	0	0	0	0	0	0	0
46.ThuaThienHue	Hué																	336	349	361	374	387	400	413	426	439	452	465	478	491	504	517	530	543	556	569	581	594	607	620	633	646	659	672	685	698	711	724	737	750	763	776	788	801	814	827	840	853	866
40.NgheAn	Vinh																	304	315	327	339	351	362	374	386	397	409	421	433	444	456	468	479	491	503	515	526	538	550	561	573	585	597	608	620	632	643	655	667	678	690	702	714	725	737	749	760	772	784
68.LamDong	Da Lat																	205	213	221	229	237	245	253	261	269	277	284	292	300	308	316	324	332	340	348	356	364	372	379	387	395	403	411	419	427	435	443	451	459	467	474	482	490	498	506	514	522	530
56.KhanhHoa	Nha Trang																	392	407	423	438	453	468	483	498	513	528	544	559	574	589	604	619	634	649	665	680	695	710	725	740	755	770	786	801	816	831	846	861	876	891	907	922	937	952	967	982	997	1,012
52.BinhDinh	Qui Nhon																	281	291	302	313	324	335	345	356	367	378	389	400	410	421	432	443	454	464	475	486	497	508	519	529	540	551	562	573	583	594	605	616	627	638	648	659	670	681	692	702	713	724
66.DakLak	Buon Ma Thuot																	326	339	351	364	376	389	402	414	427	439	452	464	477	490	502	515	527	540	553	565	578	590	603	615	628	641	653	666	678	691	703	716	729	741	754	766	779	791	804	817	829	842
19.ThaiNguyen	Thai Nguyen																	278	288	299	310	321	331	342	353	363	374	385	395	406	417	428	438	449	460	470	481	492	503	513	524	535	545	556	567	577	588	599	610	620	631	642	652	663	674	685	695	706	717
36.NamDinh	Nam Dinh																	243	253	262	271	281	290	299	309	318	328	337	346	356	365	374	384	393	403	412	421	431	440	449	459	468	478	487	496	506	515	525	534	543	553	562	571	581	590	600	609	618	628
25.PhuTho	Viet Tri																	185	192	199	206	213	220	227	235	242	249	256	263	270	277	284	292	299	306	313	320	327	334	341	348	356	363	370	377	384	391	398	405	413	420	427	434	441	448	455	462	470	477
77.BaRiaVungTau	Vung Tau																	296	308	319	331	342	353	365	376	388	399	410	422	433	445	456	468	479	490	502	513	525	536	548	559	570	582	593	605	616	628	639	650	662	673	685	696	707	719	730	742	753	765
22.QuangNinh	Ha Long																	219	227	236	244	253	261	269	278	286	295	303	312	320	329	337	345	354	362	371	379	388	396	404	413	421	430	438	447	455	464	472	480	489	497	506	514	523	531	539	548	556	565
subtotal																		3,064	3,182	3,300	3,419	3,537	3,655	3,773	3,891	4,009	4,128	4,246	4,364	4,482	4,600	4,718	4,837	4,955	5,073	5,191	5,309	5,427	5,546	5,664	5,782	5,900	6,018	6,136	6,254	6,373	6,491	6,609	6,727	6,845	6,963	7,082	7,200	7,318	7,436	7,554	7,672	7,791	7,909
Class 2 Urbans																																																										
75.DongNai	Bien Hoa																	701	728	755	782	809	836	863	890	918	945	972	999	1,026	1,053	1,080	1,107	1,134	1,161	1,188	1,215	1,242	1,269	1,296	1,323	1,350	1,377	1,404	1,431	1,458	1,485	1,512	1,539	1,566	1,594	1,621	1,648	1,675	1,702	1,729	1,756	1,783	1,810
38.ThanhHoa	Thanh Hoa																	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400	408	416	424	432	440	448	456	464	472	480	488	496	504	512	520	528	536
30.HaiDuong	Hai Duong																	213	221	230	238	246	254	262	271	279	287	295	303	312	320	328	336	345	353	361	369	377	386	394	402	410	419	427	435	443	451	460	468	476	484	492	501	509	517	525	534	542	550
82.TienGiang	My Tho																	181	188	195	202	209	216	223	230	237	244	251	258	265	272	279	286	293	300	307	314	321	328	335	342	349	356	363	370	377	384	391	398	405	412	419	426	433	440	447	454	461	468
64.GiaLai	Pleiku																	209	217	225	233	241	249	257	265	273	281	289	297	305	313	321	329	337	345	353	361	370	378	386	394	402	410	418	426	434	442	450	458	466	474	482	490	498	506	514	522	530	538
89.AnGiang	Long Xuyen																	279	289	300	311	322	332	343	354	365	375	386	397	408	418	429	440	451	461	472	483	494	504	515	526	537	547	558	569	580	590	601	612	623	633	644	655	666	676	687	698	708	719
60.BinhThuan	Phan Thiet																	216	225	233	241	250	258	266	275	283	291	300	308	316	325	333	341	350	358	366	375	383	392	400	408	417	425	433	442	450	458	467	475	483	492	500	508	517	525	533	542	550	558
96.CaMau	Ca Mau																	216	225	233	241	250	258	266	275	283	291	300	308	316	325	333	341	350	358	366	375	383	391	400	408	416	425	433	441	450	458	466	475	483	491	500	508	516	525	533	541	550	558
54.PhuYen	Tuy Hoa																	152	158	164	170	176	181	187	193	199	205	211	217	223	228	234	240	246	252	258	264	269	275	281	287	293	299	305	310	316	322	328	334	340	346	352	357	363	369	375	381	387	393
34.ThaiBinh	Thai Binh																	183	190	197	204	211	218	225	232	239	246	254	261	268	275	282	289	296	303	310	317	324	331	338	345	352	359	366	374	381	388	395	402	409	416	423	430	437	444	451	458	465	472
subtotal																		2,558	2,657	2,756	2,854	2,953	3,052	3,150	3,249	3,347	3,446	3,545	3,643	3,742	3,841	3,939	4,038	4,137	4,235	4,334	4,433	4,531	4,630	4,729	4,827	4,926	5,025	5,123	5,222	5,321	5,419	5,518	5,617	5,715	5,814	5,912	6,011	6,110	6,208	6,307	6,406	6,504	6,603
Ohters																																																										
02.HaGiang	Ha Giang																	45	47	49	51	52	54	56	58	59	61	63	64	66	68	70	71	73	75	77	78	80	82	84	85	87	89	91	92	94	96	98	99	101	103	105	106	108	110	112	113	115	117
04.CaoBang	Cao Bang																	54	56	58	61	63	65	67	69	71	73	75	77	79	81	84	86	88	90	92	94	96	98	100	102	104	107	109	111	113	115	117	119	121	123	125	127	130	132	134	136	138	140
06.BacKan	Bac Kan																	37	39	40	41	43	44	46	47	49	50	52	53	54	56	57	59	60	62	63	64	66	67	69	70	72	73	74	76	77	79	80	82	83	84	86	87	89	90	92	93	95	96
08.TuyenQuang	Tuyen Quang																	89	93	96	100	103	106	110	113	117	120	124	127	130	134	137	141	144	148	151	155	158	161	165	168	172	175	179	182	186	189	192	196	199	203	206	210	213	216	220	223	227	230
10.LaoCai	Lao Cai																	98	102	106	110	114	117	121	125	129	133	136	140	144	148	151	155	159	163	167	170	174	178	182	186	189	193	197	201	205	208	212	216	220	224	227	231	235	239	243	246	250	254
11.DienBien	Dien Bien Phu																	48	50	52	54	55	57	59	61	63	65	67	68	70	72	74	76	78	80	81	83	85	87	89	91	92	94	96	98	100	102	104	105	107	109	111	113	115	117	118	120	122	124
12.LaiChau	Lai Chau																	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
14.SonLa	Son La																	92	95	99	102	106	109	113	116	120	124	127	131	134	138	141	145	148	152	155	159	162	166	170	173	177	180	184	187	191	194	198	201	205	208	212	216	219	223	226	230	233	237
15.YenBai	Yen Bai																	91	94	98	101	105	108	112	115	119	122	126	129	133	136	140	143	147	150	154	157	161	164	168	171	175	178	182	185	189	192	196	199	203	206	210	213	217	220	224	227	231	234
17.HoaBinh	Hoa Binh																	83	86	89	93	96	99	102	106	109	112	115	118	122	125	128	131	134	138	141	144	147	150	154	157	160	163	166	170	173	176	179	182	186	189	192	195	198	202	205	208	211	214
20.LangSon	Lang Son																	87	91	94	97	101	104	107	111	114	118	121	124	128	131	134	138	141	144	148	151	155	158	161	165	168	171	175	178	182	185	188	192	195	198	202	205	208	212	215	219	222	225
24.BacGiang	Bac Giang																	101	105	109	113	117	121	125	128	132	136	140	144	148	152	156	160	164	167	171	175	179	183	187	191	195	199	203	206	210	214	218	222	226	230	234	238	242	245	249	253	257	261
26.VinhPhuc	Vinh Yen																	94	98	102	105	109	112	116	120	123	127	131	134	138	142	145	149	152	156	160	163	167	171	174	178	182	185	189	192	196	200	203	207	211	214	218	222	225	229	232	236	240	243
27.BacNinh	Bac Ninh																	164	171	177	183	190	196	202	209	215	221	228	234	240	247	253	259	266	272	278	285	291	297	304	310	316	323	329	335	342	348	354	361	367	373	380	386	392	399	405	411	418	424
33.HungYen	Hung Yen																	83	86	89	92	95	99	102	105	108	111	115	118	121	124	127	130	134	137	140	143	146	150	153	156	159	162	165	169	172	175	178	181	185	188	191	194	197	201	204	207	210	213
35.HaNam	Phu Ly																	82	85	88	91	95	98	101	104	107	110	113	117	120	123	126	129	132	136	139	142	145	148	151	155	158	161	164	167	170	173	177	180	183	186	189	192	196	199	202	205	208	211
37.NinhBinh	Ninh Binh																	111	115	119	123	128	132	136	140	145	149	153	157	162	166	170	174	179	183	187	192	196	200	204	209	213	217	221	226	230	234	238	243	247	251	255	260	264	268	273	277	281	285
42.HaTinh	Ha Tinh																	89	92	96	99	103	106	110	113	116	120	123	127	130	134	137	140	144	147	151	154	158	161	164	168	171	175	178	182	185	188	192	195	199	202	206	209	212	216	219	223	226	230
44.QuangBinh	Dong Hoi																	111	115	120	124	128	133	137	141	145	150	154	158	163	167	171	175	180	184	188	193	197	201	205	210	214	218	223	227	231	235	240	244	248	253	257	261	265	270	274	278	283	287
45.QuangTri	Dong Ha																	82	85	88	91	95	98	101	104	107	110	114	117	120	123	126	129	133	136	139	142	145	148	151	155	158	161	164	167	170	174	177	180	183	186	189	193	196	199	202	205	208	212
49.QuangNam	Tam Ky																	108	112	116	120	125	129	133	137	141	145	150	154	158	162	166	170	175	179	183	187	191	195	199	204	208	212	216	220	224	229	233	237	241	245	249	254	258	262	266	270	274	279
51.QuangNgai	Quang Ngai																	112	117	121	125	130	134	138	143	147	151	156	160	164	169	173	177	182	186	190	195	199	203	208	212	216	221	225	229	234	238	242	247	251	255	260	264	268	273	277	281	286	290
58.NinhThuan	Phan Rang-Thap Cham																	162	168	174	180	187	193	199	205	212	218	224	230	237	243	249	255	262	268	274	280	286	293	299	305	311	318	324	330	336	343	349	355	361	368	374	380	386	392	399	405	411	417
62.KonTum	Kon Tum																	143	149	154	160	165	171	176	182	187	193	198	204	209	215	220	226	231	237	242	248	253	259	265	270	276	281	287	292	298	303	309	314	320	325	331	336	342	347	353	358	364	369
67.DakNong	Gia Nghia																	42	43	45	47	48	50	51	53	55	56	58	60	61	63	64	66	68	69	71	72	74	76	77	79	80	82	84	85	87	89	90	92	93	95	97	98	100	101	103	105	106	108
70.BinhPhuoc	Dong Xoai																	80	83	86	89	92	96	99	102	105	108	111	114	117	120	123	126	130	133	136	139	142	145	148	151	154	157	160	163	167	170	173	176	179	182	185	188	191	194	197	201	204	207
72.TayNinh	Tay Ninh																	126	130	135	140	145	150	155	160	164	169	174	179	184	189	193	198	203	208	213	218	222	227	232	237	242	247	252	256	261	266	271	276	281	285	290	295	300	305	310	314	319	324
74.BinhDuong	Thu Dau Mot																	223	231	240	249	257	266	274	283	292	300	309	317	326	335	343	352	360	369	378	386	395	403	412	420	429	438	446	455	463	472	481	489	498	506	515	524	532	541	549	558	567	575
80.LongAn	Tan An																	133	138	143	148	153	158	163	168	173	179	184	189	194	199	204	209	214	219	225	230	235	240	245	250	255	260	265	271	276	281	286	291	296	301	306	311	317	322	327	332	337	342
83.BenTre	Ben Tre																	116	121	125	130	134	138	143	147	152	156	161	165	170	174	179	183	188	192	197	201	206	210	215	219	224	228	233	237	241	246	250	255	259	264	268	273	277	282	286	291	295	300
84.TraVinh	Tra Vinh																	99	103	106	110	114	118	122	125	129	133	137	141	144	148	152	156	160	163	167	171	175	179	182	186	190	194	198	201	205	209	213	217	220	224	228	232	236	240	243	247	251	255
86.VinhLong	Vinh Long																	137	142	147	152	158	163	168	173	179	184	189	195	200	205	210	216	221	226	231	237	242	247	252	258	263	268	274	279	284	289	295	300	305	310	316	321	326	331	337	342	347	353
87.DongThap	Cao Lanh																	161	168	174	180	186	192	199	205	211	217	223	230	236	242	248	255	261	267	273	279	286	292	298	304	311	317	323	329	335	342	348	354	360	367	373	379	385	391	398	404	410	416
91.KienGiang	Rach Gia																	226	235	244	252	261	270	279	287	296	305	314	322	331	340	348	357	366	375	383	392	401	410	418	427	436	444	453	462	471	479	488	497	506	514	523	532	540	549	558	567	575	584
93.HauGiang	Vi Thanh																	71	74	77	80	82	85	88	91	93	96	99	102	104	107	110	113	115	118	121	124	126	129	132	135	137	140	143	146	148	151	154	157	160	162	165	168	171	173	176	179	182	184
94.SocTrang	Soc Trang																	136	141	147	152	157	162	167	173	178	183	188	194	199	204	209	215	220	225	230	236	241	246	251	257	262	267	272	278	283	288	293	299	304	309	314	320	325	330	335	341	346	351
95.BacLieu	Bac Lieu																	148	154	159	165	171	176	182	188	193	199	205	211	216	222	228	233	239	245	250	256	262	268	273	279	285	290	296	302	308	313	319	325	330	336	342	347	353	359	365	370	376	382

Reference: The 2009 Vietnam Population and Housing Census: Complete Results

Appendix 1-2

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
1 Phu Tho	01	Viet Tri City	Viet Tri WTP	40,000	60,000	Du Lau commune, Viet Tri Town	Phu Tho water supply Co.(JSC)	95	23	Lv: 4,285.7 Pr: 6,380.9 Bu: 7,619.0	163	80,000	110,000	Viet Tri water supply project
	02	Phu Tho Town	Phu Tho WTP	6,000	8,000	Au Co commune, Phu Tho Town		95	23		41	15,000	25,000	Phu Tho water supply project
	03	Song Thao Town	Cam Khe WTP	2,000	500	Song Thao Town, Cam Khe district		30	23		13.9	1,500	2,000	Cam Khe water supply project
	04	Thanh Ba Town	Thanh Ba WTP	2,000	1,000	Thanh Ba Town , Cam Khe district		70	23		18.6	2,000	3,000	Thanh Ba water supply project
	05	Hung Hoa Town	Hung Hoa WTP	8,000	1,000	Xuan Loc commune, Thanh		30	23		32.5	3,000	8,000	Hung Hoa water supply project
2 Vinh Phuc	01	Vinh Yen City	Vinh Yen water plant	8,000	8,000	Ngo Quyen Dis.,	Vinh Phuc No. 1 water supply co.(JSC)	60	18	5,324		8,000	8,000	Ngo Quyen station
				14,000	14,000	Vinh Yen City		60	18	5,324		14,000	14,000	
	02	Lap Thach Town	Lap Thach water plant	2,000	250	Lap Thach town		36	15	4,629		5,000	5,000	Phase 2
	03	Yen Lac Town	Yen Lac water	3,000	75	Yen Lac town		12.8	59	6,773		3,000	3,000	Yen Lac town
	04	Tam Dao Town	Tam Dao water	2,000	156	Tam Dao town		74	26	6,127		2,600	2,600	Tam Dao town
	05	Phuc Yen Town	Phuc Yen water plant	28,000	16,000	Phuc Yen town	Vinh Phuc No. 2 water supply and drainage Co.(JSC)	59	25.29	8,000	125	34,000	40,000	Phuc Yen town
	06	Vinh Tuong Town	Vinh Tuong town Water supply system	2,000		Vinh Tuong town	Vinh Tuong district People's Committees				20			Under preparation phase 2
	07	Vinh Yen City	Expanding of Water supply system Vinh Yen	30,000	Preparation or completed	Vinh Yen city	Vinh Phuc province investment environment				764	45,000		Investment by ODA budget and state budget
3 Thai Nguyen	01	Thai Nguyen city	Tuc Duyen Clean water enterprise plant	10,000	11,000	Trung Vuong commune	Thai Nguyen Clean water Co.(JSC)	68.5	26.5	Lv1: 5,000 Lv2: 5,500 Lv3: 6,000 Lv4: 7,000 Ad,CC: 7,400 Pr: 7,200 Bu: 10,000				Some simple WTP construction past by PPC service for people before design - Price excluding environment protection cost
			Tich Luong Clean water production enterprise	20,000	23,000	Tich Luong commune								
	02	Song Cong town	Song Cong Clean water enterprise	15,000	6,000	Song Cong town		65	25.4					
	03	Dong Hy Dis.	Hang Pagoda Clean water plant	2,000	800	Chua Hang town		65						
	04		Trai Cau town Water supply	1,000		Trai Cau town		40		Lv: 4,800 Bu: 6,500	8.744			
	05	Dai Tu district	Dai Tu Water supply project	2,500		Hung Son commune/Dai Tu Town		30		Lv: 3.800 Ad: 5,500 CC: 5,000	12.94			Price including VAT
	06	Dinh Ho Dis.	Cho Chu town water supply plant			Cho Chu town		77						

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	07	Phu Binh Dis.	Phu Binh Living water treatment station			Huong Son town	Huong Son town	-						
	08	Pho Yen Dis.	Song Cong Clean water enterprise			Song Cong town	Thai Nguyen Clean water .,JSC	0.65						
	09		Song Cong Clean water enterprise			Bai Bong Town		0.65						
	10	Phu Luong Dis.	Clean water from treatment plant			Giang Tien town	Centre of clean water and environment sanitation	0.65						
5 Bac Ninh	01	Bac Ninh City	Bac Ninh Water Plant	20,000	20,000	Bac Ninh City	Bac Ninh Water Supply Co., Ltd	75	21	2,982	82.20	17,000	19,000	
	02	Thua Town	Water supply Thua	2,500	1,025	Tao Doi village, Luong Tai, Thua Town	Bac Ninh Water Supply Co., Ltd	40	18.5	2,982	14.60	1,500	2,125	
	03	Pho Moi Town	Water supply Phho Moi	1,300	560	Pho Moi Town	Bac Ninh Water Supply Co., Ltd	68	17	2,982	6.80	1,014	1,170	
	04	Lim Town	Lim water supply	1,200	1,200	The Socio-Thon Noi Due Dinh Tien Du District-	Bac Ninh Water Supply Co., Ltd	90	27	3,006	12.20	1,140	1,200	
	05	Tu Son Town	Tu Son water supply	20,000	5,000	Dinh Bang commune Tu Son Town	An Viet development Investment Joint Stock Company	25						
	06	Tien Son Industrial Zone	Water supply system Vinh Tuong Town	2,000		Tien Son Industrial Park/Tien Du	Viglacera							
	07	Yen Phong Industrial Zone I	Clean Water Plant	3,000		Yen Phong Industrial Zone I/Yen Phong district/Bac Ninh province	Viglacera							
	08	Que Vo Industrial Park I	Clean Water Plant	3,000		Que Vo Industrial Park I	Kinh Bac Urban Development JSC							
6Bac Giang	01	Bac Giang city	Bac Giang WTP	25,000	22,000	Tho Xuong Ward	Bac Giang Water Supply and	95	22	4,000	130	30,000	50,000	
	02	Thang Town Hiep Hoa Dis.	Hiep Hoa WTP	500	130	Duc Thang Ward	Hiep Hoa Town water Supply	95.00		3,500	4	5,000	7,000	
	03	Luc Ngan Dis.	Chu Town WTP	3,000	1,500	Chu Town	Dai Phuc Trade building power Co., Ltd	70.00	25-30	4,000	12	5,000	7,000	
	04	Lang Giang Dis.	Kep Town WTP	60		Kep Town	Kep Town					300		

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	05	Yen The Dis.	Dong Huu WPT	270		Dong Huu Commune	Yen The Town			4,000	8	200	220	
	06	Bo Ha commune	Bo Ha WTP	240		Bo Ha commune	Bo Ha commune			4,000	5	160	180	
8Hai Phong	01	Hong Bang, Le Chan, Ngo Quyen, Hai An, and one part of Duong Kinh, An Duong	An Duong water plant	100,000	130,000	Lam Son commune, Le Chan district	Hai Phong water supply One member Co., Ltd	100	20	5,750		170,000	200,000	Some simple WTP construction past by PPC service for people before design
	02	An Duong town, Quen Toan, Hung Vuong commune, some communes of An Duong district, Nomura Industrial park, Trang Due,	Vat Cach water plant	11,000	16,000	Tan Tien commune, An Duong district	Hai Phong water supply One member Co., Ltd	100	10	6,700		15,000	36,000	Some simple WTP construction past by PPC service for people before design
	03	Kien An, one part of An Lao district, Kien Thuy district, An Trang	Cau Nguyet water plant	40,000	30,000	Thei Son commune, An Lao district	Hai Phong water supply One member Co., Ltd	100	20	5,750		50,000	60,000	Some simple WTP construction past by PPC service for people before
	04	Do Son and one part of Duong Kinh district, Đ uong 353 Industrial park	Do Son water plant	5,000	6,000	Chu hamlet, Do Son town	Hai Phong water supply One member Co., Ltd	100	22	5,700				After completing Hung Dao water plant, Do Son water plant to be renovated into booster pumping station.Some simple WTP construction past by PPC service for
	05	Minh Duc town and one part of Nge Lao commune, Tam	Minh Duc water plant	1,300	1,600	Quyet Tien area, Minh Duc town, Thñy Nguyen district	Hai Phong water supply One member Co., Ltd	100	20	5,500		5,000	10,000	Some simple WTP construction past by PPC service for people before
	06	Vinh Bao town, Nhan Hoa, one part of Tan Hung and adjacent area, Tan Lien industrial	Vinh Bao water plant	2,500	1,600	Bac Hai area, Vinh Bao town , Vinh Bao district	Hai Phong water supply One member Co., Ltd							Rate of population to be supplyed water by100% of internal urban
	07	Cet Ba town	Cet Ba water plant	3,000	2,200	Cei Gie, Cet Ba	Hai Phong water supply One member Co., Ltd	100	20	5,750		3,500	6,000	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	08	Tien Lang town , Tien Lang district	Tien Lang town water supply project	14,000	800	Tien Lang town	Tien Lang general construction., JSC	70	30	Lv: 3,990 Sv: 6,090	13,630	2,100	2500	Operated from Oct 2009 Project under Vietnam small town sanitation and
9 Thai Binh	01	Thai Binh city	Thai Binh WTP	40,000	40,000	Tien Phong Ward	Thai Binh Water Supply Company	70	10,000	4,500	400	55,000	80,000	
	02		Nam Long WTP	20,000	18,000	Bo Xuyen Ward	Bitexco Nam Long JSC	70	90,000	4,500	20.5	15,000	36,000	
	03		Hoang Dieu WTP	2,500	1,400			<10	800	4,500	20	10,000	20,000	
	04	Kien Xuong Town	Thanh Ne Town WTP	2,400	1,200	Kien Xuong Town	Thai Binh Water Supply Company	70		3,500	15.2			
	05	An Bai Town	An Bai Water Enterprise	1,500	15,000	An Bai Town		70		4,500		1,500	3,000	
	06	Quynh Coi Town	Quynh Coi WTP	1,000	1,500	Quynh Coi Town		100		4,500		1,000	2,000	
	07	Diem Dien Town	Diem Dien Town WTP	2,000	2,000	Thuy Ha Commune	Diem Dien PMB	90	35	2,500	11.24	6,000	10,000	
	08	Tien Hai Town	Tien Hai WTP	10,000	10,000	Tien Hai Town	Tien Hai Water Enterprise	100		3,500		2,000	3,000	
	09	Hung Nhan Town	Hung Nhan WTP	2,000	800	Hung Nhan Town	Thai Binh Water Supply Company	70	70	4,500	18	2,000		
10 Hung Yen	01			5,000	5,000			35		6,800		70	100	
	02			3,000	3,000			10		6,800		70	70	
	03				0									
	04			0	0									
	05			0	0									
	06			0										
11Ha Nam	01	Phu Ly Town	Phu Ly WTP No.1	10,000	7,000	Quang Trung ward, Phu Ly Town	Ha Nam clean water supply plant JSC	90	34	6,600	21	10,000	15,000	
	02		Phu Ly WTP No.2	15,000	10,000	Thanh Son commune, Kim Bang Dis.	Ha Nam clean water supply plant JSC	90	34	6,600	80	15,000	25,000	
	03	Dong Van I Industrial Park	Dong Van I Industrial Park WTP	2,500	1,500	Dong Van I Industrial Park	Branch of Vietnam Clean Water and Environment JSC	100		10,000	15	1,500	2,500	100% companies in industrial park
	04	Hoa Mac Industrial Park	Hung Thanh No. 5 WTP	3,000	1,500	Méc Nam commune, Duy Tien Dis.	Hung Thanh No.5 Clean Water and Environment Co., Ltd	100		5,000	12	1,500	4,000	100% companies in industrial park
	05	Binh My Town	Binh My WTP	3,000	1,500	Binh My Town/Binh Loc	Binh Mymechanic company	80		6,600	15	1,500	3,000	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
12 Nam Dinh	01	Nam Dinh City	Nam Dinh City WTP	75,000		Nam Dinh City	Nam Dinh Clean water bussiness One member Limited company	95		5,500		506.01	522.41	
	02	Ngo Dong Town/Giao Thuy Dis	Ngo Dong Town WTP	1,000	1,000	Ngo Dong Town, Giao Thuy Dis.	Ngo Dong Town, Giao ThñyDis.	90		3,000	4.268	892.80	921.70	
	03	Xuan Truong centre Town/Xuan Truong Dis	Xuan Truong Town centre WTP	3,500	3,500	Xuan Truong centre Town/Xuan Truong Dis	Nam Dinh province Clean water supply and rural sanitation Company	90		3,800	11.84	832.70	859.70	
	04	My Loc Town	Centre WTP	1,400	1,400	My Loc Town		90		3,800	4.922	494.8	510.8	
	05	Nam Giang Town/Truc Ninh	Dao River WTP	160	100	Nam Giang Town/Nam Truc		70		4,000	20,000	464	539.6	
13 Ninh Binh	01	Ninh Binh city		20,000	17,342	Dong Thanh commune	Ninh Binh Clean water bussiness One Member Limited company	83		Lv(<10m3): 4,500 Lv(>10m3): 5,700 Ad: 6,300 Pr: 9,500 Bu: 12,600				
	02	Tam Diep town		12,200	2,373			58						
	03	Yen Ninh town		2,200	358			63						
	04	Hoa Lu district		2,200	915			68						
	05	Yen Thinh		2,200	317			57						
	06	Nho Quan district		2,200	420			67						
	07	Kim Son		4,000	593			40						
	08	Me town		2,200	438			50						
17Cao Bang	01	Cao Bang Town	Cao Bang Town water supply plant	10,000	10,000	Cao Bang Town	Cao Bang a member of water supply Co. Ltd	79	28	4,600	49.956	25,000	40,000	
	02	Nuoc Hai Town	Nươc Hai Town Town Water Plant, Hoa An district	640	450	Nươc Hai Town	Cao Bang a member of water supply Co. Ltd	94	18	4,200	1.535	15,000	3,000	
	03	Trang Khanh Town	Trung Khanh Town Town Water Plant, Trung	900	450	Thanh Ba Town	Cao Bang a member of water supply Co. Ltd	84	30	4,200	1.974	2,100	3,000	
	04	Thong Nong Town	Thong Nong Town Town Water Plant, Thong Nong district	900	200	Thong Nong Town	Cao Bang a member of water supply Co. Ltd	83	31	4,200	0.617	900	1,000	
	05	Quang Uyen Town	Quang Uyen Town Water Plant, Quang Uyen	570	320	Quang Uyen Town	Cao Bang a member of water supply Co. Ltd	95	21	4,200	1.106	2,500	4,000	
	06	Dong Khe Town	Dong Khe Town Water Plant, Thach An district	860	300	Dong Khe Town	Cao Bang a member of water supply Co. Ltd	80	29	4,200	0.781	1,570	2,500	
	07	Thanh Nhat Town	Thanh Nhat Town Water Plant, Ha Lang district	720	100	Thanh Nhat Town	Cao Bang a member of water supply Co. Ltd	70	31	4,200	1.8	1,500	2,500	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	08	Bao Lac Town	Bao Lac Town Water Plant, Bao Lac district			Bao Lac Town	PPC	70		3,000	1.8	900	1,100	
	09	Ta Lang Town	Ta Lung Town Water Plant, Phuc Hoa district	3,000	3,000	Ta Lang Town	PMU of Ta Lung gate economic zones	70		3,100	19.3			
	10	Hoa Thuan Town	Phuc Hoa WTP	1,400	14,000	Hoa Thuan Town	Investment & Construction PMU Phuc Hoa district	80		3,300	9			
	11	Xuan Hoa Town	Xuan Hoa WTP	60		Xuan Loc area, Xuan Hoa town	PPC of Quang Ha		30	4,500	2			
	12	Pac Miau	Na Mo water supply Pac Miau Town, Bao Lam	75		Na Mo - Khu I TT Pac Miau	PPC of Bao Lam		15	5,000		240	540	
	13	Tinh Tuc Town	No data No treatment											
18 Dien Bien	01	Dien Bien Phu City	Dien Bien Phu WTP	8,000	8,000	Dien Bien Phu City	Dien Bien Water Supply and Construction Co., Ltd	78	30	4,638	50	12,000	16,000	
	02	Tua Chua Dis.	Tua Chua Dis.	2,500	750	Tua Chua Dis.		87	25	4,000	20	1,500	2,500	
	03	Tuan Giao Dis.	Tuan Giao Dis.	2,500	500	Tuan Giao Dis.		75	25	3,400	20	1,500	2,500	
	04	Muong Cha Town	Muong Cha Town WTP	1,000	500	Muong Cha Town		75	30	3,000	18.7	1,000	1,500	
19 Son La	01	Son La city		20,750	14,100		Son La water supply .,JSC	100	22	4,200	-	-	-	
	02	Mai Son		7,500	3,700			90		4,200	-	-	-	
	03	Thuan Chau		1,900	1,600			85		4,200	-	-	-	
	04	Moc Chau		2,000	1,500			85		4,200	-	-	-	
	05	Yen Chau		1,900	1,100			85		4,200	-	-	-	
	06	Muong La		2,700	1,400			85		4,200	-	-	-	
	07	Phu Yen		2,500	1,300			85		4,200	-	-	-	
	08	Song Ma		2,400	1,250			85		4,200	-	-	-	
	09	Bac Yen		700	500			85		4,200	-	-	-	
	10	Quynh Nhai		1,200	1,200			-		3,500	-	-	-	
	11	Sop Cop		1,200	1,200			30		4,200	-	-	-	
	01	Tuyen Quang Town	Tuyen Quang WTP	17,500	12,425	Tuyen Quang Town	Tuyen Quang water supply and drainage One Member Limited company	92	21	3,800	8 million USD	100%	100%	
	02	Son Duong Town	Son Duong WTP	3,000	1,500	Son Duong Town	Son Duong Dis. urban and works management unit	40	23	3,500	5.2	80%	100%	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
21Tuyen Quang	03	Ham Yen Dis.	Ham Yen WTP	1,200	600	Ham Yen Town	Ham Yen water supply enterprise under Tuyen Quang water supply and drainage One	50	23	3,500	4.8			
	04	Chiem Hoa Dis.	Chiem Hoa WTP	1,500	1,100	Vinh Loc Town, Chiem Hoa Dis.	Chiem Hoa water supply enterprise under Tuyen Quang water supply and drainage One	66	21	3,600	6.7	85%	95%	
	05	Na Hang Dis.	Na Hang WTP	1,200	600	Na Hang Town, Na Hang Dis.	Na Hang water supply enterprise under Tuyen Quang water supply and drainage One	50	32	2,600	3.1	85%	95%	
22Bac Kan	01	Bac Kan Town	Bac Kan Water Supply and Sewerage a member limited	4,000	2,940	Phung Chi Kien Ward, Bac Kan Town	PPC of Bac Kan	74	28	3,600-8,900	18.6	6,000	10,000	
	02	Cho Moi Town	Cho moi Town WPT	500	400	Cho Moi District, Bac Kan Province	Central water & sanitation in rural	80		3,600-8,900		1,300	2,600	
	03	Phu Thong Town	Phu Thong Town WTP	200		Phu Thong Town, Bach Thong district, Bac Kan				3,600-8,900		900	1,800	
	04	Bang Lung Town	Bang Lung WTP	800	700	Bang Lung Town, Cho Don District	Bac Kan Water Supply and Sewerage a member limited	88		3,600-8,900	7.5	3,000	6,000	
	05	Na Phac Town	Na Phac Town WTP	500	175	Na Phac Town, Ngan Son district	Bac Kan Water Supply and Sewerage a member limited	71		3,600-8,900	6.3	1,400	3,000	
	06	Ngan Son district center	Van Tung commune WTP	300		Van Tung commune, Ngan				3,600-8,900		1,600	3,300	
	07	Yen Lac Town	Yen Lac WTP	120	100	Yen Lac Town	PPC of Na Ri	83		3,600-8,900		1,800	3,700	
	08	Pac Nam district center	Bo Luc WTP	100		Bo Bo commune, Pac Nam district				3,600-8,900		900	1,800	
	01	Lang Son City and		17,000	15,000	Lang Son City and		90	31	3,800		25,000	50,000	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
23 Lang Son	01	Cao Loc Town		17,000	15,000	Cao Loc Town	Lang Son Water Supply and Drainage .,JSC	90	31	3,800		25,000	30,000	
	02	Dong Dang Town, Cao Loc distric		2,500	2,000	Dong Dang Town		70	30	3,800		3,000	3,500	
	03	Dong Mo Town, Dong Banh Town, Chi Lang district		1,500	1,200	Dong Mo Town, Dong Banh Town		80	26	3,800		3,000	3,500	
	04	Bac Son Town		2,400	1,170	Bac Son Town		70	60	3,800		1,500	3,000	
	05	Binh Gia Town, Binh Gia district		1,200	500	Binh Gia Town		70		3,800		1,200	2,400	
	06	Loc Binh Town, Loc Binh district		1,200	1,080	Loc Binh Town		70	40	3,800		1,200	2,400	
	07	That Khe Town, Trang Dinh district		1,200	550	That Khe Town		70	55	3,800		1,200	2,400	
	08	Binh Gia Town, Binh Gia district		1,200	700	Binh Gia Town		70	40	3,800		1,200	2,400	
	09	Tu Don Town,Van Quan district		1,200	650	Tu Don Town	Van Quan district People	70	45	3,800		1,200	2,400	
	10	Na Sam Town, Van Lang district		1,200	600	Na Sam Town	Committees	70	50	3,800		1,200	2,400	
	11	Met Town, Huu Lung district		1,200	850	Met Town	Huu Lung district People	75	50	3,800		1,200	2,400	
	12	Dinh Lap Town, Dinh Lap district		1,200	700	Dinh Lap Town	Dinh Lap district People	75	50	3,800		1,200	2,400	
	13	Chi Ma border gate, Loc Binh district		1,200	300	Chi Ma border gate	Lang Son Water Supply and Drainage .,JSC							
	14	Tan Thanh border gate, Van Lang district		1,200	300	Tan Thanh border gate	Van Lang district People Committees	75	40	3,800		1,200	2,400	
26 Thanh Hoa	01	Thanh Hoa City	Ham Rong WTP	20,000	20,000	Dong Cong commune/Ham Rong Ward	Thanh Hoa WS company	94	30	Lv(<10m3): 3,800 (11to 20m3): 4,500 (21to 30m3): 5,200 (>30m3): 6,200 Ad: 7,000 Pr: 8,000		100,000	180,000	Implemented the minimum fee collection in accordance with Decree No. 117/2007/N§-CP dated July 11, 2007 of Government, at
	02		Mat Son WTP	30,000	30,000	Son Dong Ve								
	03	Hoang Hoa Dis.	Hoang Hoa WTP	750	750	Hoang Vinh commune		59	13			2,000	5,000	
	04	Bim Son Town	Bim Son WTP	10,000	7,000	Bac Son ward		73	13			20,000	40,000	
	05	Tinh Gia Dis.	Tinh Gia WTP	750	750	Nguyen Binh commune		60	25			2,000	1,000	
	01	Ha Tinh city	Ha Tinh water plant	24,000	24,000	Thach Dien Commune		72		3,200	114.0	36,000	50,000	Currently, installing pipelines
	02	Hong Linh town	Ha Tinh water plant	5,000	5,000	Trung Luong Commune		60		2,800	14.9	7,000	10,000	
	03	Huong Son district	Pho Chau water plant	600		Pho Chau town		40		2,800	3.5	10,000	12,000	

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
28 Ha Tinh	03	Huong Son district	Tay Son water plant	3,000		Tay Son town	Ha Tinh water supply Co.	80		2,800	11.7	10,000	12,000	Newly come into operation
	04	Duc Tho district	Nha may nuíc Duc Tho	1,500	1,500	Tung Anh commune		45		2,800	87.0	5,000	7,000	
	05	Vu Quang district	Vu Quang water plant	2,000	1,200			50		2,500	20.4	4,000	6,000	
	06	Nghi Xuan district	Xuan Mi water plant	7.000		Xuan Hoa commune					67.4	20,000	30,000	Not used yet
	07	Can Loc district	Can Loc water	3,000	3,000	Tien Loc		60		3,200	15.2	9,500	12,000	
	08	Huong Khe district	Huong Khe water plant	3,000	3,000	Huong Khe town		60		2,500	4.4	5,000	7,500	
	09	Cam Xuyen district	Cam Xuyen water plant	2.000	1,800			55		2,800	7.3	20,000	30,000	
	10	Ky Anh district	Ky Anh water	3,000	3,000		Vung Ang Economic Zone Managing Board	60		2,800	14.9	7,000	12,000	
	11	Ky Anh district	Vung ang water plant	5,000	5,000			50		4,500	15.0	45,000	100,000	
29 Quang Binh	01	Quy Dat town	Quy Dat WTP	2,000	1,000	Quy Dat town	CTN Quang Binh company	52	24	Lv(<10m3): 4,000 Sv(>10m3): 6,000 Ad: 9,000 Pr: 10,000 Bu: 12,000	12.7	2,000	6,000	
	02	Dong Le town	Dong Le WTP	700	700	Dong Le town		65	25		2.4	1,500	4,000	
	03	Ba Don town	Ba Don WTP	2,000	2,000	Ba Don town		85	28		11.3	4,000	12,000	
	04	Quan Hau town	Quan Hau WTP	1,000	1,000	Quan Hau town		70	26		7.5	2,000	6,000	
	05	Kien Giang town	Kien Giang WTP	1,000	400	Kien Giang town		40	25		6.7	2,000	4,000	
	06	Dong Hoi city	Phu Vinh WTP	19,000	15,000	Thuan Duc Ward		63	24		200.0	30,000	80,000	
			Hai Thanh WTP	9,000	3,000	Hai Thanh Ward								
	07	Hon La EZ	Hon La WTP	150	50	Hai Dinh Ward			20		3.1	6,000	12,000	
30 Quang Tri	01	Dong Ha Town	Dong Ha city Water plant	15,000	80	Dong Ha Town		95	42	5,323	125.4	28,000	40,000	
			Gio Linh Town water plant	15,000	60				36	4,700	35.6			
	02	Quang Tri Town	Quang Tri Town water plant	3,500	82	Quang Tri Town		95	37	4,600	13.1	6,000	9,500	
	03	Ai Tu Town						90				2,000	4,000	
	04	Gio Linh Town	Gio Linh Town water plant	15,000	60	Gio Linh Town		30	36	4,700	35.6	2,000	4,000	
	05	Cua Viet Town						60				2,000	4,000	
	06	Cua Tung Town						60				2,000	4,000	
	07	South Dong Ha IP						100				4,000	4,000	
	08	Quan Ngang Indstrial Park						100				6,000	6,000	
	08	Hai Lang Town	HaI Lang Town water plant	2,000	30	Hai Lang Town		45	11	5,300	16.6	6,000	6,000	
	10	Cam Lo Town	Cam Lo Town water plant	2,000	20	Cam Lo Town		25	8	5,300	18.2	2,000	4,000	
	11	Krong Klang Town	KrongKlang Town water plant	2,000	30	KrongKlang Town		90	18	5,000	6.5	2,000	4,000	

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	12	Khe Sanh Town	Khe Sanh Town water plant	3,000	60	Khe Sanh Town		90	20	5,000	22.5	3,000	6,000	
	13	Lao Bao Town	Lao Bao Town water plant	3,000	91	Lao Bao Town		90	20	5,000	18.3	4,000	6,000	
	14	Ho Xa Town	Ho Xa Town water plant	2,000	65	Ho Xa Town		85	30	4,600	16.2	4,000	8,000	
	15	Ben Quan Town	Ben Quan Town water plant	2,000	15	Ben Quan Town		40	8	4,500	12.9	2,000	4,000	
	16	3 urban areas expected to be established, period 2020	Unidentified									6,000	12,000	
34 Kon Tum	01	Kon Plong district	Kon Plong district water plant	1,000	200	Dak Long commune	Kon Plong district PC	70	20	4,000	12.4	650	8,000	
	02	Kon Tum city	Kon Tun water plant	12,000	6,500	Kon Tum city	Kon Tum WS company	40	24	7,100	67.3	12,000	35,000	
	03	Dak Glei town	Dawk Glei town water plant	1,000	400	Dak Glei town	Dak Glei district PC	20	30	2,500	2.9	1,000	4,000	
	04	Plei Kan town	Plei Kan town water plant	800	460	Plei Kan town	Ngoc Hoi district PC	56	25	3,800	3.0	1,300	6,000	
	05	Dak Rve town	Dak Rve town water plant	650	500	Dak Rve town	Kon Roy district PC	52	25	800	1.0	1,400	3,500	
35 Quang Ngai	01	Quang. Ngai city	Quang Ngai WTP	16,500	16,500	Quang. NgaI city	Quang NgaI water supply and drainage Isc	60	-	3,570	-	30,000	45,000	
	02	Dung Quat EZ	Dung Quat WTP	25,000	25,000	Dung Quat EZ	Vinaconex	-	-	5,600	-	150,000	300,000	
	03	Mo Duc town	Mo Duc WTP	1,000	-	Mo Duc town	Quang NgaI water supply and drainage Isc	-	-	3,570	5.9	2,000	4,000	
	04	Duc Pho town	Duc Pho WTP	2,000	500	Duc Pho town		40	-	3,570	12	5,700	12,000	
	05	Chau o town	Chau o WTP	1,200	1,000	Chau o town		50	-	3,570	-	2,500	6,000	
36 Gia LAI	01	Pleiku city	Bien Ho WTP	20,000	16,000	Bien Ho commune	Gia Lai WS and drainage company	40	30	4,500		40,000		
	02	Ayun Pa town	Ia Rbol WTP	3,000	2,000	Ia Rbol commune	Gia Lai WS and drainage company	20	30	4,500	7.0	10,000		
	03	An Khe town	An Khe WTP	5,000	2,000	An Tan ward	An Khe town PC	30	30	3,500	4.0			
	04	K' Bang district		1,800	1,000	Kbang town	Kbang district PC	45	30	5,000		5,400		
38 Phu Yen	01	Tuy Hoa city	Tuy Hoa WTP	28,000	18,000	Tuy Hoa city	Bac Kan province PC	65	22	Lv(<20m3): 3,000/household/ month Lv(>20m3): 4,000/household/ month	163.2	27,000	60,000	
	02	Song Cau town	Song Cau WTP	5,000	3,000	Xuan Phu ward	Domestic water and rural environmental	50	19		14.1	10,000	20,000	
			Northeast Song Cau WTP	900	600	Xuan Binh commune		30	37		6.1	1,000	5,000	
	03	Tuy An district	Chi Thanh WTP	3,000	1,500	Chi Thanh town		40	27		18.6	3,000	6,000	
	04	Dong Xuan district	La Hai WTP	3,000	1,300	La Hai town	Bac Kan WS and drainage one member company	45	33		11.7	3,000	6,000	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	05	Song Hinh district	Hai Rieng WTP	2,000	2,000	Ea Bia commune	Bac Kan WS and drainage one member company	80	30	Ad: 4,000 Pr: 5,000 Bu/Sv: 6,000	10.1	3,000	6,000	
	06	Son Hoa district	Cung Son WTP	2,000	1,200	Cung Son town		40	15		12.3	2,000	4,000	
	07	Phu Hoa district	Phu Hoa WTP	2,000	200	Phu Hoa town	Na Ri district PC	10	25		10.9	1,000	3,000	
39 Dak Lak	01	Buon Ma Thuot city	Buon Ma Thuot WTP	49,000	4,000	40 drilled wells	Construction investment & WTP one member company	66	24	2,800	-	30,000	45,000	
	02	Buon Ho town	Buon Ho WTP	2,800	2,800	10 drilled wells	Construction investment & WTP one member company	13	14	2,650	-	150,000	300,000	
	03	Phuoc An town; Krong Pak district	Phuoc An WTP	2,000	1,680	Open source	Construction investment & WTP one member company	46	12	2,560	-	2,000	4,000	
	04	Ea Kartown, Ea Kar district	Ea Kar water supply plant	300	165	02 drilled wells	Construction investment & WTP one member company	69	20	-	-	5,700	12,000	Took over in Dec 2009
	05	Quang Phu town, Cu M'gar dsstrict	Quang Phu water supply plant	2,500	650	drilled wells	Construction investment & WTP one member company	18	24	2,650	-			Took over in June 2009
	06	Ea Drang Town/Ea H'leo Dis.	Ea H'leo WTP	1,200	200	Underground water	Rural water center	18	-	2,780	10			Funded by JICA in 2007 - under pilot operation
	07	Ea Suop Town/Ea suop Dis.	Ea Suop WTP	1,000	900	Ea Suop ha lake	Ea Suop district PC	75	34	2,650	-			Hand over to Environment and Water supply station for mâ
	08	Ea Pok town, under CuM' Gar district	Ea Pok water supply plant	350	280	Underground water	UBND HuyÖn Cu M'gar	24	34	-	-			Hand over to Town water usage group for management
	09	M'Drak town, M' Drak district	M' Drak Water Supply Station	450	440	ChuP¸ surface water	M' Drak district PC	54	15	-	-			Hand over to Town power, water business cooperative for
	10	Krong Kmartown, Krong Bong	Krong Bong water supply plant	1,000	150	Surface water	Rural water center	24	20	-	-			
	11	Buon Trup town; Krong Ana district	Buon Trup water supply plant	790	120	Underground water	Krong Ana district PC	6	30	-	-			Under management by Domestic management team

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	12	Liien Son town; Lak district	Liien Son water supply plant	175	150	Surface water	Lak district PC	25	35	2,600	-			Liien Son Power, water cooperative
40 Khanh Hoa	01	Nha Trang city	Vo Canh WTP	58,000	70,000	Vinh Trung commune- Nha Trang city	Khanh Hoa water supply and drainage company	80	22	3,400		98,000		Some simple WTP construction past by PPC service for people before design
			Xuan Phong WTP	12,000	12,000	Vinh Thanh commune- Nha Trang city						12,000	20,000	
	02	Cam Ranh town	Cam Phuoc Tay WTP	6,000	6,000	Cam Phuoc commune, Cam Lam district	Cam Ranh urban Jsc.	60	25	5,901	23.508			
	03	Ninh Hoa town	Ninh Hoa WTP	2,500	2,500	Quang Dong-Ninh Dong Ninh Hoa	Ninh Hoa urban Jsc.			2,500		8,000	8,000	
	04	Van Ninh district	Van Gia town WTP- Van Ninh district (Son Hoa)	2,000	3,000	Vanh Pho commune-Van Ninh district	Van Ninh urban works Jsc.	4,000 hh.		3,900		6,000	10,000	Some simple WTP construction past by PPC service for people before
41Lam Dong	01	Da Lat city and Lac Duong town, Lac Duong district	Dankia I WTP	25,000	25,000	Lac Duong district	Lam Dong Sewerage & Water Supply Co., Ltd	85	25			61,000	132,000	
			- Ho Xuan Huong WTP - Than Tho lake WTP	6,000 3,000	5,000 5,500	P9-Da Lat city	Lam Dong Sewerage & Water Supply Co., Ltd							2 WTP using 1 water source from Chion Thang lake
			Da Thien lake WTP	3,000	3,000	P8-Da Lat city	Lam Dong Sewerage & Water Supply Co., Ltd							Under-preparation
			Dankia II WTP	30,000 GD I		Lat commune-Lac Duong dist. And 7 commune-Da Lat city	Lam Dong Sewerage & Water Supply Co., Ltd				171.123			Under-preparation
			Tuyen Lam WTP	10,000 (GDII: 15,000)		10 commune-Da Lat city	Tuyen Lam water supply co., ltd				97.00			Under-preparation
	02	Bao Loc city	Bao Loc WTP	6,000	7,704		Bao Loc Construction & Sewerage & Water Supply Jsc	44	22			29,800	62,300	
			Gelexim Nam Phuong WTP	9,600			Gelexim Import-export & Investment Jsc				57.828			Under-preparation
			Dinh Van WTP	1,400	1,400	Dinh Van town		50	25			6,300	11,900	
				6,000		Dinh Van town	Truong My Quang Jsc							Under-preparation

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	03	Lam Ha Dis.	Tram Xa lake WTP	2,000 (GDII:4,000)		Nam Ban commune	Lam Dong sewerage & water supply Co. Ltd				39.52 WB 84% SB 16%			Under-preparation
			Da Dang II lake WTP	2,000 (GDII: 4,000)		Tan Ha commune	Lam Dong sewerage & water supply Co. Ltd				36.097 WB 84% SB 16%			Under-preparation
	04	Cat Tien district	Cat Tien WTP	2,960		Dong Nai town	Distric public work operation & mangement Center				SB: 25.542	3,700	5,600	Cat Tien district PC is Owner
41Lam Dong	05	Dat district	Dat WTP	2,000	170	Dat town	Lam Dong sewerage & water supply Co. Ltd		15		SB:83.77 Co:10.698	3,000	5,400	
	06	Dai Hoa district		4,000	1,680	Madagui town	Dia Hoai District People's Commitee is the Owner				37.42	2,500	4,200	
				700 (GD II: 1,400)		Damri town	Lam Dong sewerage & water supply Co. Ltd				16.808 WB: 84% SB: 16%			Under-preparation
	07	Bao Lam district		2,600	1,650	Loc Thang town	Lam Dong sewerage & water supply Co. Ltd	30	15		17.031 (JBIC 13.1)			
	08	Di Linh district	Di Linh WTP	2,000	2,000	Di Linh town	Di Linh Water Supply jsc	40	25			4,000	6,500	
	09	Dam Rong district	Dam Rong WTP	500 (GD II: 1,000)		Bang Lang town	Lam Dong sewerage & water supply Co. Ltd				13.460 WB: 84% SB: 16%	900	3,500	Under-going
	10	Don Duong district	Suoi Da Bao WTP	2.000 (GDII: 4,000)		Dram town	Lam Dong sewerage & water supply Co. Ltd				30.696 WB: 84% SB: 16%	2,600	4,900	Under-going
			Thanh My WTP	2,000	30	Thanh My district	Lam Dong sewerage & water supply Co. Ltd				20.262 SB: 9.836 Co: 10.426			
	11	Dic Trong district	Dic Trong WTP	2,000	2,000	Lien Nghya district	Lam Dong sewerage & water supply Co. Ltd	20	25			11,600	25,700	Ratio of water supply coverage is calculated for the town only
				15,000		Dic Trong district	Truong My Quang Jsc				95			Under-preparation
2 Ninh Thuan	01	Phan Rang - Thap Cham City	Thap Cham WTP	52,000	27,000	Do Vinh commune	Water Supply JSC	80	25	4,800	250	46,000	92,000	
	02	Tan Son Town	Tan Son WTP	2,000	2,000	3 str. Area, Tan Son town	Water Supply JSC	80	26	4,800	5	5,000	10,000	
	03	Thanh Hai Indistrial Cluster	Intermediate Water Supply Station	2,000	100	Thanh Hai commune	IPs Management Board	100	23	8,200	4.8	1,200	1,700	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
4	04	Phan Rang - Thap Cham City	Dong My Hai Water Supply	2,500	1,400			80		3,900	5	1,700	2,500	
44 Dak Nong	01	Dak Mil town	Dak Mil town water supply system	2,000	1,000	Dak Mil town, Dak Mil district	Waseco water supply, drainage construction and investment			(1to 10m3): 4,000 (11to 20m3): 7,000 (>21m3): 10,000				
	02	Duc An town	Duc An town water supply system	-	500	Duc An town, Dak Song district				(1to 10m3): 4,000 (11to 20m3): 7,000 (>21m3): 10,000				Some simple WTP construction past by PPC service for people before
	03	Gia Nghia town	Gia Nghia town water supply system	-	2,500	Gia Nghia town	Dak nong urban works management and water supply			(1to 10m3): 4,000 (11to 20m3): 7,000 (>21m3): 10,000				Some simple WTP construction past by PPC service for people before
45 Binh Thuan	01	Phan Thiet City	Phan Thiet WTP	22,000	25,000	Phan Thiet City	Binh Thuan Water Supply & Sewerage Company	99.6	25.41	Under the Decision 54/2009/QD-UBND dated 21/8/2009 by		22,000	35,000	Being upgraded Some simple WTP construction past by PPC service for people before design
			Mui Ne WTP	350	600	Mui Ne ward	Water Supply Center & Environment & Hygience Center	80	90	Under the Decision 76/QD-UBND dated 16/11/2009 by	1.8	1,100	1,800	
			Ca Giang WTP	15,000	11,000	Ham Hiep commune	Binh Hiep water supply jsc					15,000	20,000	
	02	LaGi City	LaGi WTP	7,000	7,000	LaGi city	Binh Thuan water supply & sewerge company	72.27	23.29	Under the Decision 54/2009/QD-UBND dated		7,000	10,000	Being upgraded
			Tan Tien WTP	15,000	3,500	Tan Tien commune	V.S.G real estate jsc	Water supply for LaGi	5.0	3,800	68.0	15,000	20,000	
	03	Bac Binh District	Bac Binh WTP	5,000	4,500	Bac Binh district	Binh Thuan water supply & sewerge company	75.67	22.77	Under the Decision 54/2009/QD-UBND dated		10,000	16,300	
	04	Tuy Phong District	Tuy Phong WTP	14,000	8,000	Phong Phu commune	Management Unit	60.0	26.40	4,500	110.0	14,000	28,000	
	05	Ham Thuan Bac District	Ham Thuan Bac WTP	4,360	2,500	Thuan Minh commune	Water & Hygient Environment Center	80.0	60.0	Under the Decision 76/QD-UBND dated	28.802	4,360	10,000	Being upgraded
			Tan Tien WTP	800	900	Phu Long town		80.0	90.0		1.8	800	1,300	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
45 Binh Thuan	06	Ham Thuan Nam District	Ham Thuan Nam WTP	700	900	Thuan Nam city	Water & Hygient Environment Center	80.0	70.0	Under the Decision 76/QD-UBND dated 16/11/2009 by Provincial PC	4.430	2,200	3,600	Being upgraded
			Tan Tien WTP	1,250	200	Tan Thanh commune	Binh Hiep Water Supply Jsc						2,500	
	07	Ham Tan District	Tan Minh WTP	600	800	Tan Minh town	Water & Hygient Environment	80.0	70.0	4,500	110.0	14,000	28,000	
	08	Phu Quy District	Long Hai WTP	750	65	Long Hai	Water & Hygient Environment Center	38.0	38.0	Under the Decision 76/QD-UBND dated	11.894			
			Tan Tien WTP	1,200	91	Ngu Phung commune								
	09	Tanh Linh District	Lac Tanh town WTP	200	300	Lac Tanh Town	Water & Hygient Environment Center	60.0	32.0	Under the Decision 76/QD-UBND dated 16/11/2009 by	0.910	800	1,300	Being upgraded
	10	Duc Linh District	Vo Xu town WTP 1st Stage	1,200	600	Vo Xu Town	Water & Hygient Environment Center	80.0	43.0	Under the Decision 76/QD-UBND dated 16/11/2009 by	7.263	1,200	2,000	
	01	Bien Hoa City	Bien Hoa WTP	36,000	41,136	No. 48- CMT 8-Quyet Thang Bien Hoa city	Bien Hoa Water Supply Enterprise	94	26.50			151,175	231,898	The WTP for urban areas or Ips separately
	02		Long Binh WTP	30,000	31,765	Long Binh commune-Bien Hoa city	Long Binh Water Supply Enterprise							
	03		Thien Tan WTP	120,000	107,559	Thien Tan commune, Vinh Cuu dist	Thien Tan Water Supply Enterprise							
	04	Bien Hoa IP 1	Thien Tan WTP									10,318	11,792	
	05	Bien Hoa IP 2	Thien Tan WTP									11,242	12,848	
	06	Amata IP	Long Binh WTP									23,408	26,752	
	07	Lotecco-Logetis IP	Thien Tan WTP									3,080	3,520	
	08	Hoa An Commune (PouChen Company)	Hoa An (*) Water Supply Station	6,000	3,034		Dong Nai Service - Construction - Industry Jsc							
	09	Small scaled Ips - Industries -Trading & Service										1,694	880	
	10	Long Thanh town	Thien Tan WTP									12,597	22,781	
	11	Tam Phuoc urban area										4,199	7,012	
	12	Binh Son urban										5,249	12,985	

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
46 Dong Nai	13	Go Dau-Phuoc Thai urban area										2,519	6,493	
	14	Long Thanh International											6,500	
	15	Tam Phuoc IP	Thien Tan WTP									9,948	13,376	
	16	Doc 47 IP										1,540	1,760	
	17	An Phuoc IP										4,004	14,080	
	18	Long Thanh IP	Thien Tan WTP									7,854	17,952	
	19	Ve Dan IP										3,696	4,224	
	20	Go Dau IP	Ba Ria WTP				Ba Ria Water Jsc					5,667	6,477	
	21	Phuoc Binh IP										3,080	11,968	
	22	Long Duc IP										3,080	15,840	
	23	Small- scaled IP - Small Industries	Thien Tan WTP											
	24	Nhon Trach city	Dai Phuoc Water Supply Station	1,080	1,280	Phuoc Ly hamlet - Dai Phuoc	Nhon Trach Water Supply Jsc	12.0	11.6			29,860	121,500	
			Nhon Trach WTP	20,120	21,076	319B - Nhon Trach industrial								
	25	Nhon Trach IP	Nhon Trach WTP									77,154	88,176	
	26	Ong Ko IP										17,428	28,160	
	27	Vinh Cuu District	Vinh An WTP	2,000	1,853	Vinh An town	Vinh An Water Supply Enterprise	51.0	21.1					
	28	Vinh An Town	Vinh An WTP									5,249	10,631	
	29	Thanh Phu Town										5,249	10,935	
	30	Phu Ly Urban										630	2,597	
	31	Ong Koo IP										5,452	6,547	
	32	Trang Bom town	Long Binh WTP									6,928	17,618	
	33	Ho Nai IP	Long Binh WTP									16,108	18,410	
	34	Song May IP	Viet Thang Long WTP	5,000		Song May industrial park						14,507	16,579	
	35	Bau Xeo 1 IP	Long Binh WTP									4,928	5,632	
	36	Bau Xeo 2 IP	Long Binh WTP									4,312	9,856	
	37	Ho Nai 3 Construction Materials Cluster	Long Binh WTP											
	38	Hi-tech Industry Park										1,540	10,560	
	39	Thong Nhat district	Bau Ham Station	300	444	5 area- Tan Hop hamlet -Bau Ham commune	Bien Hoa Water Supply Enterprise		16.8					
	40	Dau Giay Town										6,299	15,188	
	41	Dau Giay IP										3,080	17,600	
	42	Gia Kiem textile IP										1,540	11,616	

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	43	Long Khnh City	Long Khanh WTP	7,000	7,171		Long Khanh Water Supply Jsc	68	23.5			21,870	39,488	
	44	Long Khanh IP										3,203	10,560	
	45	Hang Gon-Long Giao Town										630	6,075	
	46	Song Ray Urban Area										656	2,078	
	47	Cam My IP										1,540	10,560	
	48	Xuan Loc District	Gia Ray WTP	2,400	2,836	Ward 2- Gia Ray town	Xuan Loc Water Enterprise	49	23.2					
			Tam Hung Hoa Water Supply Unit	3,000	2,314	Xuan Tam commune- Xuan Loc dist								
			Thien Tan WTP	300	66	Song Ray commune, Xuan								
	49	Gia Ray Town	Gia Ray WTP									5,905	9,113	
	50	Xuan Loc IP	Gia Ray WTP									2,864	3,274	
	51	Dinh Quan Town	Dinh Quan WTP	4,200		Dinh Quan town	Tan dinh Water Enterprise					4,619	9,113	
	52	La Nga Urban										2,519	5,714	
	53	Dinh Quan IP										1,663	1,901	
	54	Tan Phu Town	Tan Phu Water Supply unit	2,500		Tan Phu town	Tan Dinh Water Enterprise					3,779	7,594	
	55	Nam Cat Tien Urban Area										630	3,896	
	56	Phu Lam Urban										630	2,597	
	57	Tan Phu IP										1,540	1,760	
	58	Phuoc Thien Urban Area										0	8,711	
	59	Long Phuoc Urban Area										0	8,711	
	60	Long Phuoc 1 Urban Village										0	2,489	
	61	Long Phuoc 2 Urban Village										0	2,489	
	62	Tan Hiep 1 Urban Village										0	2,987	
	63	Tan Hiep 2 Urban Village										0	2,987	
	64	Hung Loc Urban Village										0	2,987	
	65	Xa Loc 25 IP										1,540	8,800	
	66	Loc An- Binh Son										1,540	17,600	
	67	Tan Hiep IP										0	10,560	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
47 Ba Ria-Vung Tau	01	Regional Water Supply System (Ba Ria city, Vung Tau	Ho Da Den WTP	50,000	70,000	Ba Ria City	BR-VT Water Supply Jsc	88.0	15-18	5,000		204,000	390,000	
			Song Dinh WTP	45,000	45,000	Ba Ria City								
			Hung Dao Vuong	10,000	10,000	Ba Ria City								
	02	Phuoc Buu Town, Xuyen Moc district	Phuoc Buu Water Treatment Station	2,500	1,500	Phuoc Buu town, Xuyen Moc								
	03	Ngai Giao town, Chau Duc district	Ngai Giao Water treatment Station	4,000	2,000	Ngai Giao town, Chau Duc district								
	04	Dat Do town, Dat Do district	Long Tan WTP	3,000	3,000	Long Tan commune, Dat Do district	Ba Ria - Vung Tau Water suppy - environmental hygience Center	73.0	15-18	5,000		10,000	10,000	
	05	Phu My town, Tan Thanh district	Phu My WTP	20,000	20,000	Phu My town/Tan Thanh Dis.	Phu My Water Supply jsc	73.0	15-18	5,000		60,000	100,000	
	06	Phu My town, Tan Thanh district	Toc Tien WTP	12,000	12,000	Toc Tien commune, Tan	Toc Tien Water Supply Jsc	73.0	15-18	5,000		50,000	100,000	
	07	Con Dao district center	Con Dao WTP	2,000	1,500	Con Dao district	Water & Electricity Station for Con Dao	100.0	15-18	5,000		4,000	5,000	
48 Tay Ninh	01	Tay Ninh city	Tay Ninh WTP	18,000	13,000	Ninh Son commune	Tay Ninh Water Supply 1 Member Co., ltd	89.1	28.2	3,900	10.7 Mil USD	18,000	30,000	
	02	Hoa Thanh town	Hoa Thanh Water Supply station	1,000	1,000	Long Trung Thanh commune		25.3	-	3,900	-	2,500	5,000	
	03	Go Dau town	Go Dau Water Supply Station	2,500	1,500	Rach Son commune		27.3	18.7	3,900	9.7	2,500	5,000	
	04	Trang Bang town	Trang Bang Water Supply Station	2,000	2,000	Stadium		10.9	30.2	3,900	-	4,000	10,000	
	05	Ben Cau town	Ben Cau Water Supply Station	1,500	1,300	Ben Cau town		20.6	13.5	3,900	-	4,000	10,000	
	06	Chau Thanh town	Chau Thanh Water supply Station	1,000	-	Chau Thanh town		-	-	3,900	-	2,500	4,000	
	07	Moc Bai border gate EZ	Moc Bai WTP	3,000	3,000	Cau Dia Xu	Tay Ninh Water Supply 1 Member Co., ltd	100.0	-	-	-	-	-	
	08	Trang Bang IP	Trang Bang IP WTP	2,860	-	No.6 str., Trang Bang industrial park	Tay Ninh IP infrastructure development company	100.0	-	3,780	-	-	-	
	09	Trang Bang IP	WTP	1,600	-	No. 8 str., Trang Bang industrial park	Tay Ninh Water Supply 1 Member Co., ltd	100.0	-	3,780	-	4,000	10,000	
	10	Linh Trung IP & Processing Zone	WTP	10,000	8,000	Linh Trung IP & Processing Zone	Sepzone Linh Trung 3 company	100.0	-	28cent/m3	15	15,000	-	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
49 Binh Duong	01	Phu Loi commune, Thu Dau Mot town	Thu Dau Mot Water supply Enterprise	21,600	19,000-20,000	Phu Loi commune, TDM town	Binh Duong Drainage - Sewerage - water supply 1 member Limited company	80	18.5	Water tariff: For the first 20m3:	311	650,000	#######	
	02	An Phu commune, Di An District	Di An Water supply Enterprise	90,000	90,000-95,000	An Phu commune-Di An		75	8.2		981			Some simple WTP construction past by PPC service for people before
	03	Mi Phuoc town, Ben Cat dist.	Mi Phuoc WTP Cluster	18,000	13,000-14,000	Mi Phuoc town - Ben Cat dist.		75	5.4		48			
	04		Lien Hop Water supply Enterprise	10,000	2,000-2,400	B×nh Du¬ng urban service industry complex		70	7.9		24			
	05	Uyen Hung town, Tan Uyen dist.	Uyen Hung Water Plant	5,000	1,000-1,500	Uyen Hung town-Tan Uyen dist.		60	4.2		14			
	06	Tan Uyen dist.	South Tan Uyen Water Treatment Plant	3,000	850-1,100	Tan Uyen dist.		60	4.2		3			
	07	Phuoc Vinh town, Phu Giao dist.	Phuoc Vinh	1,200	750-1,000	Phuoc Vinh town - Phu Giao dist.		50	5.3		6			
	08	Dçu Tieng dist.	Water Treatment Plant	1,000	700-900	Dçu Tieng dist.		50	2.7		6			
50 Ho Chi Minh City	01	Thu Duc district	Thu Duc WTP	750,000	756,515	Thu Duc district	Sai Gon water supply corporation					750,000	750,000	
	02	Thu Duc district	BOT Binh An WTP	100,000	100,520	Thu Duc district	Binh An water supply Co., Ltd					100,000	100,000	
	03	Hoc Mon district	Tan Hiep WTP	300,000	298,564	Hoc Mon district	SaI Gon water supply corporation					300,000	300,000	
	04	Thu Duc district	BOO Thu Duc WTP	300,000	118,276	Thu Duc district	BOO Thu Duc Water Supply Jsc					300,000	300,000	
	05	Tan Binh District	Tan Binh underground WTP	70,000	67,409	Tan Binh District	SaI Gon water supply corporation					70,000	70,000	
	06		other underground water sources	16,000	15,617							16,000	16,000	
52 Tien Giang	01	My Tho city and Binh Duc IP	My Tho WTP Binh Duc WTP	20,000 30,000	35,000	F1, My Tho and Binh Duc commune, Chau	Tien Giang Water Supply 1 Member Limited Company	100.0	37.0	4,700	150.0	50,000	90,000	
55 Vinh Long	01	Vinh Long city	Truong An	10,000	10,000	Tan NgaI commune	Vinh Long Water Supply 1 Members Limited Company	75.0	25.5	5,008	69.7	35,500	35,500	
			Hung Dao Vuong	13,400	13,400	1 commune					-			
	02	Long Ho town	TT Long Ho	240	360	Long Ho town		44.0	24.2	5,008	-	1,500	3,000	
	03	Hoa Phu IP	Loc Hoa	800	800	Loc Hoa commune		40.0	22.6	5,008	-	4,800	9,600	
			Hoa Phu	1,000	1,000	Phu Quoi								
	04	Tam Binh Town	TT Tam Binh	1,500	1,100	Tam Binh		78.0	23.1	5,008	13.115	1,500	3,000	
	05	Tra on Town	TT Tra on	2,400	1,100	Thien Mi		72.0	23.5	5,008	12.344	2,400	5,000	

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	06	Cai Von Town	Thanh Loi	5,000	2,400	Thanh Loi		59.0	24.1	5,008	27.952	5,000	15,000	
	07	Vung Liem Town	Vung Liem Town	1,500	1,300	Vung Liem		80.0	23.5	5,008	87.07	1,500	3,000	
56 Tra Vinh	01	Tra Vinh city	Tra Vinh city WTP	18,000	18,000	Tra Vinh City/Tra Vinh Province	Tra Vinh sewerage & water supply company	97.6	23.5	4,200	-	-	-	-
	01	Long Xuyen City	Binh Duc	34,000	48,377	Binh Duc Ward-Long Xuyen City					247.476			Some simple WTP construction past by PPC service for people before
	02	Long Xuyen City	Long Xuyen	9,000	534	My Xuyen Ward - Long Xuyen City					1.900			
	03	Long Xuyen City	My An- My Hoa Hung	200		My Hoa Hung Commune-Long Xuyen city					0.840			
	04	Long Xuyen City	My Hoa Hung	200		My Hoa Hung Commune -Long Xuyen City					0.438			Including VAT
	05	Long Xuyen City	Tay Hue 2	50	34	Phuong My Hoa - Long Xuyen city					0.111			
	06	Long Xuyen City	Dong Thinh 6	50	29	My Phuoc- Long Xuyen City					0.111			
	07	Long Xuyen City	Hoa Thanh	50	143	My Thanh ward-Long Xuyen City					0.225			
	08	Long Xuyen City	My Khanh	100	216	Binh Khanh ward-Long Xuyen City					0.312			
	09	Chau Doc City	Chau Doc	11,000	16,088	Chau Phu B ward - Chau Doc City					7.415			Some simple WTP construction past by PPC service for people before
	10	Chau Doc City	Vinh Nguon	400	788	Vinh Nguon commune - Chau Doc City					0.417			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	11	Chau Doc City	Vinh My	200	300	Vinh My commune - Chau					0.379			
	12	Chau Doc City	Nui Nam	2,000	4,885	Nui Sam ward-Chau Doc City					6.500			Some simple WTP construction past by PPC service for people before design Including
	13	Chau Doc City	Vinh Te	1,000	395	Vinh Te Commune- Chau					1.700			
	14	An Phu District	An Phu	2,000	1,487	An Phu town-An Phu District					7.270			
	15	An Phu District	Da Phuoc II (+ TTA)	200	457	Da Phuoc commune - An					1.056			
	16	An Phu District	Quac Thai	200	174	Quoc Thai commune- An Phu Dist					0.745			
	17	An Phu District	Nhon Hoi	150	110	Nhon Hoi Commune- An Phu Dist					0.664			Including VAT
	18	An Phu District	N. Hoi - Hamlet 1	200	138	Hamlet 1- Nhon Hoi Commune - An phu Dist					0.722			
	19	An Phu District	Khanh An	200	248	Khanh An Commune-An Phu Dist					0.583			
	20	An Phu District	KDC V. Truong A2	150	63	Vinh Truong Commune -An Phu Dist					0.493			
	21	An Phu District	Vinh Hau	150	82	Vinh Hau commune -An Phu					0.354			
	22	An Phu District	V. Hoi Dong	200	128	Vinh Hoi Dong commune- An Phu dist					0.420			
	23	An Phu District	HTCN Vinh Loc	200	223	Vinh Loc commune- An Phu					0.924			
	24	An Phu District	Phu Huu	150	219	Phu Huu commune- An Phu					0.541			
	25	An Phu District	Phuoc Hung	150	145	Phuoc Hong commune - An Phu dist					0.880			
	26	An Phu District	Khanh Binh	150	137	Khanh Binh commune -An Phu dist					0.336			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	27	An Phu District	Hamlet 4 - VHD	150	119	Hamlet 4- Vinh Hoi Dong commune- An Phu					0.527			
	28	An Phu District	Hamlet 2 - VHD	200	144	Hamlet 2-Vinh Hoi Dong commune- An Phu					0.391			
	29	An Phu District	P. Loi - P. Huu	200	123	Hamlet Phu Loi-x· Phu Huu-H. An					0.529			
	30	An Phu District	Da Phuoc	200	174	Da Phuoc commune- An Phu					0.365			
	31	An Phu District	Phu Hoi	200	63	Phu Hoi commune- An Phu					0.372			
	32	An Phu District	Hamlet 3 -Phu Hoi	150	10	Hamlet 3-Phu Hoi commune-An Phu dist					0.589			
	33	An Phu District	Vam Kenh-Vinh Hau	200	13	Hamlet Vam Kenh-Vinh Hau-An Phu dist					0.378			
	34	An Phu District	KDC Vinh Hau	200	10	Vinh Hau commune-An Phu					0.741			
	35	An Phu District	KDC Quoc ThaI (Coc)	200	231	Quoc Thai commune- An Phu Dist					1.055			
	36	An Phu District	Vinh Truong 2	200	71	Vinh Truong commune- An Phu dist					0.580			
	37	An Phu District	Cot D Thep	200	32	An Phu town-An Phu District					0.398			
	38	An Phu District	VK Da Phuoc	150	94	Da Phuoc commune- An Phu					0.452			
	39	An Phu District	Vinh Thanh- Vinh Hau	150	106	Vinh Thanh - Vinh Hau commune- An Phu					0.611			
	40	An Phu District	Con Liet sy	150	136	An Phu dist.					0.667			
	41	Chau Phu	Cai Dau Town	2,000	5,188	CaI Dau town - Chou Phu dist.					5.977			Some simple WTP construction past by PPC service for people before
	42	Chau Phu	Binh Long	2,000	2,000	CaI Dau town-Chou Phu dist.					9.221			
	43	Chau Phu	Binh My	200	525	Binh My commune- Chou					0.649			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	44	Chau Phu	Binh Thuy	100	271	Binh Thuy commune-Chau Phu dist					0.309			
	45	Chau Phu	Cho Truong	200	279	Cho Truong commune- Chau Phu dist					0.489			
	46	Chau Phu	Cay Duong	200	375	Cay Duong commune- Chou Phu dist					0.396			
	47	Chau Phu	My Duc	100	280	My Duc commune- Chau					0.848			
	48	Chau Phu	My Phu	100	203	My Phu commune - Chau Phu dist.					0.639			
	49	Chau Phu	T. Ca Lan	200	459	My Phu commune- Chau					1.030			
	50	Chau Phu	Vinh Thanh Trung	200	113	Vinh Thanh Trung commune-Chau Phu dist					0.688			
	51	Chau Phu	Thanh My Tay	200	432	My Phu commune - Chau Phu dist.					0.639			
	52	Chau Phu	Khanh Hoa 1	700	856	Khanh Hoa commune - H. Chou Phu					2.554			
	53	Chau Phu	Khanh Hoa 2	200	293	Khanh Hoa commune, Chou Phu dist					0.395			
	54	Chau Phu	o Long Vi 1	200	154	o Long Vi commune, Chau					0.316			
	55	Chau Phu	o Long Vi 2	200	48	K7-o Long Vi commune-Chau Phu dist					0.390			
	56	Chau Phu	o Long Vi 3	200	82	K13- o Long Vi commune-Chau Phu dist					0.316			
	57	Chau Phu	Binh Chanh	200	206	Binh Chanh commune-Chau Phu dist					0.387			
	58	Chau Phu	Hao Suong	200	85	Hao Suong commune-Chau Phu dist					0.572			
	59	Chau Phu	Binh Thoi	200	222	Binh Thoi hamlet-Binh Thuy commune- Chau Phu dist					0.000			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	60	Chau Phu	Binh Phu	200	136	Binh Chanh commune-Chau Phu dist.					0.365			
	61	Chau Phu	My Duc 2	200	275	Dao Huu Canh commune-Chau Phu dist.					0.770			
	62	Chau Phu	My Phu	200	112	My Phu commune -Chau Phu dist.					0.634			
	63	Chau Phu	Dao Huu Canh	200	338	Dao Huu Canh commune -Chau Phu dist.					0.314			
	64	Chau Phu	Thanh My Tam	200	432	Thanh My Tay commune - Chau Phu dist.					0.999			
	65	Chau Phu	K2 Can Thao	200	171	My Phu commune -Chau Phu dist.					0.343			
	66	Chau Phu	Tay K7-K10	200	91						0.637			
	67	Chau Phu	Long Son	200	13	My Phu commune -Chau Phu dist.					0.743			
	68	Chau Phu	Nam K10- BP	200	73	My Phu commune -Chau Phu dist.					0.521			
	69	Chau Thanh dist.	An Chau	600	2,475	An Chau town-Chau THanh dist.					1.734			
	70	Chau Thanh dist.	Vinh Hanh	200	413	Vinh Hanh commune-Chau THanh dist. dist.					0.504			
	71	Chau Thanh dist.	Vinh An	200	140	Vinh An commune -Chau THanh dist. dist.					0.415			
	72	Chau Thanh dist.	Binh Hoa	400	467	Binh Hoa commune-Chau THanh dist. dist.					0.416			
	73	Chau Thanh dist.	Vinh Binh	200	210	Vinh Binh commune - Chau					0.517			
	74	Chau Thanh dist.	Vinh Loi	200	71	Vinh Loi commune - Chau					0.378			
	75	Chau Thanh dist.	Vinh Nhuan	200	151	Vinh Nhuan commune -Chau Phu dist.					0.427			
An Giang	76	Chau Thanh dist.	Tan Phu	200	157	Tan Phu commune - Chau Phu dist.					0.360			
	77	Chau Thanh dist.	Vinh Thanh	200	111	Tan Phu commune - Chau Phu dist.					0.804			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
57	78	Chau Thanh dist.	An Hoa	200	193	An Hoa commune - Chau Phu dist.					0.798			
	79	Chau Thanh dist.	Binh Thanh	200	104	Binh Thanh hamlet- Vinh Thanh commune - Chau Thanh dist.					0.853			
	80	Chau Thanh dist.	D. Binh Nhot	200	126	Dong Binh Nhot hamlet -Vinh Thanh commune - Chau Thanh dist.					0.839			
	81	Chau Thanh dist.	Hoa Binh Thanh	200	202	Hoa Binh Thanh commune - Chau Thanh dist.					0.960			
	82	Chau Thanh dist.	Kenh Quyt	200	37	Kenh Quyt commune-Chau THanh dist. dist.					0.477			
	83	Cho Moi	Cho Moi	2,000	3,076	Cho Moi town-Cho Moi dist.					10.719			
	84	Cho Moi	My Luong	2,000	2,620	My Luong town-Cho Moi dist.					5.662			
	85	Cho Moi	My Hoi Dong I	200	439	My Hoi Dong commune-Cho Moi dist.					1.139			
	86	Cho Moi	My Hoi Dong II	200	247	My Hoi Dong commune-Cho Moi dist.					0.000			
	87	Cho Moi	Long Dien B	200	237	Long Dien B town -Cho Moi dist.					0.446			
	88	Cho Moi	Kien Thanh	200	401	Kien An commune - Cho Moi dist.					1.249			
	89	Cho Moi	Kien An	200	220	Kien An commune - Cho Moi dist.					1.000			
	90	Cho Moi	Long Kien	200	213	Kien An commune - Cho Moi dist.					0.514			
	91	Cho Moi	Ton My	200	374	Ton My commune - Cho Moi dist.					0.748			
	92	Cho Moi	Long Giang	200	261	Long Giang commune -Cho Moi dist.					0.476			
	93	Cho Moi	My Hiep	100	203	My Hiep commune - Cho					0.378			
	94	Cho Moi	Hoa Binh	100	325	Hoa Binh commune - Cho					0.420			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	95	Cho Moi	Hoi An	400	355	Hoi An commune - Cho Moi dist.					0.751			
	96	Cho Moi	Binh Quoi 1	50	48	Hoa An commune - Cho Moi dist.					0.122			
	97	Cho Moi	Binh Phu	50	38	Hoa An commune - Cho Moi dist.					0.129			
	98	Cho Moi	An Khanh	150	184	An Khanh commune - Cho					0.687			
	99	Cho Moi	Binh Thanh 1	50	85	Hoa An commune - Cho Moi dist.					0.122			
	100	Cho Moi	Ton Long	50	49	Hoa An commune - Cho Moi dist.					0.285			
	101	Cho Moi	Nhon My	200	431	Hoa An commune - Cho Moi dist.					0.822			
	102	Cho Moi	My An	200	303	My An commune - Cho Moi dist.					0.288			
	103	Cho Moi	Kien Thanh II	200	261	Kien Thanh commune - Cho Moi dist.					0.687			
	104	Phu Tan	Phu My	2,500	4,797	Phu My town - Phu Tan dist.					9.347			
	105	Phu Tan	B.T. Dong	200	384	Binh Th·nh Dong commune - Phu Tan dist.					1.043			
	106	Phu Tan	Binh Tay 2	200	200	Binh Th·nh Dong commune - Phu Tan dist.					0.410			
	107	Phu Tan	Cho Vam	400	790	Cho Vam town - Phu Tan dist.					1.881			
	108	Phu Tan	Phu Tho	100	392	Phu Tho commune - Phu Tan dist.					0.484			
	109	Phu Tan	Phu An	200	556	Phu An commune - Phu Tan dist.					0.879			
	110	Phu Tan	Hiep Xuong	200	86	Hiep Xuong commune - Phu Tan dist.					0.869			
	111	Phu Tan	Phu Thanh	200	485	Phu Thanh commune - Phu Tan dist.					1.371			
	112	Phu Tan	Long Hoa	200	177	Long Phu commune - Phu					0.556			
	113	Tan Chau	Tan Chau	5,000	7,921	Tan Chau - Tan Chau dist.					12.370			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	114	Tan Chau	Long An	200	316	Long An commune - Tan					0.953			
	115	Tan Chau	Chau Phong	200	258	Chau Phong commune - Tan Chau dist.					1.047			
	116	Tan Chau	Bac Tan An	150	174	Phu Loc commune - Tan Chau dist.					0.405			
	117	Tan Chau	H. Chuong-T.An	150	203	Vinh Huong commune-Tan Chau dist.					0.347			
	118	Tan Chau	Vinh Xuong	400	311	Vinh Huong commune-Tan Chau dist.					0.287			
	119	Tan Chau	Tan Hau A2	150	107	Hamlet 2-Vinh Hoi Dong-An Phu					0.287			
	120	Tan Chau	Vinh Hoa	150	0	Vinh Hoa commune-Tan					0.482			
	121	Tan Chau	Phu Loc	200	145	Phu Loc commune - Tan Chau dist.					0.850			
	122	Tan Chau	Le Chanh	400	570	Le Chanh commune-Tan					0.271			
	123	Tinh Bien	Nha Bang	2,000	3,654	Nha Ban town - Tinh Bien dist.					8.629			
	124	Tinh Bien	Nhon Hung	200	226	Chi Lang town - Tinh Bien dist.					0.613			
	125	Tinh Bien	CL-V. Trung	1,000	1,030	Chi Lang town - Tinh Bien dist.					0.288			
	126	Tinh Bien	CL-An Hao	500	698	Nhon Hung - Tinh Bien dist.					2.287			
	127	Tinh Bien	X. To- An Cu	2,400	1,568	Xuan To commune - Tinh					2.089			
	128	Tinh Bien	An Phu	200	315	An Phu commune - Tinh Bien dist.					0.353			
	129	Tinh Bien	Nui Voi	400	803	Nui Voi commune - Tinh Bien dist.					1.186			
	130	Tinh Bien	Xuan Binh	400	192	Xuan Binh-X To-Tinh Bien dist.					1.527			
	131	Tinh Bien	Phuoc Dien	200	28	Phuoc Dien commune- Tinh Bien dist.					0.609			
	132	Tinh Bien	Chua Ro	50	18	An Cu commune-Tinh Bien dist.					0.218			
	133	Tinh Bien	An Cu	200	189	An Cu commune-Tinh Bien dist.					1.078			

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				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	134	Tri Ton	Tri on	2,000	3,075	Tri Ton town - Tri Ton dist.					7.754			
	135	Tri Ton	O Lam	200	131	Le Tri town - Tri Ton dist.					0.918			
	136	Tri Ton	Co To	200	395	Lac Quoi commune - Tri					1.814			
	137	Tri Ton	Tan Lap	200	180	Tan Lap commune - Tri Ton dist.					0.442			
	138	Tri Ton	An Tuc	200	161	Vinh Gia commune - Tri					0.796			
	139	Tri Ton	Le Tri	200	98	o Lam commune- Tri Ton dist.					0.905			
	140	Tri Ton	Lac Quoi	200	76	Co To commune - Tri Ton dist.					0.605			
	141	Tri Ton	Vinh Gia	400	199	Chau L¯ng commune- Tri Ton dist					0.866			
	142	Tri Ton	Ba Chuc	200	1,009	Ba Chuc commune- Tri Ton					0.000			
	143	Tri Ton	Vinh Phuoc	200	63	Vinh Phuoc commune- Tri Ton dist					1.131			
	144	Tri Ton	Luong An Tra	200	143	Luong An Tra commune- Tri Ton dist					2.106			
	145	Thoai Son	Nui Sap	2,000	3,339	Nui Sap commune- Thoai					7.874			
	146	Thoai Son	Vinh Phu	200	163	Vinh Phu commune- Thoai					0.336			
	147	Thoai Son	Dinh My	100	51	Dinh My commune- Thoai					0.382			
	148	Thoai Son	Kinh H	100	138	Dinh Thanh commune- Thoai Son dist					0.375			
	149	Thoai Son	Vinh Trach	200	288	Vinh Trach commune- Thoai Son dist					0.652			
	150	Thoai Son	Vinh Khanh	100	225	Vinh Khanh commune- Thoai Son dist					0.469			
	151	Thoai Son	Dinh Thanh	200	211	Dinh Thanh commune- Thoai Son dist					1.055			

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	152	Thoai Son	Vong Dong	200	260	Vong Dong commune- Thoai Son dist					0.743			
	153	Thoai Son	Tay Phu	200	187	Tay Phu commune- Thoai					0.766			
	154	Thoai Son	Phu Hoa	200	205	Vinh Trach commune- Thoai Son dist					0.484			
	155	Thoai Son	Vong The	400	621	Vong The commune- Thoai					1.485			
	156	Thoai Son	M.P. Dong	200	116	My Phu Dong commune- Thoai Son dist					0.381			
	157	Thoai Son	Binh Thanh	200	122	Dinh Thanh commune- Thoai Son dist					0.860			
	158	Thoai Son	Vinh Chanh	200	74	Vinh Chanh commune- Thoai Son dist					0.529			
	159	Thoai Son	Trung Phu 3	150	84	Vinh Phu commune - Thoai					0.122			
	160	Thoai Son	Phu Thuan	150	46	Phu Thuan commune- Thoai Son dist					0.808			
59Hau Giang	01	Vi Thanh city	Vi Thanh WTP	11,000	9,350	Ca Mau city	Hau Giang Water Supply & Sewerage company	78.0	34.5	3,500	38.0	10,500	-	Water tariff in Ca Mau city: 0-10m3: 3,900VND/m3 >11m3 : 5,000VND/m3
	02	Long My district	Long My WTP	2,000	1,760	Khanh an town - U Minh dist.	Hau Giang Water Supply & Sewerage	78.0	22.8	3,500	1.6	2,100	-	
	03	Chau Thanh A district	CaI Tac Water supply Station	500	305	U Minh town + Khanh Héi	Hau Giang Water Supply & Sewerage	78.0	9.6	3,500	-	500	-	Water tariff in districts : 0-10m3: 3,800VND/m3 >11m3 : 4,500VND/m3 For poor households: 0-10m3:
	04	Chau Thanh A distric	Mét Ngan Water supply Station	500	305	Thoi Binh town+TrÝ Phai	Hau Giang Water Supply & Sewerage	78.0	9.6	3,500	3.4	500	-	
	05	Chau Thanh district	Nga Sau Water supply Station	500	305	Nam Can town - Hang Vinh	Hau Giang Water Supply & Sewerage	78.0	9.6	3,500	2.4	500	-	
	06	Chau Thanh district	Dong Phu Water supply Station	500	75	Rach Rang tonw and Song Doc	Hau Giang Water Supply & Sewerage	78.0	9.6	3,500	3.8	500	-	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	07	Nga Bay city	Nga Bay WTP	5,000	3,450	Dam DoI town and Quach Phom commune	Hau Giang Water Supply & Sewerage	78.0	28.0	3,500	28	4,400	-	3,000VND/m3 >11m3 : 4,000VND/m3
	08	Phung Hiep district	Cay Duong WTP	500	450	Cai Nuoc town	Hau Giang Water Supply & Sewerage	78.0	10.7	3,500	-	1,000	-	
	09	Phung Hiep district	Tan Phu Hung Water supply Station	500	225	Cai Nuoc town	Hau Giang Water Supply & Sewerage	78.0	10.7	3,500	-	500	-	
	10	Phung Hiep district	Tan Binh Water supply Station	500	225	Cai Nuoc town	Hau Giang Water Supply & Sewerage	78.0	10.7	3,500	-	600	-	
60 Soc Trang	01	Soc Trang city	Soc Trang 1 underground WTP	14,000		Soc Trang city								
	02	Soc Trang city	Soc Trang 2 underground WTP	8,000		Soc Trang city								
	03	Soc Trang city	Sung Dinh underground WTP	2,000		Bach Dang str.- Soc Trang town								
	04	Soc Trang city	Ward 2 WTP	2,000	22,328	Chua Phu Tuc hamlet-Soc Trang city		93.6			81.7			
	05	Soc Trang city	Ward 7 WTP	2,000		383 Nam Ky Khoi Nghia -Soc Trang city								
	06	An Nghiep IP	an Nghiep IP WTP	6,000		D4 str., an nghiep industrial park, Soc Trang					27.8			
	07	Mi Xuyen Town	Mi Xuyen Water Supply Enterprise	4,000	4,374	D4 str., an nghiep industrial park, Soc Trang		100	16.87		8.3			
	08	Vinh Chau Town	Vinh Chau Water Supply Enterprise	2,900	1,609	30/4 str.- Vinh Chau town	Soc Trang Water Supply 1 Member Co., ltd	84	18	Lv(<10m3): 3,800 Lv(>10m3): 4,300 Of/Ad: 4,500 Pr: 5,100 S/Bu: 6,700	3.9			
	09	Long Phu Town		1,250	1,086	3 hamlet- Long Phu town		76	20		3.0			
	10	Huynh Huu Nghia Town	Mi Tu Water Supply Enterprise	1,000	808	Huynh Huu Nghia town		84	12		1.4			
	11	Lich Hoi Thuong town	Lich Hoi Thuong Water Supply Enterprise	1,250	1,030	Hai Ba Trung- Giảng Gua hamlet- Lich Hoi Thuong		63.1	4.74		2.3			
	12	Dai Ngai commune, Long Phu district	Dai Ngai Water treatment station	1,000	646	908 Ngai Hoi 1 hamlet - Dai NgaI commune		51.5	20.01		1.2			

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	13	Dai Ngai commune, Long Phu district	\Dai Ngai Water treatment station	1,000	904	908 Ngai Hoi 1 hamlet - Dai NgaI commune		54.5	24.26		2.4			
	14	Hung Loi town-Thanh Tri district	Chau Hung Water treatment station	400	1,055	Tunh 937B str. - Xom Tro hamlet - Chau Hung commune		27.1	21.85		1.0			
	15	Phu Loc town	Thanh Tri Water Supply Enterprise	3,000		Tunh 937a str. - 3 hamlet - Phu Loc town		37.3			5.7			
	16	Tran De town	Tran De Water Supply Brance	2,000	449	Dau Giảng hamlet - Tran De town		21.8	17.09		2.5			
61Kien Giang	01	An Bien District	An Bien Water Supply system	500	500	An Bien	Kien Giang Sewerage & Water Supply Company	75	22.78	3,550	1.1	1,000		
	02	An Minh District	An Minh town Water Supply system	1,000	1,000	An Minh	Kien Giang Sewerage & Water Supply Company	75	22.54	3,550	3.3	2,000	2,000	
	03	Tan Hiep Town	Tan Hiep town Water Supply system	1,200	1,200	Tan Hiep	Kien Giang Sewerage & Water Supply Company	75	19.03	3,550	3.9	2,000	2,000	
	04	Giong Rieng District	Giong Rieng Water Supply system	2,400	1,400	Giong Rieng	Kien Giang Sewerage & Water Supply Company	70	21.11	3,550	6.9	2,000	2,000	
	05	Minh Luong Commune, Chau Thanh District	Minh Luong Water Supply system	500	500	Minh Luong	Kien Giang Sewerage & Water Supply Company	75	21.88	3,550	0.9	2,000	2,000	
	06	Chau Thanh District	Tac Cou IP Water Supply system	1,000	800	Chau Thanh	Kien Giang Sewerage & Water Supply Company	70	17.97	3,550	2.7	2,000	2,000	
	07	Hon Chong port, Rach Gia City	Hon Chong Water Supply system	2,000	2,000	Hon Chong	Kien Giang Sewerage & Water Supply Company	75	12.89	4,850	20.6	2,000	2,000	
	08	Kien Luong District	Moi Ba Hon New Urban Area Water Supply system	2,000	2,000	Kien Luong	Kien Giang Sewerage & Water Supply Company	75	12.89	4,850	6.8	2,000	2,000	
	09	Ha Tien District	Ha Tien City Water Supply system & Enviromental	8,000	8,000	Ha Tien	Kien Giang Sewerage & Water Supply Company	80	12.47	4,850	197.8	16,000	32,000	
	10	Rach Gia City	Rach Gia city Water Supply system & Enviromental	35,000	35,000	Rach Gia	Kien Giang Sewerage & Water Supply Company	85	25.09	4,850	246.3	10,000	20,000	

Prov.	No.	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	11	Phu Quoc District	Duong Dong-Phu Quoc Water Supply System	5,000	3,000	Phu Quoc	Kien Giang Sewerage & Water Supply Company	70	11.08	4,850	28.6	10,000	10,000	
	12	Hon Dat District	Hon Dat Water Supply System	6,000	1,000	Hon Dat	Kien Giang Sewerage & Water Supply Company	75	25.09	4,850	41.0	10,000	10,000	
63 Ca Mau	01	Ca Mau City	Ca Mau city Water Supply System	28,000	25,000	Ca Mau city	Ca Mau Water supply & sewerage jsc	70.0	35.0	3,900	-	100,000	150,000	Water tariff in Ca Mau city: 0-10m3: 3,900VND/m3 >11m3 : 5,000VND/m3
	02	Khanh An IP (Ca Mau gas - electricity - fertilizer)	Ca Mau gas-electricity - fertilizer Water Supply System	10,000	5,000	Khanh An commune - U Minh dist.	Ca Mau Water supply & sewerage jsc	90.0	15.0	3,800	-	15,000	25,000	
	03	U Minh Town - Khanh Hoi	U Minh town Water Supply System	1,000	1,000	U Minh + Khanh Hoi town	Ca Mau Water supply & sewerage jsc	50.0	25.0	3,800	-	6,000	10,000	Water tariff in district: 0-10 m3: 3,800VND/m3 >11m3: 4,500VND/m3 For poor households: 0-10m3: 3,000VND/m3 >11m3 : 4,000VND/m3
	04	Thoi Binh Town	Thoi Binh town Water Supply System	1,600	1,600	Thoi Binh + Tri Phai town	Ca Mau Water supply & sewerage jsc	60.0	22.0	3,800	-	6,000	10,000	
	05	Nam Can town - Hang Vinh	Nam Can town Water Supply System	3,000	2,800	Nam Can town - Hang Vinh	Ca Mau Water supply & sewerage jsc	60.0	23.0	3,800	-	10,000	18,000	
	06	Rach Rang town-Song Doc	Tran Van Thoi Town Water Supply System	2,500	2,500	Rach Rang town and Song Doc	Ca Mau Water supply & sewerage jsc	40.0	24.0	3,800	-	10,000	18,000	
	07	Dam Doi town	Dam Doi Town Water Supply System	1,000	1,000	Dam DoI town and Quach Phom commune	Ca Mau Water supply & sewerage jsc	60.0	25.0	3,800	-	6,000	12,000	
	08	Cai Nuoc town	Cai Nuoc Town Water Supply System	900	800	Cai Nuoc town	Ca Mau Water supply & sewerage jsc	60.0	24.0	3,800	-	5,000	10,000	

Appendix 1-3

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
2 Vinh Phuc	01	Tam Duong	Tam Duong water plant	80,000	80,000	Tam Duong district	Vinh Phuc province investment environment	100				20,000	60,000	Tam Duong district
	02	Binh Xuyen	Binh Xuyen water plant	20,000		Binh Xuyen					160	16,000	20,000	Binh Xuyen district
3 Thai Nguyen	01	Song Cong town Pho Yen Dis.	Song Cong town water supply project	20,000		Song Cong town					111.858			Improving and expanding Song Cong plant
	02	Thai Nguyen city	Tich Luong water plant capacity increasing project	30,000		Tich Luong commune, Thai Nguyen city					14.922			Increasing capacity of Tich Luong water plant from 20,000m3 to 30,000m3/d
	03	Du town Phu Luong district and Dinh Ca town, VoNhai district	Water supply project Dinh Ca town, VoNhai district and Water supply project Du town, Phu Luong	600			Du town; Dinh Ca town				27.725			Dinh Ca town Improvement Project ; Du town New construction investment project Construction of
5 Bac Ninh	01	Cho Town	The project of urban water supply systems Towns Yen Phong district and Town of Binh Gia Gia Binh	1,200-2,400		Cho Yen Phong Town	Bac Ninh Water Supply Co., Ltd				54.54	60	80	
	02	Gia Binh Town	The project of urban water supply systems Towns Yen Phong district and Town of Binh Gia Gia Binh	3,000-6,000		Lang Ngam commune- Gia Binh	Bac Ninh Water Supply Co., Ltd				32.0	60	80	
8 Hai Phong	01	As item I.2	Expansion and improvement Vat Cach water plant	30,000		Tan Tien commune, An Duong district	Hai Phong water supply One member Co., Ltd				78	30,000	60,000	
	02	Tam Cuong town and adjacent area	Construction of Vinh Bao 2 water plant	3,000		Vinh Quang commune, Vinh Bao district	Hai Phong water supply One member Co., Ltd				23	3,000	12,000	
	03	An Lao town, An Lao district	An Lao town water supply	800		An Lao town	An Lao town water supply., JSC	0.8			6.188	1,400	2,000	Under construction
0 Hung Yen	01			2,000										
	02			3,000										
	03			1,500										

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
1	04			10,000										
11 Ha Nam	01	Ha Nam Province	Tan Tao Clean water supply plant	100,000		Mec Nam commune/Duy Tien Dis.	Tan Tao Group							
	02	Vinh Tru Town	Vinh Tru Town and Adjacent area supply system Project	4,500		Vinh Tru Town	Song Chau .,JSC				17.1	2,000	4,500	
12 Nam Dinh	01	Cat Thanh commune/Truc Ninh Dis.	Water supply station, Cat Thanh commune, Truc Ninh Dis.	1,200	1,200	Cat Thanh commune/Truc Ninh Dis.	Cat Thanh commune People Committees, Truc Ninh Dis.				7.002	12,000		
	02	Dong Son, commune/Nam Truc Dis.	Water supply station, Dong Son, commune, Nam Truc Dis.	2,396	2,396	Dong Son, commune/Nam Truc Dis.	Nam Dinh province Clean water supply and rural sanitation				14.675	16,530	17,678	
	03	Nghya An commune/Nam Truc Dis.	Water supply station, 5 wards, Nam Truc Dis.	7,000		Nghya An commune/Nam Truc Dis.	Nam Dinh province Clean water supply and rural sanitation				80.971	47,161		
	04	Tan Khanh commune/Nam Truc Dis.	Water supply station,Tan Khanh commune, Nam Truc Dis.	1,012	1,012	Tan Khanh commune/Nam Truc Dis.	Tan Khanh commune People Committees				9.743	6,549	7,396	Projects calling for investment
13 Ninh Binh	01	Khanh Phu Industrial Park	Thanh Nam Clean water plant	20,000		Khanh Phu Industrial Park	Thanh Nam Clean water plant			2,540	107.2	50 years		
	02	Tam Diep Industrial Park	Industrial Park Planning Project	10,000		Tam Diep Industrial Park								Planned project
	03	Ninh Binh city	Ninh Binh BOO water plant	45,000		Ninh Khang commune, Hoa Lu district	V.S.G Real Estate .,JSC, Ho Chi Minh city				44.31	15,000	30,000	
	01	Cao Bang Town	The water supply system of new urban areas Tham, Cao Bang Town	5,000	5,000	Cao Bang Town	Cao Bang a member of water supply Co. Ltd	80		5,300	80	15,000	25,000	Detail plan
	02	Thong Nong Town, Thong Nong district	The water supply system Thkong Nzong Town, district Thkong	900	1,000	Thong Nong Town	Cao Bang a member of water supply Co. Ltd	100		4,000	10	900	1,000	
	03	De Tham Industrial Park, Cao Bang Town	The water supply system of industrial parks Tham Cao Bang		3,276	De Tham Industrial park	De Tham Industrial park infrastructure development				4.6			

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
17 Cao Bang	04	Xuan Hoa, Ha Quang district	The water supply system Xuan Hoa, Ha Quang district	2,000			Cao Bang a member of water supply Co. Ltd				20	1,500	2,000	
	05	Trung Khanh, Trung Khanh district	The water supply system Trung Khanh, Trung Khanh district	2,500			Cao Bang a member of water supply Co. Ltd				11	2,000	2,500	
	06	Dong Khe Town, Thach An	The water supply system Dong Khe Town, Thach An	2,500			Cao Bang a member of water supply Co. Ltd				12	2,000	2,500	
	07	Bao Lac Town, Bao Lac District	The water supply system Bao Lac Town, Bao Lac District	110			Cao Bang a member of water supply Co. Ltd				13	2,300	2,800	
	08	Pac Miau Town, Bao Lam district	The water supply system Pac Miau Town, Bao Lam district	650			Cao Bang a member of water supply Co. Ltd				10	450	650	
	09	Hung Quoc Town, Tra Linh district	The water supply system Hung Quoc Town, Tra Linh district	1,200			Cao Bang a member of water supply Co. Ltd				15	2,300	2,800	
	10	Tinh Tuc Town, Nguyen Binh district	The water supply system Tinh Tuc Town, Nguyen Binh district	1,400			Cao Bang a member of water supply Co. Ltd				20	1,200	1,400	
18 Dien Bien	01	Dien Bien Phu	Dien Bien Phu	8,000		Dien Bien Phu City	Dien Bien Water Supply and Construction Co., Ltd				80			
	02	Muong La Town	Muong Lay Town WTP	5,000		Muong La Town, Dien Bien province					90	3,000	5,000	
	03	Dien Bien Dong Dis.	Dien Bien Dong Dis. WTP	1,500		Dien Bien Dong Dis.					20	1,000	1,500	
19 Son La	01	Sop Cop Town	Sop Cop Town	1,200		Sop Cop Town	Son La water supply .,JSC	-	-	-	-	-	-	
	02	Hat Lot - Mai Son Town	Mai Son Cement plant living water supply system	1,000		Hat Lot - Mai Son Town		-	-	-	-	-	-	
	03	Son La city	Nam La WTP	2,500		Son La city		-	-	-	-	-	-	
ng	01	Chiem Hoa Dis.	Chiem Hoa Town water supply, drainage and environment sanitation	1,500	1,500	Vinh Loc Town, Chiem Hoa Dis.	Tuyen Quang water supply and drainage One	80	25	3,600	5	85%	95%	ODA budget of Finland Government

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
21 Tuyen Qua	02	Na Hang Dis.	Na Hang Town water supply, drainage and environment sanitation	1,500	1,500	Na Hang Town, Na Hang Dis.	drainage One Member Limited company	80	15	3,400	12	85%	95%	ODA budget of Finland Government
	03	Long Binh An Industrial Park	Long Binh An Industrial Park WTP	Total: 7,330 Phase I: 4,830	Phase I: 4,830	Doi Can commune, Tuyen Quang Town	Viet Nam clean water and environment .,JSC	70	20	Not available	31	80%	90%	
22 Bac Kan	01	Thanh Binh Industrial zone	The water supply system Thanh Binh Industrial	15,000		Thanh Bình industrial zone	Thanh Binh water supply JSC				50	20,000	22,000	
	02	Bac Kan Town	Project water supply and sanitation Bac Kan	2,000		Bac Kan Town	PPC of Bac Kan		30		2,052,204 Euro			
	03	Yen Lac Town, Na Ri district	WTP Yen Lac	800			Bac Kan Water Supply and Sewerage a member limited				16.4			
	04	Cho Ra Town, Ba Be district	WTP Cho Ra	800			Bac Kan Water Supply and Sewerage a member limited				9.87			
23 Lang Son	01	Na Sam Town	Na Sam Town Water supply	1,200		Na Sam Town	Lang Son Water Supply and Drainage .,JSC				14			Under construction with 90% of package
	02	Dinh Lap Town	Dinh Lap Town Water supply system	1,200		Dinh Lap Town					40			Under construction design
	03	Na Duong Town	Na Duong Town Water supply system	1,200		Na Duong Town					Over 15			Under preparation project
	04	Huu Nghi border gate area	Water supply for Huu Nghi border gate area	1,000							12			Under bidding for construction
	05	Bac Son Town water supply	Improvement,upgrading, extending of pipeline network of Bac Son Town water supply								About 5			Under preparation project
	01		Increase the capacity of Mat Son WTP to 50,000m3/day	50,000		Increase the capacity of Mat Son WTP to 50,000 m^3/d					25			
	02	Luu Ve Town-Quang Xuong	Build Quang X-ong WTP 5,000	5,000		Luu Ve Town-Quang Xuong-					30	5,000	10,000	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
26 Thanh Hoa	03	Hai Thang commune, Tinh Gia district	Nghi Son WTP	90,000		Hai Thang commune, Tinh Gia					760			
	04	Thanh Hoa city	Comprehensive development WS component in Thanh Hoa city	Replace 19,64Km existing pipeline of center of Thanh Hoa city- newly build 18,6Km of conveyance pipelines, distribution pipelines along the East			Thanh Hoa WS company				8,573 million USD			
	05		Viet Nam urban WS sub-project	Build WS system for 6 Towns of districst of Tao Xuyen, Nong Cong,			Thanh Hoa WS company				135			
	06	Thanh Hoa city	Expand clean WS system for internal Thanh Hoa city (communes adjacent to wards)	Newly install about 30km pipelines, improve 20km pipelines			Thanh Hoa WS company				Expected 300 Loans from WB&other sources			Expected period of 2010-2014
	07	Ngoc Lac Dis	Central urban WS system in the mountainous area of West Ngoc Lac Dis, Thanh Hoa	Estimated capacity of 20,000m3/day			Thanh Hoa WS company				Expected 200 loans from WB&ADB			Expected period of 2010-2015
	08	Tinh Gia district	Nghi Son -Tinh Gia new urban area Internal urban area	Estimated capacity of 20,000m^3/day			Thanh Hoa WS company				Expected 200 loans from WB&ADB			Expected period of 2010-2015
28 Ha Tinh	01	Duc Tho district	Duc Tho water plant expansion and improvement	Increase to 5,000			Duc Tho district PC			3,500 (estimated)	36.4		5,000	
	02	Thach Ha district	Water supply project for resettlement area of Thach Khe iron	3,000		Dong Ha village, Thach TrÞ commune	Ha Tinh water supply plant			3,000 (estimated)	70.4	3,000	6,000	Under phase 1
	03	Com Xuyen district	Com Xuyen district domestic water supply project - Ha Tinh	Phase1: 18,000 Phase2: 23,000		Com Son commune	Com Xuyen district PC			2,800 (estimated)	214.5	18,000	23,000	
	04	Loc Ha district	Domestic water supply and rural environment hygiene project in Thach Bang	6,500		Tan Loc commune	Ha Tinh water supply and environmental hygiene company			3,500 (estimated)	49.2		6,500	
Quang Binh	01	Hoan Lao town	Hoan Lao WTP	2,000			Department of Agriculture and Rural development				30.6	2,000	4,000	
	02	Viet Trung town	Viet Trung WTP	1,000			CTN Quang Binh company				15.0	1,000	2,000	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
29	03	Hon La EZ, Hon La urban area	Song Thai WTP	34,000			Quang Binh young enterprise Jsc.				145.0	34,000		
30 Quang Tri	1	Expand water supply for Gio Linh				Gio Linh Town					10.9			
	02	Expand water supply for Cua Viut				Cua Viut Town					10.7			
	03	Water supply for urban poor people funded by UN Habitat				Dong Ha city, Quang Tri Town, Cua Viut Town					45			
34 Kon Tum	01	Dak Ha town	Supply domestic water in Dak Ha town	4,200	unidentified	Dak Ha town	Dak Ha district PC	78	Unidentified	Not calculated	44	1,300	6,000	
	02	Sa Thaytown	Supply domestic water in Dak Ha town	2,000	unidentified	Sa Thay town	Sa Thay district PC	75	Unidentified	Not calculated	48	1,400	3,500	
	03	Dak To town	Supply domestic water in Dak To town	4,500	unidentified	Dak To town	Dak To district PC	80	Unidentified	Not calculated	44	1,000	4,000	
	04	Kon Plong district	Adjust domestic water supply in Kon Plong district	4,000	unidentified	Dak Long commune	Kon Plong district PC	90	Unidentified	4,560	25	650	8,000	
	05	Tu Mo Rong town	Domestic water supply inTu Mo Rong district	2,000	unidentified	Dak Ha commune	Tu Mo Rong district PC	75	Unidentified	Not calculated	33	450	1,200	
	06	Bo y border gate EZ	Water supply system in centre	2,000	unidentified	Bo Y commune, Ngoc Hoi	Kom Tum provincial EZ MB	75	Unidentified	Not calculated	54	1,800	4,000	
35 Qua	01	Dung Quat EZ	Dung Quat WTP	145,000	-	Dung Quat EZ	Vinaconex	-	-	-	500	Whole EZ:	Whole EZ:	
	02	Dung Quat EZ	-	50,000	-	Dung Quat EZ	VIWASEEN	-	-	-	-			
36 Gia Lai	01	Dak Po		1,200		Dak Po commune	Dak Po district PC				4.4			
	02	Ia Grai		1,200		Ia Kha town	Ia Grai district PC				8.03	2,100		
	03	Kong Chro		1,500		Krong Chro town	Krong Chro PC				4.4			
38 Phu Yen	01	Tay Hoa district	Phu Thu WTP	2,000		Phu To town					30	2,000	4,000	
	02	Nam Phu Yen EZ	Nam Tuy Hoa WTP	60,000		Nam Tuy Hoa city					750	60,000	210,000	Under project formulation
	01	Buon Ma Thuot city	Upgrade, expand the water supply system of Buon Ma Thuot city	-	-	Exploit Sere Poc river water in Quynh Ngoc	Dak Lak construction investment & water supply one member company	75	20	3,500	30.8 tr. USD	35,000	100,000	Prepared detailed work plan proposed by MPI and WB for phase 1 - financial year 2011; Employer
	02	Cu Kuin district and some communes of Cu Kuin district, Dak Lak province	Cu Kuin district water supply and add source to BMT	-	-	Open source	Thuan An construction investment Ltd. Co.	-	-	-	13 tr. USD	2,500	7,500	Prepared detailed work plan proposed by MPI and WB for phase 1 - financial year 2011; Employer

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
39 Dak Lak	03	Buon Don district center	Newly build Buon Don district water supply system	-	-	-	Dak Lak construction investment & water supply one member company	-	-	-	22.5	2,000	4,000	Under Vietnam urban water supply project, FS approved by MOC and WB. WB requested Employer
	04	Krong Nang town; Krong Nang district	Newly build Krong Nang town water supply system	-	-	-	Dak Lak construction investment & water supply one	70	-	-	28	1,600	5,000	Ditto
	05	Ea Kar town, Ea Kar district	Newly build Ea Kar town water supply system	-	-	Exploit surface water of Ea Kar lake	Dak Lak construction investment & water supply one	80			45.7	2,500	7,500	Ditto
	06	Buon Ho town, Dak Lak province	Upgrade, expand Buon Ho town water supply system	-	-	-	Buon Ho town PC	60	-	-	-	5,600	8,000	Agreed minutes between KOICa office in Vietnam and Provincial PC; in May 2010, Provincial PC planned to assign Employer to prepare
	07	Buon Trup town; Krong Ana district	Upgrade, expand town water supply system	-	-	04 drilled wells	Krong Ana district PC	50	-	-	-	1,500	4,000	Project started in 2008 by National target program, completed and under
40 Khanh Hoa	01	Nha Trang city	Vo Canh WTP upgradation	98,000				90	22	3,400	165			Being designed
	02	Cam Ranh town	Cam Ranh water supply system	6,000		Cam Phuoc Tay commune, Cam Lam district	Cam Ranh urban JSC	70	25		56.537	18,000	36,000	Expected to complete in December 2011
	03	Cam Lam district	North Cam Ranh peninsula tourist site and Cam Lam district WTP		12,000	Cam Døc town	ThaI Bxnh Duong commercial JSC			6,400	120	12,000	33,000	
	04	Ninh Hoa town	Khanh Hoa province small and medium sized urban development	4,000		Da Ban lake-Ninh Hoa	Khanh Hoa provincial small and medium size urban development				3,952,800 USD	4,000	8,000	
	05	Suoi Dou IP	Suoi Dou IP treatment plant	15,000		Suoi Dou IP, Cam Lam district, Khanh Hoa	Suoi Dou IP JSC				29.4	15,000	15,000	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
42 Ninh Thuan	01	Phuoc Nam IP	Booster Station	8,556		Thuan Nam district	Phuoc Nam Investment Jsc				12.3	1,000	6,000	
	02	Du Long IP	Du Long IP WTP and surrounding areas	15,000		Thuan Bac district	Truong My Giang Jsc				73	1,000	10,000	
44 Dak Nong	01	Ea Tling town	Vietnam urban water supply development project - sub-project of competitive route	4,000		Ea Tling town, Cu Jut district	Dak nong urban works management and water supply, drainage company				48.2	2,939 households	4,481 households	
	02	Dak Mam town	Vietnam urban water supply development project - sub-project of competitive route	2,000		Dak Mam town, Krong No district	Dak nong urban works management and water supply, drainage company				24.6	1,503 households	2,148 households	
	03	Kien Duc town	Vietnam urban water supply development project - sub-project of competitive route	2,000		Kien Duc town, Dak Rlap district	Dak nong urban works management and water supply, drainage company				30.9	1,503 households	2,148 households	
	04	Quang Khe town	Vietnam urban water supply development project - sub-project of competitive route	1,400		Quang Khe town, Dak Glong district	Dak nong urban works management and water supply, drainage company				12			
	05	Gia Nghia town	Small and medium sized urban development project in Central region - Sub-project of Dak	30,000		Gia Nghia town	Dak nong urban works management and water supply, drainage company				6,612,636 USD	12000m3 /day	18000m3 /day	
	01	Ham Kien IP stage I&II	Ba Bau WTP	20,000		Ham Thuan Nam District	Dai Doong Co., Ltd				126.0	20,000	35,000	
	02	LaGi City	LaGi WTP	10,000		LaGi City	Dong Hai Water Supply &				54.0	10,000	10,000	
			Cho Lau WTP	5,000		Bac Binh district					22.8	10,000	16,300	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
45 Binh Thuan	03	Bac Binh district	Loong Son Town WTP	670		Loong Son Town	Water & Hygient Environment				8.743	670	1,100	
	04	Ham Tan District	Tan Nghya WTP	5,000		Tan Lap Commune (Ham Thuan Nam district)	Water Supply & Sewerage Company is making joint				62.0	5,000	7,000	
			Loong Son WTP	1,200		Tan Minh town	Water & Hygient Environment				3.313	1,200	2,000	
			Tan Nghya WTP	550		Tan Nghya Town					13.353	550	900	
	05	Ham Thuan Bac District	Upgrading Phu Long town WTP	1,100		Phu Long town	Water & Hygient Environment Center				10.35	1,100	1,800	
			Upgrading Ham Thuan Bac WTP	10,000		Thuan Minh Commune					139.025	10,000	16,300	
	06	Tanh Linh District	Upgrading the Water Treatment system & O&M for Lac Tanh water system	800		Lac Tanh Town					5.999	800	1,300	
	07	Duc Linh district	Vo Xu water system - 2nd stage	1,200		Vo Xu Town	Water & Hygient Environment Center				4.597	1,200	2,000	
			Upgrading the Ham Thuan Bac Water Supply system	4,476		- Da Kai Commune - MePu Commune - Sïng Nhon Commune - NghÞ Duc					188.8	4,476	7,300	#NAME?
	08	Phan Thiet city	Upgrading Mui Ne water system	1,100		Mui Ne ward					10.747	1,100	1,800	
	09	Ham Thuan district	Ng Hai Water Supply System	35,000		Ham My commune	Land Development Fund Center					35,000	39,000	
			Upgrading Ham Thuan Bac WTP	2,200		Thuan Nam district	Water & Hygient Environment				11.360	2,200	3,600	JICA fund
47 Ba Ria-Vung Tau	01	Dat Do town, Dat Do district	Improvement, upgrading the Long Tan water supply system	3,000	3,000	Long Tan commune, Dat Do district	Ba Ria - Vung Tau Water suppy - environmental hygience Center				3.1	6,000	6,000	
nh	01	DM Chau town	DMC Water Supply Station	-	-	Town		-			-	3,500	4,000	
	02	Tan Bien town	Tan Bien Water Supply Station	-	-	Town		-			-	2,600	4,000	
	03	Tan Chau town	Tan Chau Water Supply Station	-	-	Town		-			-	1,500	4,000	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
48 Tay Ni	04	Xa Mat border gate Urban area	WTP	11,000	11,000	Xa Mat border gate Urban area	Xa Mat Border EZ Management Board	100			68.995	11,000	11,000	The project was approved under the decision 1582/QD-UBND ngay
	05	Bourbon An Hoa IP	WTP - 1st stage	23,800	23,800	Bourbon An Hoa IP	Bourbon Hoa An Company	100			-	23,800	23,800	
	06	Phuoc Dong Boi Loi Industrial-Service - Trade	WTP	94,000	94,000	Phuoc Dong Boi Loi Industrial-Service - Trade	Sai Gon VRG Investment Company	100			-	94,000	94,000	
49 Binh Duong	01	Tan Uyen Town, Tan Uyen District	Finalization of Tan Hiep WTP	60,000	60,000	Tan Uyen Town					650			
50 Ho Chi Minh City	01	District 8	Binh Hung underground WTP			District 8	Volunteer Youth Public Services Company					15,000	15,000	
	02	Cu Chi district	Kenh Dong WTP				Kenh Dong Water Supply Jsc					240,000	240,000	
52 Tien Giang	01	Cho Gao town, Vinh Binh town (H.G CT), Go Cong town, Tan Hoa town (H.G CT), Tan Ph	Development of BOO Dong Tam WTP	50,000	50,000	Binh Duc commune, Chau Thanh dist., Tion Giang	Dong Tam Water Supply Jsc	100	20	8,000	1,450	50,000	90,000	Phase 1 50,000 m3/day Phase 2 40,000 m3/day In total, 90,000 m3/day
	02	Cai Be town, Cai Be dist.	Cai Be surface water treatment cluster with capacity of	5,000	3,000	2 Area, CaI Be town, CaI Be dist.	Tien Giang Water Supply 1 Member Limited Company	100	30	4,700	14,000	5,000	10,000	
	03	An Huu town, Cai Be district	Development of Hoa Hung commune water supply system, CaI Be district	5,000	3,000	Hoa H-ng commune CaI Be district	Tien Giang Water Supply 1 Member Limited Company	100	30	4,700	14,000	5,000	10,000	
55 Vinh Long	01	Cai Ngang commune- T. Binh district	Investment Project for water supply system for the Commune Center	1,500		8 hamlet, Mi Loc commune	Vinh Long Water Supply 1 Members Limited Company				19.547			
56 Tra Vinh	01	Cau Ngang town, Cau Ngang district	NMN Cau Ngang - My Long	4,200	1,100	Cau ngang town, Cau Ngang district	Tra Vinh sewerage & water supply company	-	-	4,200	-	-	-	
	02	Duyen Hai town, Duyen Hai district	Duyen Hai town WTP	720	635	Duyen HaI town, Duyen Hai district	Tra Vinh sewerage & water supply company	56.5	-	-	-	-	-	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
56	03	Tra Cu town, Tra Cu district	Tra Cu WTP	720	700	Tra Cu town, Tra Cu district	Tra Vinh sewerage & water supply company	56.3	-	-	-	-	-	
57 An Giang	01	B commune, Chau Doc town	Chau Doc Water Supply System	20,000		B commune - Chau Doc town					120			
	02	Binh Hoa commune, Chau	Binh Hoa IP Water Supply System	5,000		Binh Hoa commune-Chau					18			
	03	Khanh Hoa commune, Chau THanh dist	Khanh Hoa Water Supply System	500		Khanh Hoa commune-Chau THanh dist					5			
	04	Tan Hoa commune, Chau	Cai Dam Water Supply System	1,000		Tan Hoa commune-Chau					6			
	05	Hoa Lac commune, Chau	Hoa Lac Water Supply System	400		Hoa Lac commune-Chau THanh dist.					3			
	06	Hoa Binh commune, Chau	Hoa Binh Water Supply System	1,000		Hoa Binh commune-Chau					7			
	07	Co To commune, Tri Ton	Co To Water Supply System	400		Co To commune - Tri Ton					4			
	08	An Hao commune - Tinh Bien	Nui Com Water Supply System	1,000		An Hao commune - Tinh Bien					25			
61 Kien Giang	01	Phu Quoc	Phu Quoc Water Supply System	16,500		Phu Quoc	Kien Giang Sewerage & Water Supply Company				400			WB
63 Ca Mau	01	Ca Mau ciy	Expansion & upgrading the water supply system in Ca Mau	45,000	40,000	Ca Mau city	Ca Mau Water supply & sewerage jsc	-	-	-	-	100,000	150,000	
	02	Song Doc Town	Development of Song Doc town water supply	6,000	4,000	Song Doc town, Tran Van Thoi dist.	Ca Mau Water supply & sewerage jsc	-	-	-	-	10,000	18,000	
	03	Cai Doi Vam Town - H. Phu Tan dist	Cai Doi Vam town Waer supply system	4,000	3,000	Cai Doi Vam town, Phu Tan dist.	Ca Mau Water supply & sewerage jsc	-	-	-	-	8,000	16,000	

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Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion VND)	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
2VINH PHUC	01	Binh Xuyen	Ba Hien water plant	5,000	4,000	Ba Hien commune					25	4,000	5,000	Binh Xuyen district
3THAI NGUYEN	01	Thai Nguyen city	Southern of Ho Nui Coc water supply	20,000		Southern of Ho Nui Coc	Thai Nguyen Clean water ,,JSC				475			Estimated total investment; not decision
	02	Water supply project Southern Pho Yen district va Diem Thui Industrial Park, Phu Binh district	Construction of 01 booster pumping station	5,500										Using water from Song Cong water plant (construction of pumping station and pipeline network)
5BAC NINH	01	Bac Ninh City	The project of urban water supply systems for Bac Ninh City	20,000		Vo Ninh district Bac Ninh City	Bac Ninh Water Supply Co., Ltd				79			
6BAC GIANG	01	Voi Town Lang Giang Dis.	WTP No 1 WTP No 2 WTP No 3	600 1,100 3,500		Voi tram Town WTP no 1,2; Quang Thpnh commune WTP no3	Voi Town	90				250	3,500	
8Hai Phong	01	Do Son district, Duong kinh district, Nui Doi town, Hai An, Kien Thuy district	Do Son water supply project - Hung Dao water plant	25,000		Hung Dao commune, Duong Kinh district	Hai Phong water supply One member Co., Ltd				12 million EUR	30,000	50,000	Feasibility report apprpved by Government
	02	The inner city of old Hai Phong and expansion area	i) Improvement of An Duong water plant; ii) Construction of Kim Son water plant; iii) Construction of Nge Lao water plant;	200,000 25,000 25,000			Hai Phong water supply One member Co., Ltd				61 million USD	25,000 25,000	200,000 50,000 50,000	Cost of preparation of feasibility report by ADB , waiting approval of Government HaI Phong Water supply system improvement and renovation project - Phase II including: i) Improvement of An Duong water plant; ii) Construction of Kim Son water plant; iii) Construction of Nge Lao water plant; iv) Construction of 65

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion VND)	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
	03	Nui Doi town, Kien Thuy district	Nui Doi town water supply project											
11HA NAM	01	ASSENDAS Industrial Park	Location of Industrial Park in Kim Bang Dis., Ha Nam province under implementing detail design by Binh Duong Import - Export .JSC as a investor. Scale: 300ha										7,000	
	02	Liem Can- Thanh Binh Industrial Park	Location of Industrial Park in Thanh Liem Dis., Ha Nam Province under implementing detail planning by Viet Real Estate and Investment Company, Joint venture of Sunjry and Taiwan Investors as a investor. Scale: 200ha										5,000	
	03	Lien Phong Industrial Park	Location of Industrial Park in Thanh Liem Dis., Ha Nam Province under implementing detail planning by SUNRISE Land Investment ..JSC as a investor. Scale: 200ha										5,000	
	04	ATAHAN Industrial	Location of Industrial Park in Duy Tien Dis., Ha Nam province under implementing detail planning by Tan Tao Group as a investor. Scale:										7,000	
17CAO BANG	01	Cao Bang Town	The water supply system of new urban areas Tham, Cao Bang	5,000	5,000	Cao Bang Town	Cao Bang a member of water supply Co. Ltd	80		5,300	80	15,000	25,000	Detail plan
	02	Thong Nong Town, Thong Nong district	The water supply system Thkong Nzong Town, district Thkong	900	1,000	Thong Nong Town	Cao Bang a member of water supply Co. Ltd	100		4,000	10	900	1,000	
	03	De Tham Industrial Park, Cao Bang Town	The water supply system of industrial parks Tham Cao Bang		3,276	De Tham Industrial park	De Tham Industrial park infrastructure development company				4.6			
	04	Xuan Hoa, Ha Quang district	The water supply system Xuan Hoa, Ha Quang district	2,000			Cao Bang a member of water supply Co. Ltd				20	1,500	2,000	
	05	Trung Khanh, Trung Khanh district	The water supply system Trung Khanh, Trung Khanh district	2,500			Cao Bang a member of water supply Co. Ltd				11	2,000	2,500	
	06	Dong Khe Town, Thach An	The water supply system Dong Khe Town, Thach An	2,500			Cao Bang a member of water supply Co. Ltd				12	2,000	2,500	
	07	Bao Lac Town, Bao Lac District	The water supply system Bao Lac Town, Bao Lac District	110			Cao Bang a member of water supply Co. Ltd				13	2,300	2,800	
	08	Pac Miau Town, Bao Lam district	The water supply system Pac Miau Town, Bao Lam district	650			Cao Bang a member of water supply Co. Ltd				10	450	650	
	09	Hung Quoc Town, Tra Linh district	The water supply system Hung Quoc Town, Tra Linh district	1,200			Cao Bang a member of water supply Co. Ltd				15	2,300	2,800	
	10	Tinh Tuc Town, Nguyen Binh district	The water supply system Tinh Tuc Town, Nguyen Binh district	1,400			Cao Bang a member of water supply Co. Ltd				20	1,200	1,400	
[illegible]	01	Muong Nha Town	Muong Nha WTP	1,500		Muong Nha Town					20	1,000	1,500	
	02	Muong Ang Town	Muong Ang WTP	1,500		Muong Ang Town					20	1,000	1,500	
22BAC KAN	01	Van Tung town, Ngan Son district	Van Tung water supply project, Ngan Son	800							18			water supply and drainage
	02	Cho Moi Town, Cho Moi district	Cho Moi Town water supply project, Cho Moi district	800							7			
	03	Phu Thong Town, Bach Thong district		800							17.5			water supply and drainage
	04	Bec Be Town, Pac Nam district	Bec Be water supply project, Pac Nam	700							19			water supply and drainage
	01	Lang Son city	Lang Son city water supply project - Phase II	15,000		Lang Son City and Cao Loc Town	Lang Son Water Supply and Drainage							

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion VND)	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
23LANG SON	02	Dong Dang Town, Cao Loc district	Dong Dang Town water supply, Cao Loc	3,500		Lang Son City and Cao Loc Town	Lang Son Water Supply and Drainage				Over 23			
	03	Met Town, Huu Lung district	Met Town water supply, Huu Lung	3,500							Over 23			
	04	Dong Mo - Chi Lang Town, Chi Lang district	Dong Mo - Chi Lang Town water supply, Chi Lang district	3,500							Over 23			
	05	Binh Gia Town, Binh Gia district	Binh Gia Town water supply, Binh Gia	2,400							Over 15			
	06	Tu Don Town, Van Quang district	Tu Don Town water supply, Van Quang district	2,400							Over 15			
	07	That Khe Town, Trang DÞnh district	That Khe Town water supply, Trang DÞnh district	2,400							Over 15			
	08	Loc Binh Town, Loc Binh district	Loc Binh Town water supply, Loc Binh	2,400							Over 15			
29Quang Binh	01	Ba Don town	Ba Don WTP	6,000			CTN Quang Binh company				75			
	02	Le Ninh town	Le Ninh WTP	1,000							18			
	03	Dong Le town	Dong Le WTP	1,000							18			
	04	Dong Hoi city	Dong Hoi WTP	50,000							500			
	05	Quan Hau town	Quan Hau WTP	6,000							90			
30Quang Tri	01	Hai Chanh commune	Hai Chanh commune water supply(registered with ODA capital plan)	2,000		Hai Lang district					20.8			
	02	VÜnh Ha commune	VÜnh Ha commune water supply, VÜnh Long (registered with ODA capital plan)	2,000		Vinh Linh district					31.5			
	03	Cua Tung Town and adjacent communes	Water supply for Cua Tung Town and adjacent communes (on-going registered with ODA capital plan)	6,000		Vinh Linh district					47.0			
	04	Dong Ha Town and adjacent communes	Expand water supply for Dong Ha Town and adjacent communes (on-going registered with ODA capital plan)	30,000		Cam Lo district					31.0 million USD			
	05	sub-Mekong region (RETTA)	Water supply and environmental hygiene for sub-Mekong region (RETTA) (registered with ODA capital plan)			Dong Ha city, Quang Tri, Cua Viet Town, Lao Bao Town					9.0 million USD			
34Kon TUM	01	Tu Mo Rong district	Supply domestic water in Tu Mo Rong district	2,000	Not exploited	Dak Ha commune	Tu Mo Rong district PC	75	Unidentified	Not calculated	33.0	450	1,200	
	02	Sa Thay town	Supply domestic water in Sa Son commune, Sa Thay town and Sa	2,000	Not exploited	Sa Thay town	Sa Thay district PC	75	Unidentified	Not calculated	48.0	1,400	3,500	
	03	Dak Ha town	Supply domestic water in Dak Ha town	4,200	Not exploited	Dak Ha town	Dak Ha district PC	78	Unidentified	Not calculated	44.1	1,300	6,000	

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion VND)	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
35Quang Ngai	01	Quang. Ngai city	-	20,000	-	Quang. NgaI city	Quang NgaI water supply and drainage	-	-	-	65	35,000	45,000	
	02	Mountainouse urban areas	-	8,000	-	-	-	-	-	-	35	8,000	15,000	
36GIA LAI	01	Pleiku	Bien Ho	40,000		Bien Ho					200			
39Dak Lak	01	Phuoc An town; Krong Pak district	Upgrade, expand Phuoc An town water supply system	-	-	Quang Ngai city	Dak Lak construction investment & water supply one member company	80	-	-	-	4,000	8,000	Letter No. 1996/UBND-CN dated April 13, 2009 of Provincial PC on assigning Employer register funds from WB and enterprise
	02	Krong Mar town, Krong Bong district	Upgrade, expand Krong Kmar town water supply system	-	-		Not defined yet	80	-	-	-	4,000	8,000	Ditto
	03	Buon Trup town; Krong Ana district	Upgrade, expand Phuoc An town water supply system	-	-		Not defined yet	90	-	-	-	8,000	16,000	Ditto
	04	Thi trun Lien Son; H. Lak Dis.	Upgrade, expand Li³n S¬n town water supply	-	-		Not defined yet	80	-	-	-	3,000	9,000	Ditto
	05	Ea Suop town; Ea Suop district	Upgrade, expand Ea Suop town water	-	-		Not defined yet	80	-	-	-	4,000	8,000	Ditto
	06	M'Drak town, M' Drak district	Upgrade, expand M' Drak town water supply	-	-		Not defined yet	80	-	-	-	3,000	9,000	Ditto
	07	Hoang Phu IP	Newly build water supply system for IP	-	-	Sere Pok river water	Dak Lak IPs Management Board	95	-	-	-	8,000	20,000	
40KHANH HOA	01	Nha Trang city	Vinh Luong communal WS project	30km pipeline D100-		Vinh Luong commune, Nha Trang city	Khanh Hoa WS and drainage company				60			Under FS preparation
	02	Cam Lam district	Suoi Dou WTP construction project	50,000		Suoi Hiep , Cam Lom		11,000 people			450	25,000	50,000	Under FS preparation
	03	Van Phong EZ	Bac Van Phong WS system	45,000		Van Long commune, Van Ninh, Khanh Hoa province	Van Phong EZ MB				352	25,000	45,000	The project was approved for the BOT investment method scheme
	04	Van Phong EZ	Nam Van Phong WS syst	50,000		Ninh Da commune, Ninh Hoa district, Khanh Hoa province	Van Phong EZ MB				400	30,000	50,000	The project was approved for the BOT investment method scheme
	05	Van Ninh IP	Van Ninh IP water treatment plant	7,600		Van Ninh IP, Van Ninh district,Khanh Hoa province	Calling for investment from Khanh Hoa					4,000	7,600	As planned
	06	Ninh Thuy IP	Not available	3,000		Ninh Thuy IP, Ninh Hoa, Khanh Hoa	Hoan Cou Van Phong Ltd				29.736	3,000	9,000	As planned
	07	North Cam Ranh IP	Not available	3,000		North Cam Ranh IP, Cam Phuc Bac ward and Cam Phóc Nam ward, Cam Ranh town					5.01	3,000	9,200	As planned
	08	South Cam Ranh IP	Not available	10,000		South Cam Ranh Ih, Cam Thinh Dong ward, Cam Ranh town	Nha Trang Ship industry company				23	10,000	10,000	As planned

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion VND)	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
45BINH THUAN	01	Tuy Phong IP	Tuy Phong IP WTP	7,500		Tuy Phong district						7,500	7,500	
	02	Son My IP I & II	Son My IP WTP	59,500		Son My commune (Ham Tan district)						22,000	59,500	Under Planning
	03	Tan Duc IP	Tan Duc IP WTP	36,400		Tan Duc commune (Ham Tan dist.)						12,100	36,400	
	04	Ham Thuan Nam District	Tan Thanh urban area WTP	15,000		Tan Thanh commune						10,000	15,000	
	05	Tanh Linh district	Lac Tanh Water System	7,300		- Lac Tanh commune - Gia An commune - Vu Hoa commune						4,800	7,300	
48Tay Ninh	01	Trang Bang IP	Surface Water Treatment Plant	5,000	5,000	Trang Bang IP	Tay Ninh Water Supply 1 Member Co., ltd	100	-	-	50	5,000	-	
	02	Xa Mat border gate Urban area	WTP	11,000	11,000	Xa Mat border gate Urban area	Xa Mat Border EZ Management Board	100	-	-	68.995	11,000	11,000	
49BINH DUONG	01		Water supply system for Viet Nam 2 Urban area Mi Phuoc 3	30,000		Mi Phuoc Town								
	02	Phu Giao district	Water Supply Projec used the water source from Phuoc Hoa lake	1,300,000							6000 4700 for Pipeline			Hydro power Project
50HO CHI MINH CITY	01	Thu Duc district	Thu Duc 3 WTP			Thu Duc district	SaI Gon water supply corporation				1,000	300,000	300,000	Under preparation investment project
	02	Hoc Mon district	Tan Hiep 2 WTP			Hoc Mon district	SaI Gon water supply corporation				1,000	300,000	300,000	Prepared basic design
	03	Thu Duc district	Thu Duc 4 WTP			Thu Duc district	SaI Gon water supply corporation				1,700		500,000	
	04	Hoc Mon district	Tan Hiep 3 WTP			Hoc Mon district	SaI Gon water supply corporation				1,000		300,000	
55Vinh Long	01	Vinh Long city	Expanded WTP for Vinh Long(upgrading the capacity from 25,500 m3/daynight to 35,500 m3/daynight	10,000		Tan NgaI commune	Vinh Long Water Supply 1 Members Limited Company				65.5			FS approved on 18/03/2009
	02	Long Ho town	Expanded WTP for Long Ho town	1,500		Long Phuoc commune	Vinh Long Water Supply 1 Members Limited Company				21.1			FS approved on 18/03/2009 Upgrading the capacity from 240 to 1500 m3/day
	03	Binh Minh IP	Binh Minh WTP	7,600		Binh Minh IP	Hoang Quan Mekong Real Estate & Commercial & Service			Under the Government Price	30	3,000	3,500	
56Tra Vinh	01	Tra Vinh City/Tra Vinh Province	Tra Vinh City WTP - Stage 2	50,000	21,000	Tra Vinh city, Tra Vinh province	Tra Vinh sewerage & water supply company	-	-	-	-	-	-	
	02	Tieu Can town, Tieu Can district	Tieu Can - Cau Quan townWTP	8,000	1,200	Tieu Can town, Tiuu Can dist.	Tra Vinh sewerage & water supply company	-	-	-	-	-	-	
	01	Binh Duc commune, Long Xuyen city	Upgrading Binh Duc Water supply system	34,000		Binh Duc commune-Long Xuyen city					350			
	02	My Thanh commune, Long Xuyen city	Vam Cong Water supply system	20,000		My Thanh commune-Long Xuyen city					200			
	03	Nha Bang town, Tinh Bien district	Upgrading Nha Bang Water Supply System	5,000		Nha Bang town-Tinh Bien district					25			

Prov.	NO	Name of City/Town	Name of WTP	Capacity		Location of WTP	Owner / Developer	Coverage Ratio of WS (%)	Water Loss Ratio (%)	Water Tariff (VND/m^3)	Total Investment (billion VND)	Estimated		Note
				Design (m^3/day)	Current (m^3/day)							through 2015 (m^3/day)	through 2025 (m^3/day)	
57AN GIANG	04	Tri Ton town, Tri Ton district	Upgrading Tri Ton Water Supply System	5,000		Tri Ton town - Tri Ton district					25			
	05	Nui Sap town, Thoai Son district	Upgrading Nui Sap	5,000		Nui Sap town - Thoai Son district					25			
	06	My Luong town, Cho Moi district	Upgrading My Luong Water Supply System	2,000		My Luong town- Cho Moi district					10			
	07	Cho Moi town, Cho Moi district	Upgrading Cho Moi Water Supply System	10,000		Cho Moi town-Cho Moi district					100			
	08	Phu My town, Phu Tan district	HTCN Phu My Water Supply System	10,000		Phu My town - Phu Tan district					100			
	09	Le Chanh town, Tan Chau	Vinh Thanh Water Supply System	2,000		Le Chanh town - Tan Chau					10			
59Hau Giang	01	Chau Thanh A district	WTP & Reservoir - Hau Giang province	30,000		Mot Ngan town		-	-	-	496.6	-	-	Detail project outline
	02	Chau Thanh district	Song Hau urban Water supply system	50,000		Nga Sau town		-	-	-	262.2	-	-	Detail project outline
60SOC TRANG	01	Soc Trang city and Ke sach town, Thuon Hoa, Huynh Huu Nghia	Surface water supply project for Soc Trang city	40,000		Phu Tan commune - Chau Thanh dist.	Soc Trang Water Supply 1 Member Co., ltd				600			
	02	Remaining urban areas	Water supply for remaining urban area	5,000							1,500	3,000	5,000	Water supply for remaining urban area (in 2015: 22 urban areas; in 2025: 26 urban area)
61KIEN GIANG	01	Tan Thanh commune, An Minh District	Xeo Nhau Water Supply System	1,200		An Minh	Kien Giang Sewerage & Water Supply				20.0			Calling for investment
	02	An Minh District	Nam An Minh Water Supply System	4,000		An Minh	Kien Giang Sewerage & Water Supply				65.0			Calling for investment
	03	Southern Rach Gia City	Southern Rach Gia City Water Supply	20,000		Rach Gia	Kien Giang Sewerage & Water Supply				500			Calling for investment
	04	Kien Luong district	Kien Luong Water Supply System	20,000		Kien Luong	Kien Giang Sewerage & Water Supply				400			Calling for investment
	05	Giang Thanh district	Giang Thanh district Water Supply System	5,000			Kien Giang Sewerage & Water Supply				80			Calling for investment
63CA MAU	01	Khanh An IP	Khanh An IP water supply project	15,000	12,000	Khanh An, U Minh dist.	Ca Mau Water supply & sewerage jsc	-	-	-	-	22,000	35,000	
	02	Rach Goc Town, Ngoc Hien District	Rach Goc town water supply project, Ngoc Hiun district	4,000	3,000	Rach Goc - Ngoc Hiun	Ca Mau Water supply & sewerage jsc	-	-	-	-	5,000	10,000	
	03	Nam Can Town- Nam Can District	Expansion of Nam Can town water supply	10,000	8,000	Nam Can	Ca Mau Water supply & sewerage jsc	-	-	-	-	10,000	18,000	
	04	Dam Doi Town	Expansion of Dam Doi town water supply	7,000	5,000	Dam Doi town	Ca Mau Water supply & sewerage jsc	-	-	-	-	6,000	12,000	
	05	Thoi Binh Town	Expansion of Thoi Binh town water supply	8,000	4,500	Thoi Binh town	Ca Mau Water supply & sewerage jsc	-	-	-	-	6,000	10,000	
	06	Cai Nuoc Town	Expansion of Cai Nuoc town water supply project	7,000	5,000	Cai Nuoc town	Ca Mau Water supply & sewerage jsc	-	-	-	-	5,000	10,000	
	07	U Minh Town - Khanh Hoi	U Minh - khanh Hoi water supply system	5,000	4,000	U Minh - Khanh Hoi town	Ca Mau Water supply & sewerage jsc	-	-	-	-	6,000	10,000	

Appendix 1-5

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No.	Province Name	City Name	Category (Ⅰ～Ⅴ)	Town Plan (Land Use)						Sewerage Plan (including construction on-going)																	
				Area (ha)		Present population (In the year 2009) (pers.)		Planned population 【2019】(pers.)		Project Name	Financial Source (Donor etc.)	Project Area (ha)	Planned Population (pers.)	Sewage Volume per capita (ℓ/pers./day)	Sewer Pipe Length (km)			Number of Pump Station	Number of House Connection	Sewage Amount to be Treated (m^3/day)	Treatment Method	Project Cost (VND)					Maintenance cost (VND/Year)	Construction Status Method
				Whole	Urban	Whole	Urban	Whole	Urban						Main Sewer	Luteral/ House connection.	Total					Sewer pipe cost (Main)	Sewer pipe cost (Luteral/H.c)	Pumping Station cost	WWTP cost	Total cost		
1	-	Hanoi	Ⅰ	334,470	34,702	6,699,600	2,632,087	7,494,400	N/A	Feasibility Study for the Construction Project of Central Large-scaled Wastewater treatment Plants for Hanoi Environmental Improvemer	JICA	4,936 (combined: 2,977, separated: 1,959)	882,000	245 (daily average) 300 (daily maximum)	Open cut: 10.392 pipe jacking: 8.794 shield tunneling: 8.455		38,321	1 at WWTP		270,000	Conventional Activated	14.39 billion JPY			22.3 billion JPY		WWTP: 103,793 million VND/year Sewer: 5.94 million VND/ha/year	not yet
													in 2020									1USD =16,100VND, 1JPY = 160VND, 1USD = 101JPY The cost is estimated based on the price level of April 2008.						
2	-	Hanoi	Ⅰ							Feasibility Study for the Construction Project of Central Large-scaled Wastewater treatment Plants for Hanoi Environmental Improvement	JICA	2,394 (combined: 480, separated:	280,000	245 (daily average) 300 (daily maximum)	Open cut: 7.059 pipe jacking: 12.248 shield tunneling: 2.300		21,067	1 at WWTP		84,000	Conventional Activated Sludge (AO)	5.41 billion Yen			8.6 billion Yen		WWTP: 36,619 million VND/year Sewer: 5.94 million VND/ha/year	not yet
																						1USD =16,100VND, 1JPY = 160VND, 1USD = 101JPY The cost is estimated based on the price level of April 2008.						
								【2020】																			
3	TP HCMC	HCMC	Ⅰ	209,500	N/A	5,630,200	4,570,000	10,000,000	6,000,000	Water Environment Project	JICA	2,720	1,411,740	300	*φ300 -φ1800 3,4000km*	*N/A*	34,000	0	N/A	512,000	Modified Aeration Process	N/A	N/A	N/A	N/A	Phase 1: 118億円 (2004 price level) Phase 2: 272億円 (2012 price level) Phase 3:未定	N/A	Phase-1: 2004-2009 Phase2: Scheduled 2014-2020 Phase3: N/A
																Interceptor Sewer											
4	VINH PHUC	Vinh Yen city	Ⅲ	123,650	5,080	999,800	94,249	1,094,900	N/A	Vinh Yen Drainage and Waste Water Treatment Project_Phase I	JBIC	729	47,502	162						5,000	Activated Sludge					430,600,000,000	N/A	about 90% completed
5	VINH PHUC	Vinh Yen city	Ⅲ	123,650	5,080	999,800	94,249	1,094,900	N/A	Vinh Yen Drainage and Waste Water Treatment Project_Phase I	JBIC	729	47,502	162						5,000	Activated Sludge					430,600,000,000	N/A	about 90% completed
6	VINH PHUC	Phuc Yen town	Ⅲ	123,650	12,030	999,800	91,790	1,094,900	N/A	Phuc Yen Waste Water Treatment Plant	Under Calling for Investment (ODA or BOT)	842	75,622	162	31.2	N/A	31.2	5	N/A	17,000	Activated Sludge	N/A	N/A	N/A	N/A	700,000,000,000	N/A	Calling for Investment
7	BAC NINH	Bac Ninh	Ⅲ	82,270	8,260	1,024,500	164,307	1,145,100	N/A	BAC NINH CITY DRAINAGE, SEWERAGE AND WASTEWATER TREATMENT PROJECT	KfW	3,000	92,800	165	13.53	N/A	13.53	4	N/A	28,000	Biofileration	116,325,000,000	N/A	13,200,000,000	65,862,000,000	195,387,000,000	423,700,000	Construction complete, under trial coperation
8	HUNG YEN	Hung Yen	Ⅲ	92,600	7,342	1,127,900	82,637	1,213,400		IMPLEMENTING COMPREHENSIVE SOCIECONOMIC URBAN DEVELOPMET PROJECT	KOREA-EXIMBANK	N/A	N/A	N/A	19.70	N/A	19.70	3	N/A	6,300						554,568,000,000	N/A	Under design work
9	HA NAM	Phu Ly	Ⅲ	86,050	8,787	784,000	136,054	809,500	N/A	Phu Ly City Drainage and Waste Water Treatment Project_Phase 2	PPC	150	N/A	165						2,500						N/A		
10	HA NAM	Phu Ly	Ⅲ							Phu Ly City Drainage and Waste Water Treatment Project_Phase 1	ODA Belgium	650	N/A	165						5,000						154,632,000,000		
11	HA NAM	Phu Ly	Ⅲ							Phu Ly City Drainage and Waste Water Treatment Project_Phase 3	WB	400		165						3,300						N/A		
12	HAI DUONG	Hai Duong	Ⅱ	165,600	7,139	1,705,100	253,893	1,807,100	N/A	HAI DUONG CITY DRAINAGE AND WASTEWATER TREATMENT PROJECT	KfW	1,800	50,000	150	12.62	N/A	12.62	5	N/A	13,300	Biofileration	78,882,000,000	N/A	5,919,000,000	23,494,000,000	108,295,000,000	N/A	Under Construction
13	-	Hai Phong	Ⅰ	152,390	24,376	1,837,200	846,191	2,040,600	N/A	HAI PHONG, UPGRADE INFRASTRUCTURE IN HAI PHONG CITY, COMPONENT COLLECTION DRAINAGE AND WASTEWATER PROJECT	JICA	33,798	258,800 (up to 2020)							36,000	Activated Sludge					3221 billion dong		Under Construction

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No.	Province Name	City Name	Category (Ⅰ～Ⅴ)	Town Plan (Land Use)						Sewerage Plan (including construction on-going)																
				Area (ha)		Present population (In the year 2009) (pers.)		Planned population 【2019】(pers.)		Project Name	Financial Source (Donor etc.)	Project Area (ha)	Planned Population (pers.)	Sewage Volume per capita (ℓ/pers./day)	Sewer Pipe Length (km)			Number of Pump Station	Number of House Connection	Sewage Amount to be Treated (m^3/day)	Treatment Method	Project Cost (VND)					Maintenance cost (VND/Year)	Construction Status Method
				Whole	Urban	Whole	Urban	Whole	Urban						Main Sewer	Luteral/ House connection.	Total					Sewer pipe cost (Main)	Sewer pipe cost (Luteral/H.c)	Pumping Station cost	WWTP cost	Total cost		
14	THAI BINH	Thai Binh	II	156,740	6,771	1,786,300	268,482	1,819,000	N/A	THAI BINH CITY DRAINAGE, SEWERAGE AND SANITATION IMPROVEMENT PROJECT	NORWAY (Via reconstruction credit institude KfW)	1,167	135,000	96	31.34	N/A	31.34	4	N/A	10,000	A2O	147,191,907,000	N/A	6,964,700	#REF!	#REF!	1,183,585,500	Construction Bidding completed, construction starts
15	NAM DINH	NAM DINH	III	165,260	46,400	1,828,100	352,108	1,923,200	N/A	UNDER PLANNING																
16	NINH BINH	NINH BINH	III	137,670	4,836	899,000	110,541	931,900	N/A	UNDER PLANNING																
17	LAI CHAU	LAI CHAU	III	906,880	7,077	370,500	52,227	432,400	N/A	UNDER PLANNING																
18	LAO CAI	Sa Pa		638,390	2,402	614,600	8,975	710,800		PROGAME OF RURAL INFRASTRUCTURE IMPROVEMENT LAO CAI	AFD (Agency France Development)	N/A	43,600	120	13	N/A	13	N/A	N/A	2,500	Activated Sludge with Aerotank	546,702,451,500	N/A	N/A	30,536,750,300	577,239,201,800	N/A	Under Construction
19	DIEN BIEN																									
20	YEN BAI																									
21	SON LA	SON LA	III	1,417,440	32,493	1,076,100	91,720	1,264,800	N/A	VIETNAM PROGRAM NORTH II-WAST WATER MANAGEMENT IN SONLA	German	1,406	90,263	100	19.00	N/A	19.00	5	N/A	10,355	OD	98,203,742,000	288,791,386,000	10,473,658,000	80,842,840,000	478,311,626,000	N/A	Under Construction
22	HOA BINH	HOA BINH	III	460,870	14,820	785,200	93,409	858,100	N/A	VIETNAM PROGRAM NORTH II-WAST WATER MANAGEMENT IN HOA BINH	German	470	85,575	100	21.00	N/A	21.00	5	N/A	5,120	OD	224,205,748,000	N/A	11,582,818,000	73,719,178,000	309,507,744,000	N/A	
23	HA GIANG	Ha Giang	III	791,490	13,532	724,500	71,689	837,000	N/A	HA GIANG CITY DRAINAGE, SEWERAGE AND WASTE WATER TREATMENT PROJECT	DANIDA	13,508	94,000	80	33.92	N/A	33.92	4	N/A	6,000	OD channel	57,884,663,000		5,736,800,000	18,324,000,000	221,074,000,000	N/A	Under Design Work
24	CAO BANG	Cao Bang	III	670,790	10,763	507,200	84,421	549,000	N/A	CAO BANG TOWN DRAINAGE, SEWERAGE AND WASTEWATER CONNECTION PROJECT	DANIDA	1,115	60,433	90	41.15	N/A	41.15	5	N/A	3,000	OD channel	176,190,405,000	N/A	8,872,595,000	26,110,000,000	211,173,000,000	N/A	Under design work
25	TUYEN QUANG	TUYEN QUANG	III	586,730	119,170	724,800	89,211	783,500	N/A																	
26	BAC KAN	Bac Kan (TOWNSHIP)	III	485,940	12,972	293,800	37,180	321,200	N/A	BAC KAN DRAINAGE AND SANITATION PROJECT	FINLAND				44.86	N/A	44.86	N/A	3,800	3,000							
27	LANG SON	LANG SON	III	832,080	7,769	732,500	187,278	793,300	N/A	VIETNAM PROGRAM NORTH II-WAST WATER MANAGEMENT IN LANG SON	German	781	80,468	100	13.70	N/A	13.70	13	N/A	5,260	OD	188,761,508,000	N/A	36,599,134,000	162,440,954,000	387,801,596,000	N/A	Under Construction
28	THAI NGUYEN	Thai Nguyen	Ⅱ	356,282	189,705	1,123,116	330,707	1,237,300	N/A	THAI NGUYEN CITY DRAINAGE, SEWERAGE AND WASTEWATER TREATMENT PROJECT	FRANCE ODA	1,200	100,000	150	54.30	N/A		9	N/A	8,000	Aeration Channel	395,248,795,715	N/A	22,931,013,967	#REF!	#REF!	N/A	Under Construction
29	BAC GIANG	Bac Giang	III	384,890	6,677	1,554,100	157439 (2013)	1,655,500	N/A																	
30	QUANG NINH	Uong Bi	II	610,230.00	25,630	1,145,000	174,678	1,274,800	N/A																	

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No.	Province Name	City Name	Category (Ⅰ～Ⅴ)	Town Plan (Land Use)						Sewerage Plan (including construction on-going)																	
				Area (ha)		Present population (In the year 2009) (pers.)		Planned population 【2019】(pers.)		Project Name	Financial Source (Donor etc.)	Project Area (ha)	Planned Population (pers.)	Sewage Volume per capita (ℓ/pers./day)	Sewer Pipe Length (km)			Number of Pump Station	Number of House Connection	Sewage Amount to be Treated (m^3/day)	Treatment Method	Project Cost (VND)					Maintenance cost (VND/Year)	Construction Status Method
				Whole	Urban	Whole	Urban	Whole	Urban						Main Sewer	Luteral/ House connection.	Total					Sewer pipe cost (Main)	Sewer pipe cost (Luteral/H.c)	Pumping Station cost	WWTP cost	Total cost		
31	PHU THO	Phu Tho	III	353,340	6,329	1,316,400	68,392	1,406,800		PHU THO TOWN DRAINAGE AND WASTEWATER TREATMENT PROJECT	PPC	6,460	122,287	N/A	13.73	N/A	13.73	4	N/A	5,000							Under Design Work
32	PHU THO	Viet Tri	I	353,340	10,636	1,316,400	181,123	1,406,800		VIET TRI DRAINAGE AND WASTEWATER COLLECTION PROJECT	KOREA	22,258	228.400 (up to 2020)	N/A	193.69	N/A	193.69	11	N/A	25,000	OD	N/A	N/A	N/A	N/A	753,939,185,641	N/A	Under Design Work
33	THANH HOA	Thanh Hoa	II	1,113,200	14,677	3,400,600	393294 (2012)	3,504,000	N/A	THANH HOA CITY COMPREHENSIVE SOCIECONOMIC DEVELOPMENT PROJECT	ADB	1,108	1,581,000	96	8.70	N/A	9	3	N/A	15,000	OD	33,818,700,000		icluded to cost of WWTP	27,438,600,000	#REF!	5,108,250,000	Under Construction
34	THANH HOA	Bim Son town	V	1,113,200	6,681	3,400,600	55,442	3,504,000	N/A	BIM SON TOWN FEASIBILITY REVISION PROJECT	WB	6074	91.115 (up to 2020)							3,500	OD	92,714,841,658		7,870,575,000	60,127,367,290	236,434,397,000	N/A	
35	NGHE AN	Thai Hoa town	V	1,649,090	135,188	2,912,000	67,427	3,156,130	N/A	THAI HOA TOWN DRAINAGE, SEWERAGE AND WASTEWATER CONNECTION PROJECT	WB	13,500	159,529	120	35.92	N/A	35.92	6	N/A	10,000	Anaerabic pond	93,611,828,000		2,034,890,000	29,015,805,000	321,763,333,000	N/A	Under Design Work
36	HA TINH	Ha Tinh	III	599,780	5,619	1,227,000	117,546	1,259,200	N/A	HA TINH CITY DRAINAGE, SEWERAGE AND WASTEWATER TREATMENT PROJECT	WB	13,508	94,000	N/A	91.50	N/A	91.50	6	N/A			N/A		N/A	N/A	95,080,025,000		Under Design Work
37	QUANG BINH	Ba Don	IV	806,530	16,318	844,900	115196 (2013)	897,600	N/A	BA DON DRAINAGE, SEWERAGE AND WASTE WATER TREATMENT PROJECT	DANIDA	5,046	106,255	N/A	23.00	N/A	23.00	4	N/A	8,000	N/A	101,018,759,708	335,518,434,742	18,293,292,000	58,789,513,550	513,620,000,000	7,367,710,500	N/A
38	QUANG BINH	Dong Hoi	II	806,530	15,571	844,900	112,865	897,600	N/A	DONG HOI CITY FLOOD CONTROL, DRAINAGE AND WASTEWATER TREATMENT PROJECT	WB	15,666	184.900 (up to 2020)	N/A						8,000		98,265,132,600		1,811,948,400	60,210,379,800	491,246,328,750	729,770,850	Under Construction
39	QUANG TRI	Dong Ha	III	473,980	7,296	598,300	84,157 (2011)	637,900	N/A	DONG HA CITY DRAINAGE, SEWERAGE AND WASTEWATER TREATMENT PROJECT	WB	7,298	106,255	N/A	8.30	N/A	8.30	5	N/A	7,000	N/A	1,480,350,000	N/A	N/A	N/A	310,665,000,000	2,439,450,000	Under Design Work
40	THUA THIEN HUE	Lang Co town	V	503,320	800	1,087,400	11,200	1,170,200	N/A	LANG CO TOWN DRAINAGGE SEWERAGE AND WASTE WATER TREATMENT PROJECT	ADB-AFD	1,060	21,000	n/a	39.80	N/A	39.80	3	N/A	4,750	N/A	70,056,000,000	N/A	N/A	13,573,350,000	#REF!	5,004,000,000	Under Construction
						【2008】		【2020】																			
41	-	Da Nang	Ⅱ	128,342	24,151	822,178	713,926	1,070,000	835,000	STUDY ON WATER ENVIRONMENT IMPROVEMENT PROJECT FOR DA NANG CITY(Phase- Ⅰ)	JICA	762	264,700	180 20 (m3/ha/day) for industrial	φ100㎜~ φ1500㎜ L=22.6km		φ200㎜ L=152.8km	175.4	1 (31.9m^3/min) manhole type:10	N/A	75,500	CAS	334,500,537,634	547,670,250,896	61,648,745,520	796,415,770,609	1,740,235,304,659	83	Scheduled 2013-2019 under construction
●																										(Million JPY, 2009 price)	
42	QUANG NAM	Tam Ky	III	143,840.00	100,264	1,422,300	123662 (2006)	1,486,500	N/A	COLLECTION, WASTEWATER TREATMENT AND DRAINAGE SYSTEM OF TAM KY CITY PROJECT	WB	9,282	117.873 (up to 2020)	120	47.01	N/A	47.01	5	N/A	16,000	Biological Pond	159,953,370,280	N/A	N/A	N/A	159,953,370,280	N/A	Under Construction
●																											
43	QUANG NGAI										ADB-AFD											6,359,250,000		N/A	N/A	321,090,000,000	4,878,900,000	
44	BINH DINH																										
45	PHU YEN	Tuy Hoa	II	506,060	10,700	862,200	202,030	919,600																			
46	KHANH HOA	Nha Trang	I	521,770	25,100	1,157,600	392,279	1,272,900	N/A	NHA TRANG ENVIRONMENTAL SANITATION PROJECT	WB	42,178	300.261 (up to 2020)	150						60,000	OD channel	N/A		N/A	865,088,684,400	865,088,684,400	N/A	Under Construction
47	NINH THUAN																										

Abbreviation and notes: *1. KfW ~ Reconstruction Credit Institute bank of Germany 2. WB ~ World Bank 3. ADB ~ Asian Development Bank 4. (*) Ha Tay province was combined into Hanoi city 5. AFD ~ Agency France Developent 6. DANIDA ~ Danish International Development Agency 7. PPC ~ Provincial People Committee 8. OECF ~ Overseas Economic Cooperation Fund*

No.	Province Name	City Name	Category (Ⅰ～Ⅴ)	Town Plan (Land Use)						Sewerage Plan (including construction on-going)																		
				Area (ha)		Present population (In the year 2009) (pers.)		Planned population 【2019】(pers.)		Project Name	Financial Source (Donor etc.)	Project Area (ha)	Planned Population (pers.)	Sewage Volume per capita (ℓ/pers./day)	Sewer Pipe Length (km)			Number of Pump Station	Number of House Connection	Sewage Amount to be Treated (m^3/day)	Treatment Method	Project Cost (VND)					Maintenance cost (VND/Year)	Construction Status Method
				Whole	Urban	Whole	Urban	Whole	Urban						Main Sewer	Luteral/ House connection.	Total					Sewer pipe cost (Main)	Sewer pipe cost (Luteral/H.c)	Pumping Station cost	WWTP cost	Total cost		
48	BINH THUAN																											
49	GIA LAI																											
50	KON TUM	Kon Tum (Town Ship)	III	968,960.00	43,298	430,100	143,467	534,900	N/A	KON TUM TOWN SHIP DRAINAGE SYSTEM AND WASTEWATER TREATMENT PLANT PROJECT	NORWAY	2,347	52,096	96	20.50	N/A	20.50	3	N/A	3,000	SBR	145,442,600,000	N/A	4,323,000,000	20,202,400,000	169,968,000,000	N/A	N/A
●																												
51	DAK LAK	Buon Ma Thuot	III	1,312,540	37,718	1,773,600	331,744	1,973,200	N/A	DAK LAK EXTENTION OF DRAINAGE, SEWERAGE NETWORK AND HOUSE HOLD WASTEWATER CONNECTION PROJECT	DANIDA	288	295,291	N/A	117.70	N/A	117.70	0	N/A	12,950		177,944,922,000	N/A	N/A	71,116,250,000	382,001,000,000	N/A	Under design work
52	LAM DONG	Da Lat	I	977,350	39,464	1,187,600	211696 (2011)	1,368,400		DA LAT DRAINAGE AND WASTEWATER TREATMENT COLLECTION PROJECT	WB	11,378	116.500 (up to 2020)		193.69	N/A	193.69	11	N/A	12,000		N/A		N/A	N/A	735,939,185,641		Under Design Work
53	DAK NONG																											
54	HO CHI MINH																											
55	BINH DUONG	Thu Dau Mot	III	269,440	N/A	1,491,600	153,400 (city center)	2,166,400	248,400 (city center)	SOUTHERN BINH DUONG WATER ENVIRONMENT IMPROVEMENT PROJECT - Phase II	JICA	1,911	97,400 (In 2018)	148 (city center) 128 (other area)	φ200 - φ800 : 46 km	φ110 & φ160: 120 km	166	11 manhole type: 5	14,692	to be treated STP constructed in Phase 1	-	1,936	1,399	251	-	N/A	3,586	Scheduled 2014-2017 (30 months), under Prequalification
56	BINH DUONG	Thuan An	III	269,440	11,887	1,491,600	244,277 (2012)	2,166,400	N/A	SOUTHERN BINH DUONG WATER ENVIRONMENT IMPROVEMENT PROJECT - Phase II	JICA	3,163	79,700 (In 2018)	128	φ225 - φ1200 : 86 km	φ110 & φ160: 88 km	170	10 manhole type: 2	16,330	17,000	SBR	1,021,136,363,636	232,727,272,727	38,636,363,636	523,181,818,182	1,815,681,818,181	1,815,681,818,181	Scheduled 2014-2017 (30 months), under Prequalification
●																												
57	BINH PHUOC																											
58	TAY NINH	Tay Ninh	III	403,970.00	13,965	1,066,500	127,878	1,167,200	N/A	Wastewater collection and treatment system project in Tay Ninh town – Tay Ninh province	ODA-Italy	2,523	104,876	70	45	N/A	45	4	N/A	6,000	OD channel	#REF!	N/A	2,847,424,379	46,390,523,132	#REF!	N/A	
●																												
59	DONG NAI	Bien Hoa	Ⅲ	9,966	3,635	615,000	421,000	2,980,000	N/A	DONG NAI WATER ENVIRONMENT IMPROVEMENT PROJECT	JICA LOAN	1,072	188,300 (In 2030)	132	φ500 -φ900 18.3Km	φ200~φ280 245.6km	263.9	2 manhole type:25	N/A	52,000	CAS or SBR	573,923,165,138	1,437,916,513,761	126,553,669,725	1,353,787,155,963	3,492,180,504,587	3,492,180,504,587	Scheduled 2013-2019 Dlaying
●								【2019】																				
60	VUNG TAU																											
61	LONG AN																											

Abbreviation and notes: *1. KfW ~ Reconstruction Credit Institute bank of Germany 2. WB ~ World Bank 3. ADB ~ Asian Development Bank 4. (*) Ha Tay province was combined into Hanoi city 5. AFD ~ Agency France Developent 6. DANIDA ~ Danish International Development Agency 7. PPC ~ Provincial People Committee 8. OECF ~ Overseas Economic Cooperation Fund*

No.	Province Name	City Name	Category (Ⅰ～Ⅴ)	Town Plan (Land Use)						Sewerage Plan (including construction on-going)																	
				Area (ha)		Present population (In the year 2009) (pers.)		Planned population 【2019】(pers.)		Project Name	Financial Source (Donor etc.)	Project Area (ha)	Planned Population (pers.)	Sewage Volume per capita (ℓ/pers./day)	Sewer Pipe Length (km)			Number of Pump Station	Number of House Connection	Sewage Amount to be Treated (m^3/day)	Treatment Method	Project Cost (VND)					Maintenance cost (VND/Year)	Construction Status Method
				Whole	Urban	Whole	Urban	Whole	Urban						Main Sewer	Luteral/ House connection.	Total					Sewer pipe cost (Main)	Sewer pipe cost (Luteral/H.c)	Pumping Station cost	WWTP cost	Total cost		
62	DONG THAP	Cao Lanh	III	337,700	10,700	1,666,500	161,292	1,762,100	N/A	CAO LANH CITY DRAINAGE, SEWERAGE AND WASTEWATER TREATMENT PROJECT	NORWAY	10,719	151,027	150	37	N/A	37	6	N/A	10,000	A2O	163,059,582,000		13,007,208,000	71,236,123,000	385,402,675,000	N/A	Under Design Work
63	TIEN GIANG	My Tho	II	250,830.00	7,980	1,672,300	215,541	1,755,200	N/A	MY THO CITY DRAINAGE, SEWERAGE AND WASTEWATER TREATMENT PROJECT	DANIDA				16	N/A	16	6	N/A	10,000	OD channel	173,746,293,000		13,158,200,000	85,393,820,000	367,675,000,000	N/A	
64	BEN TRE																										
65	AN GIANG	Long Xuyen	III	353,670	10,687	2,142,700	360000 (2011)	2,291,000	N/A	LONG XUYEN DRAINAGE AND WASTEWATER COLLECTION PROJECT	KOREA	14,238	128.200 (up to 2020)	100	95	N/A	95	11	N/A	20,000	OD channel	360,955,972,000		38,593,425,000	257,779,000,000	925,194,899,000	N/A	Under Design Work
66	CAN THO																										
67	VINH LONG																										
68	TRA VINH																										
69	KIEN GIANG	Phu Quoc	Ⅲ	58,915	13,923	90,671 (2009)	51820 (2009)	340,000 - 380,000	200,000 - 230,000	PREPARATORY SURVEY ON WATER SUPPLY AND SEWERAGE SYSTEM PROJECT IN PHU QUOC ISLAND IN THE SOCIALIST REPUBLIC OF VIETNAM PHASE- Ⅰ	JICA	1,632 (2020)	include sightseeing 435,000 (In 2030) Only domestic 96,411	Domestic:120 (2020, 2030) Tourist: 300 (2020), 300(2030)	L=18,246 18.25km	L=9,801 +31,365 =41,162m 41.16km	59.41	7 manhole type:27	N/A	include sightseeing 7,500 (in 2020)	CAS	516,757,027,027	N/A	110,000,000,000	684,459,459,459	1,311,216,486,486	21	Scheduled 2014-2017 (30 months), under Prequalification. Construction (schedule not fixed) Operation(2017(
●																										(Billion VND/Year, 2012 price)	
70	KIEN GIANG	Phu Quoc	Ⅲ	58,915	13,923	90,671 (2009)	51820 (2009)	340,000 - 380,000	200,000 - 230,000	PREPARATORY SURVEY ON WATER SUPPLY AND SEWERAGE SYSTEM PROJECT IN PHU QUOC ISLAND IN THE SOCIALIST REPUBLIC OF VIETNAM PHASE- Ⅱ	JICA	1,280(2030)	include sightseeing 435,000 (In 2030) Only domestic 96,411	Domestic:120 (2020, 2030) Tourist: 300 (2020), 300(2030)	L=24,037 24.04km	L=10,240+3,200 =13,440m 13.44km	37.48	3 manhole type:27	N/A	include sightseeing 30,000 Only domestic 13,358 (In 2030)	CAS	250,000,270,270	N/A	50,270,270,270	355,945,945,946	656,216,486,486	21	Scheduled -2019
●																										(Billion VND/Year, 2012 price)	
71	HAU GIANG																										
72	SOC TRANG																										
73	BAC LIEU																										
74	CA MAU																										

Appendix 2-1

QUESTIONNAIRE

FOR

THE TRAINING PROGRAM FOR IMPROVING THE CAPACITY OF SEWERAGE

IN VIETNAM

Prepared by JICA Survey Team

January 2014

To Sewerage Organization concerned

Questionees, which will be decided through consulting with Government of Vietnam.
(Draft)

Ministry of Construction
Department of Construction, Hanoi City
Department of Construction, Ho Chi Minh City

MOC, Ha Noi City and Ho Chi Minh City achieve significant roles of training program since not only basic theory but also experience and know-how are indispensable for practicable training.
The JICA Survey Team shall furnish general and specific information on the training program of sewerage in order to clarify the contents of the training program project and to consider the scope of cooperation.
Please answer in detail as much as possible in writing to the following questions, and provide available data and information requested herein for the sake of smooth implementation of the JICA Survey.

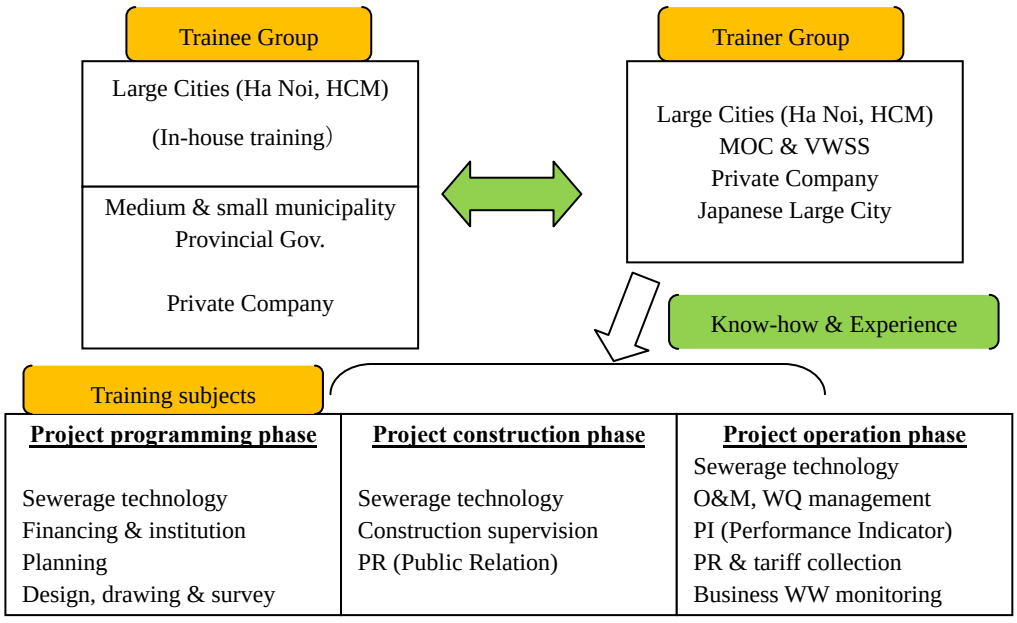


Fig. Task Force of Sewerage Training Program

1. General Information

1.1. Organization

(1) The latest organization chart with staff composition of each division, section and branch office

(2) Work contents of each division

(3) Budget and financial source

(4) Relation of each institution(MOC, Hanoi DOC and Ho Chi Minh DOC)

1.2. Staff training needs

(1) The records of staff training in last three years

a. Training programs of in-house, domestics and overseas

b. Number of trainees (managers, engineers and operators/office clerks/workers) by each training course

c. Budget for staff training

(2) Do you have trainers for staff training in your office? If you have, please describe their name and training course they teach, and records of staff training in your office.

(3) Your plan for staff training in the next year

(4) What types of training programs do you need such as basic theory of sewerage technology, workshop/seminar on hot topics, operation and maintenance skills, practices of sewerage engineering and practicable knowhow transfer on project implementation and operation?

Training manner	Priority
Basic theory of with class room style	
Workshop/seminar on hot topics	
Operation & maintenance skills for technician class	
Practices of sewerage engineering	
Practicable knowhow transfer on project implementation and operation	

(5) Do you think what kind of staff training is necessary for improving wastewater management and storm water drainage? Please describe your needs for staff training in detail according to your priority.

Training Subject	Priority
Sewerage Planning	
Sewer design and construction	
Sewer maintenance	
O&M of pumping station and WWTP	
Water quality management	
Industrial and business discharge management	
Storm water drainage and reuse	
Building construction approval	
Sewerage business management	
Public relation and tariff collection	
Project procedure and evaluation	

(6) In case the College of Urban Works Construction and/or the College of Construction No.2 establish the sewerage training course in collaboration with JICA, what kinds of training course do you want to participate?

1.3. Other donor's cooperation in capacity development

(1) German Government and other organization are working to improve the performance of water utilities by enhancing their managerial capacities; please describe the details of cooperation which is extending to you for enhancing managerial capacities and its progress

(2) Please describe the details of other donor's cooperation for capacity development, if you have.

2. Specific Information about sewerage

2.1. Sewerage and storm water drainage projects

(1) Please describe the outline of national development plan of urban drainage and wastewater treatment.

(2) Which issues on technologies and institution are to be solved for implementing national development plan?

2.2. Planning, design and construction skills of sewerage and storm water drainage system

(1) Are planning and design documents/drawings executed in-house or out-source?.

(2) Do you provide design manuals of sewer and drainage system?

(3) How do you examine pipe materials and equipments of domestic products?

(4) Do you provide wastewater pretreatment guideline for municipal/industrial wastewater discharge?

(5) How do you appraise house connection application and check the result of plumbing?

(6) Current issues and problems on planning, design and construction.

2.3. Operation and maintenance of sewerage facilities

(1) Do you provide facility information system (ledger of sewer, drain, pumping station and wastewater treatment plant). Please describe in detail as followings;
   a. Map/layout plan
   b. Individual sewer/equipment information of location, structure and maintenance record and
   c. Operation & maintenance record of equipments of wastewater treatment plant
   d. Customer information of house connection

(2) Do you provide facility operation and maintenance plan of day, week, month and year? What task force reviews facility operation and maintenance plan? And please describe followings;
   a. Record of clogging/failure of sewer in last three year
   b. Record of number of pipe repair in last three year
   c. Record of machinery repair of pump and screen in last three year
   d. Record of wastewater treatment performance in last three year

(3) How do you maintain dredger, truck and equipments of sewer inspection? Please describe list of principal machinery/equipment and job outline.

(4) How do you purchase spare parts? Please describe inventory list of spare part and expendables.

(5) How much budget is allocated to operation and maintenance? Please describe detailed cost of personnel, spare part/consumables and administration in last three years.

(6) What kind of problems do you have in operation and maintenance of sewerage and storm water facilities? Please describe the problems by facilities

(7) Do you think what kinds of technical assistance are useful for you to solve the problems? Please describe your opinions.

Facilities	Problems	Useful technical assistance
Sewer/house connection		
Storm water drainage		
Pumping station		
Wastewater Treatment Plant		

2.4. Water quality management

(1) Monitoring manuals of wastewater treatment plant, municipal/industrial wastewater discharge and water course

(2) Water sampling point, frequency of test and parameter of water quality test, and the latest water quality test records

(3) List of laboratory and its staff composition (number, level and specialty)

(4) List of available laboratory equipment for water quality analysis

(5) Current issues and problems on waste water quality examination which you encounter at present

2.5. Others

(1) Record of the guidance for citizens

a. Urban development planning

b. Industrial wastewater pretreatment

c. Public campaign

(2) In case of outsourcing, please describe the contractor, kinds of work and contract money.

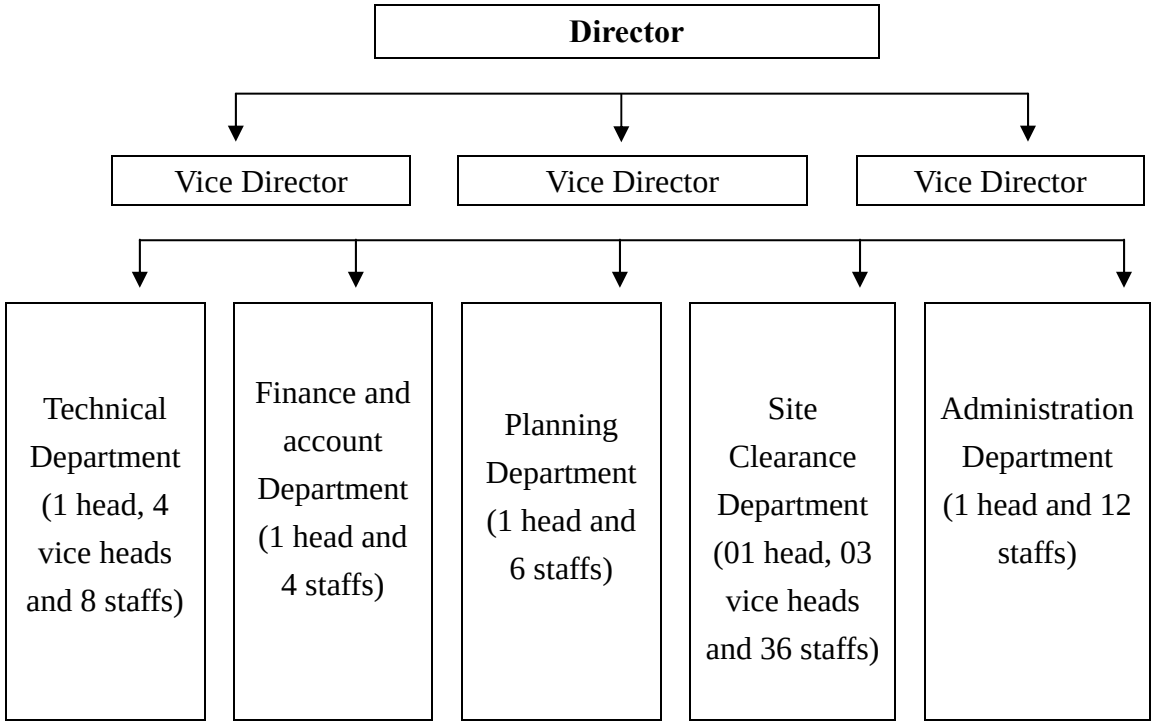
Appendix 2-2

Department of Construction, Hanoi City

1. General Information

1.1. Organization

(1) Organization chart of HSDPMB (PMB)



(2) Work contents of each division

Organization model of HSDPMB included: 1 director, 3 vice directors and 5 departments such as: Technical, finance and account, administration, planning and site clearance departments. Total staffs of PMB are 84 people.

Task of functional departments:

Administration department:

- Consult with the director board of PMB on personel arrangement, administration work, and public relation in order to serve for the policy purpose of PMB.
- Coordination with the related authorities and functional departments of PMB in order to well complete the assigned tasks.

Site clearance department:

- Consult with PMB's director board in the field of site clearance, resettlement of

Hanoi Drainage project and other projects which are implemented by PMB.

Planning department:

- Consult with PMB's director boards in the field of planning, investment monitoring, prequalification bidding.
- Management and consultant to Hanoi Drainage project – phase 2.
- Coordination with related authorities and functional task in order to well implemented assigned tasks.

Technical Department:

- Consult with PMB's director in the field of management of project implementation, construction items, management of quality of construction work, acceptance of works, handover and put the works into use with effective and high quality.
- Coordination with related authorities and functional departments to implement assigned work.

Finance and account department:

- Consult with PMB's director board on investment funds management and allocation of contract packages and also the internal expenditure of PMB in line with current regulations.

  Coordination with related authorities and functional departments to implement assigned work.

(3) Budget and financial source

HSDPMB is a unit which has income, legal status, own stamp and account in State treasury and al so it is responsible for bear all operation cost by itself.

Project management cost cited from project for payment in compliance with current regulations of the government.

(4) Relation of each institution(MOC, Hanoi DOC and Ho Chi Minh DOC)

HSDPMB is a unit which has income, legal status, own stamp and account in State treasury and al so it is responsible for bear all operation cost by itself.

Project management cost cited from project for payment in compliance with current regulations of the government.

1.2. Staff training needs

(1) The records of staff training in last three years

Year	Training program	Participants	budget
2011	- PPP training course - Advanced pipe jacking technology	04 01	Granted by JICA Granted by JICA
2012	Drainage and sewerage technology	01	Granted by JICA
2013	- Water environment management - Industrial wastewater treatment	01 01	Granted by Fukuoka Granted by JICA

(2) Do you have trainers for staff training in your office? If you have, please describe their name and training course they teach, and records of staff training in your office.

No

(3) Your plan for staff training in the next year

Yen Xa WWTP project is one of the key environment projects in Ha noi. Thus, in order to implement project effectively, PMB need to obtain a list of qualified staffs. The upcoming plan for enbhance capacity of management staffs serving for Yen Xa WWTP project as follows:

- Pipe jacking technology
- Experience on sewerage development planning
- Buil up frame contents and plan for sewerage works management
- Wastewater treatment technology and wastewater treatment system planning.

(4) What types of training programs do you need such as basic theory of sewerage technology, workshop/seminar on hot topics, operation and maintenance skills, practices of sewerage engineering and practicable knowhow transfer on project implementation and operation?

Training manner	Priority
Basic theory of with class room style	2
Workshop/seminar on hot topics	1

Operation & maintenance skills for technician class	4
Practices of sewerage engineering	3
Practicable knowhow transfer on project implementation and operation	5

(5) Do you think what kind of staff training is necessary for improving wastewater management and storm water drainage? Please describe your needs for staff training in detail according to your priority.

Training Subject	Priority
Sewerage Planning	2
Sewer design and construction	2
Sewer maintenance	2
O&M of pumping station and WWTP	5
Water quality management	4
Industrial and business discharge management	5
Storm water drainage and reuse	3
Building construction approval	5
Sewerage business management	1
Public relation and tariff collection	1
Project procedure and evaluation	5

(6) In case the College of Urban Works Construction and/or the College of Construction No.2 establish the sewerage training course in collaboration with JICA, what kinds of training course do you want to participate?

With the aim at enhancing capacity of PMB' staffs serving for Yen Xa WWTP project, PMB would like to focus on the following training courses:

- Pipe jacking technology
- Drainage and sewerage system
- Wastewater treatment technology
- Water environment management
- Wastewater treatment system technology

- Wastewater treatment system operation

1.3. Other donor's cooperation in capacity development (NONE)

(1) German Government and other organization are working to improve the performance of water utilities by enhancing their managerial capacities; please describe the details of cooperation which is extending to you for enhancing managerial capacities and its progress

(2) Please describe the details of other donor's cooperation for capacity development, if you have.

2. Specific Information about sewerage

2.1. Sewerage and storm water drainage projects

(a) *Study on drainage and urban wastewater treatment system in Hanoi (*"MP 1995") (Decision No. 430/1995/QD-TTg, with supporting from JICA in 1995, MP for drainage and wastewater treatment system towards 2010 was issued. This MP plays a role as the overview project map for *Hanoi drainage for environment improvement in Hanoi – Phase 1* (Project Phase 1) as well as *Hanoi drainage for environment improvement in Hanoi – Phase 2* (Project phase 2) with the use of Japanese ODA loan.

(b) *Revised MP for Hanoi Capital towards 2020* ("MP1998") (Decision No. 108/ 1998/QD-TTg) is a basic MP based on MP 1995 with additional of northern area of Red River delta. In this MP, 3 large scale-centralized WWTPs were proposed such as: Yen So, Yen Xa and Phu Do, in which Yen So WWTP has been constructed under BT method by Gamuda Berhad Corporation (Malaysia) and budget from HPC.

(c) *Comprehensive urban development program for Hanoi Capital* ("HAIDEP Study") is a MP of the Hanoi city planned by JICA's support in 2007. This study proposed 12 combined and separated sewerage systems as a part of urban development planning.

(d) *General plan for construction of Hanoi capital towards 2030 and vision to 2050 (*Hanoi vision 30/50) is the latest plan of Hanoi city which was prepared in 2010. This plan proposed land use values per capita for difference period and provide common orientation with sewerage development system, specifically is wastewater from urban areas is also collected by combined sewer while separated sewer shall be developed to new urban areas.

(e) *Drainage plan of Hanoi capital towards 2030, vision to 2050,* the latest special plan on drainage and wastewater treatment in Hanoi following MP Hanoi 30/50. This plan proposed 41 centrally-small scaled wastewater treatment plants in Hanoi including Yen Xa WWTP with remaining capacity. Drainage plan of Hanoi capital to 2030, vision to 2050 was approved by the Prime Minister at the Decision No. 725/QĐ-TTg dated 10/5/2013.

2.2. Planning, design and construction skills of sewerage and storm water drainage system

(1) Are planning and design documents/drawings executed in-house or out-source?.

Out source

(2) Do you provide design manuals of sewer and drainage system?

Yes

(3) How do you examine pipe materials and equipments of domestic products?

Before project implementation

(4) Do you provide wastewater pretreatment guideline for municipal/industrial wastewater discharge?

Yes

(5) How do you appraise house connection application and check the result of plumbing?

Monthly schedule or right after residents inform about the problem.

(6) Current issues and problems on planning, design and construction.

Current problems on planning, design and construction of HSDPMB are lacking experience on dealing with problems of underground sewer, constructing large scale WWTPs so sharing from the developed countries is necessary.

Questions from 2.3 to 2.5 focus on O&M work which is handed over to HSDC. Finance source for O&M work paid by HPC.

2.3. Operation and maintenance of sewerage facilities

(1) Do you provide facility information system (ledger of sewer, drain, pumping station and wastewater treatment plant). Please describe in detail as followings;

a. Map/layout plan

b. Individual sewer/equipment information of location, structure and maintenance record and

c. Operation & maintenance record of equipments of wastewater treatment plant
d. Customer information of house connection

(2) Do you provide facility operation and maintenance plan of day, week, month and year? What task force reviews facility operation and maintenance plan? And please describe followings;

a. Record of clogging/failure of sewer in last three year
b. Record of number of pipe repair in last three year
c. Record of machinery repair of pump and screen in last three year
d. Record of wastewater treatment performance in last three year

(3) How do you maintain dredger, truck and equipments of sewer inspection? Please describe list of principal machinery/equipment and job outline.

(4) How do you purchase spare parts? Please describe inventory list of spare part and expendables.

(5) How much budget is allocated to operation and maintenance? Please describe detailed cost of personnel, spare part/consumables and administration in last three years.

(6) What kind of problems do you have in operation and maintenance of sewerage and storm water facilities? Please describe the problems by facilities

(7) Do you think what kinds of technical assistance are useful for you to solve the problems? Please describe your opinions.

Facilities	Problems	Useful technical assistance
Sewer/house connection		
Storm water drainage		
Pumping station		
Wastewater Treatment Plant		

2.4. Water quality management

(1) Monitoring manuals of wastewater treatment plant, municipal/industrial wastewater discharge and water course

(2) Water sampling point, frequency of test and parameter of water quality test, and

the latest water quality test records

(3) List of laboratory and its staff composition (number, level and specialty)

(4) List of available laboratory equipment for water quality analysis

(5) Current issues and problems on waste water quality examination which you encounter at present

2.5. Others

(1) Record of the guidance for citizens

a. Urban development planning

b. Industrial wastewater pretreatment

c. Public campaign

(2) In case of outsourcing, please describe the contractor, kinds of work and contract money.

Appendix 3-1

	会社名	回答者情報	1．ベトナム国に対するビジネス展開の現状・計画 貴社のベトナム国におけるビジネスの状況を以下から選択してください。	（1）貴社がベトナム国にてビジネスを行っている技術、今後のビジネス展開を検討されている技術を以下から選択してください 1）ビジネス展開実施中	2）ビジネス展開予定	（2）貴社がベトナム国に展開されるビジネスの形態を以下から選択してください	（3）貴社ビジネスの取引先を以下から選択してください	（4）ベトナム国に事務所・関係会社を有していれば、住所・連絡先を記載ください。 1）事務所	2）関係会社	2．ベトナム国における水ビジネス展開支援策の利用状況 ① VietWaterでJETROの主催するJapan Booth	② Business Matching	参加された企業はその効果についてお答えください。	③ 日本政府の支援する普及事業等（JICA中小企業支援事業等）
1	愛知時計電機株式会社	名古屋市熱田区千年一丁目２番７０号 経営企画室 近藤邦彦 052-661-0567 ku-kondo@inet1.aichitokei.co.jp	ベトナム国にてビジネスを行っている	計測機器		機器の製造	民間企業(日本企業)	GERERA PRECISION VIETNAM CO.,LTD C3 Plot,C3-3 Factory,Trang Due Industrial Park,An Duong District,Hai Phong City +84(0)31290132		知っている	参加した	効果がなかった	実績有り
2	アズビル株式会社	アドバンスオートメーションカンパニー営業本部営業２部2Gr 鈴木秀幸 0466-52-7049 h.suzuki.fn@azbil.com	ベトナム国にてビジネスを行っている	計装 計測機器	計装 計測機器	機器の供給	民間会社(日本企業) 民間企業(ベトナム国企業)	Azbil Vietnam Co., Ltd. 11th flr,15 floors building,381 Doi Can street,Ba Dinh dist,Hanoi,Vietnam +84-4-6273-4641 Azbil Vietnam Co., Ltd. Hochiminh Branch 13th floor,Coteccons offfice Tower,236/6Dien Bien phu street,ward 17,Binh Thanh District,Ho Chi Minh City,Vietnam		知らない	参加していない		実績無し
3	エヌ・イー・ティ株式会社	兵庫県川西市向陽台3-6-216 代表取締役 小山登一郎	ベトナム国へのビジネス展開を検討中である(現在は行っていない)		下水処理場建設 水処理設備 汚泥処理設備	技術供与・コンサルティング 水処理用接触材バイオフリンジ	ベトナム国内地方公共団体・公社 民間会社(日本企業) 民間企業(ベトナム国企業)				参加した	効果がなかった	実績無し
4	機動建設工業株式会社	大阪市福島区福島４丁目６番３１号 社長室 刈谷光男 03-5289-4773 mi.kariya@kidoh.co.jp	ベトナム国へのビジネス展開を検討中である(現在は行っていない)		管路建設	建設工事受託 技術供与・コンサルティング	民間会社(日本企業) 民間企業(ベトナム国企業)			知っている	参加していない		実績有り
5	株式会社グッドマン	神奈川県横浜市金沢区六浦東2-3-3 営業部 大塚奈穂子 045-701-5680 inuzuka@info-inc.co.jp	海外ビジネス展開において、ベトナム国は対象としていない							知らない	参加していない		実績有り
6	国産ラセン管株式会社	横浜市港北区日吉6-10-23 営業部 大津将芳 045-560-6321 ootsu-m@kokusanrasenkan.jp	ベトナム国へのビジネス展開を検討中である(現在は行っていない)							知らない		効果がなかった	実績有り
7	五洋建設株式会社	横浜市中区山下町23 横浜営業支店 谷川純一 045-220-4610 junichi.tanigawa@mail.penta-ocean.co.jp	ベトナム国にてビジネスを行っている	港湾建設土木工事・浚渫工事・工場等建設工事	港湾建設土木工事・浚渫工事・工場等建設工事 その他案件は主軸を置く上記工事等との関係・ファンドの状況等を勘案して検討	建設工事受託	ベトナム国内地方公共団体・公社 民間企業(日本企業)	五洋建設株式会社　ベトナム営業所 4th Floor,VNA8 Building 18 Tran Hung Dao St.,Hoan Kiem Dist.,Hanoi		知っている	参加していない		
8	JFEエンジニアリング株式会社	神奈川県横浜市鶴見区末広町2-1 海外本部東南アジア事業部 営業統括部 高橋元 045-505-7845 takahashi-gen@jfe-eng.co.jp	ベトナム国にてビジネスを行っている	駐在事務所にて情報収集	下水処理場建設 水処理施設 汚泥処理設備 計装 維持管理 計測機器 薬品類	建設工事受託 O&M受託 機器の供給 技術供与・コンサルティング 水ビジネス投資	ベトナム国内地方公共団体・公社 民間企業(日本企業) 民間会社(ベトナム国企業) 日本/ベトナム国以外の民間企業	JFE Engineering Corporation Ho Chi Minh Office Room2002,20th Floor,Sun Wah Tower,115 Nguyen Hue Bivd,Dist, 1,HCMC +84-8-3827-8800 Ubit 13-03 Prime Centere,53 Quang Trung Street,Hai Ba Trung District,Hanoi +84-4-3944-9725	JFE Steel Vietnam Co., Ltd. Unit 1401,14th Floor,Kumho Asiana Plaza,39 Le Duan Street,Dist 1,HCMC +84-8-3825-8576 グループ会社のベトナム現地法人 JFE SHOJI TRADE VIETNAM Co.,LTD. Saigon Trade Center,Unit No.1112 37 Ton Duc Thang St.,Dist1,Ho Chi Minh City +84-8-3910-1002 グループ会社のベトナム現地法人	知っている	参加していない		実績無し
9	重田建設企業株式会社	横浜市都筑区荏田南１丁目２番地 代表取締役 重田　茂 045-941-6538 shigetakennsetu@almond.ocn.ne.jp								知らない	参加していない		実績無し
10	水道テクニカルサービス株式会社	横浜市旭区二俣川1-45-87 高和ビル1F 代表取締役 大島　健司 045-360-9220 ooshoma@suidou-tec.co.jp	ベトナム国にてビジネスを行っている	漏水調査業務を生体とした無収水対策		横浜水道局との草の根協力 H25～	(2)との係り・横浜市水道局を通して			知らない	参加していない		実績有り
11	水ing株式会社	東京都港区港南1-7-18 海外事業本部　海外営業統括　海外プラント営業室 松本直秀 050-3482-8465 matsumoto.naohide@swing.com	ベトナム国にてビジネスを行っている	下水処理場建設 水処理施設 汚泥処理設備 計装 維持管理	管路建設 下水処理場建設 水処理設備 汚泥処理設備 計装 維持管理 計測機器 薬品類 顧客・施設情報	建設工事受託 O&M受託 機器の供給 技術供与・コンサルティング 水ビジネス投資	ベトナム国内地方公共団体・公社 民間企業(日本企業)		Swing Water Vietnam Corporation 13th Floor,Tung Shing Square,2 Ngo Quyen Street,Hoan Kiem District,Hanoi City,Vietnam 84-4-3934-9601 子会社	知っている	参加した	効果があった	実績無し

	会社名	回答者情報	1．ベトナム国に対するビジネス展開の現状・計画 貴社のベトナム国におけるビジネスの状況を以下から選択してください。	（1）貴社がベトナム国にてビジネスを行っている技術、今後のビジネス展開を検討されている技術を以下から選択してください 1）ビジネス展開実施中	2）ビジネス展開予定	（2）貴社がベトナム国に展開されるビジネスの形態を以下から選択してください	（3）貴社ビジネスの取引先を以下から選択してください	（4）ベトナム国に事務所・関係会社を有していれば、住所・連絡先を記載ください。 1）事務所	2）関係会社	2．ベトナム国における水ビジネス展開支援策の利用状況 ① VietWaterでJETROの主催するJapan Booth	② Business Matching	参加された企業はその効果についてお答えください。	③ 日本政府の支援する普及事業等（JICA中小企業支援事業等）
12	大成建設株式会社	横浜市西区みなとみらい3-6-3 横浜支店　営業部 有川徹 045-227-5950 arikawa@ce.taisei.co.jp	ベトナム国にてビジネスを行っている	空港、高速道路、鉄道工事（橋梁）、現地法人有	地下鉄、高速鉄道、トンネル、開発	建設工事受託	ベトナム国内地方公共団体・公社 民間企業(日本企業) 省庁	ハノイ事務所 289 Khuat Duy Tien Road,Trung Hoa Ward,Cau Giay District,Hanoi,S.R.VIETNAM (ハノイオフィス)84-4-3553-5032,5033 ホーチミン事務所 VIETNAM CHAMBER OF COMMERCE AND INDUSTRY,Hochiminh City Branch Building 7th FL,171 Vo Thi Sau At.,Ward7,District-3,Hochiminh City,S.R.VIETNAM (ホーチミン)84-8-3932-1759	ビナタ・インターナショナル(VINATA INTERNATIONAL J/V LTD.CO.) 84-4-3553-3839,-840 子会社	知らない	参加していない		実績無し
13	月島機械株式会社	東京都中央区晴海３－５－１ 海外水インフラ室 高橋正純 03-5560-6583 m_takahashi@tsk-g.co.jp	ベトナム国にてビジネスを行っている	水処理設備 製糖機器納入	下水処理場建設 水処理設備 汚泥処理設備 維持管理	建設工事受託 機器の供給 水ビジネス投資	ベトナム国内地方公共団体・公社 民間会社（日本企業） 民間会社（ベトナム国企業）	ハノイ駐在員事務所 HANOI REPRESENTATIVE OFFICE Unit 13-03A, Prime Centre, 53 Quang Trung Street, Hai Ba Trung District, Hanoi, Viet Nam TEL：+84-(0)4-3766-9965/9967/9968		知っている	参加した	効果不明	今後、応募したい
14	帝人株式会社	千代田区霞が関3-2-1 WPT事業推進班 野呂篤 03-3506-4593 a.noro@teijin.co.jp	ベトナム国へのビジネス展開を検討中である(現在は行っていない)		水処理設備	機器の供給				知っている	今後、参加する		今後、応募したい
15	株式会社トーエル	横浜市港北区高田西1-5-21 管理部門長 山中正幸 045-592-7777 k-kikaku[toell.co.jp	ベトナム国へのビジネス展開を検討中である(現在は行っていない)		ボトルウォーターの輸出	日本の水の輸出	民間企業(ベトナム国企業)			知らない	今後、参加する		実績無し
16	株式会社西原環境	事業統括本部 月橋伸夫 03-3455-3606 nobuo_ttsukihashi@nishihara.co.jp	ベトナム国へのビジネス展開を検討中である(現在は行っていない)							知らない	参加していない		実績無し
17	日之出産業株式会社	取締役 藤田香 045-507-3031 k-fujita@hinodesanngyo.com	ベトナム国へのビジネス展開を検討中である(現在は行っていない)	水処理設備 薬品類 水処理技術提供	水処理設備 薬品類	技術供与・コンサルティング	ベトナム国内地方公共団体・公社 民間企業(日本企業) 民間企業(ブラジル国企業)			知っている	参加していない		今後応募したい
18	三井住友建設株式会社	国際支店　土木営業部 中野数也 03-4582-3173 KazuyaNakano@amcon.co.jp	ベトナム国にてビジネスを行っている		管路建設 下水処理場建設 水処理設備	建設工事受託	ベトナム国内地方公共団体・公社 民間会社(日本企業) 民間会社(ベトナム国企業)	ハノイ事務所 17-21 FL.,BLDG GROUP No.4 HACINCO STUDENT'S VILLAGE,NGUY NHU KON TUM RD.NHAN CHINH WRD,THANH XUAN HANOI 04-3942-8888		知っている	参加していない		実績無し
19	三菱化工機株式会社	神奈川県横浜市旭区白銀４丁目２８番２号-101 横浜営業出張所 奈良晃昌 045-958-2923 nara@kakoki.co.jp	海外ビジネス展開において、ベトナム国は対象としていない										
20	三菱電機株式会社	神奈川支社 横浜市西区みなとみらい2-2-1 社会システム部社会システム第一課 富岡飛 045-224-2607 Tomioka.Takashi@dx.MitubishiElectric.co.jp	ベトナム国へのビジネス展開を検討中である(現在は行っていない)		上下水プラントにおける電気設備およびオゾナイザー	機器の供給				知っている	参加していない		実績無し
21	三菱レイヨン株式会社	千代田区丸の内1-1-1 メンブレン部 堀内大光 090-8580-1510 horiuti_fu@mrc.co.jp	ベトナム国にてビジネスを行っている	水処理設備		機器の供給	ベトナム国内地方公共団体・公社 民間企業(日本企業) 民間企業(ブラジル国企業)			知らない	参加していない		今後応募したい

	会社名	回答者情報	1．ベトナム国に対するビジネス展開の現状・計画 貴社のベトナム国におけるビジネスの状況を以下から選択してください。	（1）貴社がベトナム国にてビジネスを行っている技術、今後のビジネス展開を検討されている技術を以下から選択してください 1）ビジネス展開実施中	2）ビジネス展開予定	（2）貴社がベトナム国に展開されるビジネスの形態を以下から選択してください	（3）貴社ビジネスの取引先を以下から選択してください	（4）ベトナム国に事務所・関係会社を有していれば、住所・連絡先を記載ください。 1）事務所	2）関係会社	2．ベトナム国における水ビジネス展開支援策の利用状況 ① VietWaterでJETROの主催するJapan Booth	② Business Matching	参加された企業はその効果についてお答えください。	③ 日本政府の支援する普及事業等（JICA中小企業支援事業等）
22	メタウォーター株式会社	東京都千代田区神田須田町1-25　JR神田万世橋ビル 海外事業部　海外営業部 木本　孝司 03-6853-7343 kimoto-takashi@metawater.co.jp	ベトナム国にてビジネスを行っている	共同研究				ハノイ駐在員事務所 #701VIT Tower,519 Kim Ma Street,Ba Dinh Distrist,Hanoi +84-4-2220-8770		知っている	参加した	効果不明	実績無し
23	ヤスダエンジニアリング株式会社	大阪市浪速区塩草3-2-26 専務取締役　海外事業部長 安田一成 06-6561-5788 k_yasuda@yasuda-eng.co.jp	ベトナム国にてビジネスを行っている	管路建設 コンクリート製品の製造及び販売	汚泥処理設備	建設工事受託 機器の供給 技術供与・コンサルティング				知らない	参加していない		今後応募したい
24	横河ソリューションサービス株式会社	東京都武蔵野市中町2-9-32 環境システム営業本部　グローバル推進部 千葉昌広 0422-52-6701 Masahiro.Chiba@jp.yokogawa.com	ベトナム国へのビジネス展開を検討中である(現在は行っていない)		計装	機器の供給	民間企業(日本企業)			知っている			実績無し

			３．ベトナム国展開時の資金調達について							４．その他、要望・課題等
		④ 行政機関への支援方策の要望（政府間パネルの採択技術、財政支援、機材供与等）	（１）貴社が（ベトナム国を含む）外国に既に進出している場合には、資金調達方法、本邦公的機関・本邦金融機関からの資金面以外でのサポート内容（もしあれば）について記載してください	（２）ベトナム国でビジネスを行う際の資金調達方法について以下から選択してください	（３）資金調達に関して課題と捉えている事項について記載してください	（４）ベトナム国でビジネスを行う企業が利用できる水ファンドの創設について本調査にて検討しています。水ファンドに対して期待する事項、希望する条件等について記載してください。			（５）本邦地域金融機関に期待する事項について記載してください	その他要望・課題等がありましたら、下欄に記載してください。
	会社名					運転資金等の融資：	水ファンドからの信用保	（希望するファンドの条		
1	愛知時計電機株式会社		本邦金融機関からの借り入れ	本邦金融機関借り入れ		期待しない	期待しない			
2	アズビル株式会社		資本金、運転資金に関しては、自社(本社)資金活用。		ベトナム国内の金融機関から資金調達をする場合、現地通貨VNDでの調達となり、ベトナム国垣外の取引が有る場合、調達した資金に為替リスクが発生する。	期待しない	期待する	ベトナム企業は支払いに問題が有るケースが多く、代金回収リスクが非常に高い。水ファンド若しくは銀行から実施者に関する支払い信用保証があると非常に良いと思う。		
3	エヌ・イー・ティ株式会社	弊社は、材メーカーであり、PE(パートナーEng)とのタイアップが必要。		自己資金	個人企業にとって、政府民間共、資金調達は難しい。	期待する	期待する			
4	機動建設工業株式会社	本邦技術を用いた水プロジェクトの確立の為の協力(技術プレゼン、財政支援)		自己資金 本邦金融機関借り入れ	１件のプロジェクト規模に対して、達成可能資金が過小。	期待する	期待する			
5	株式会社グッドマン	国内にない漏水探索技術を必要とする途上国の技術開発に伴う、国内における開発支援の要望。具体策に関してはパネルディスカッションも可能。								前述の通りです
6	国産ラセン管株式会社									ベトナム現地にて未活動のため今後の展開は現段階において未定です
7	五洋建設株式会社		日本本国からの資金送金並びにベトナム国内での受領の工事代金	自己資金 JBIC等の本邦公的資金	為替レートの回避。（調達資金通貨と実支払通貨の差異による）					
8	JFEエンジニアリング株式会社	・円借款予算のフレキシブルな運用 (PPP案件での円借款による施設設備等) ・低収益公共事業(PPP案件)への低金利融資(円借款事業並みの低金利)	・各国現地法人の資金調達:原則として親会社(本社)からの直接投資/融資 ・公的機関からのサポート:JICA/JETRO等との情報交換 ・金融機関からのサポート:口座開設等以外、特になし	自己資金 JBIC等の本邦公的資金 本邦金融機関借り入れ	・為替リスク ・高金利(VND建)	期待する	期待する	・VND建/長期固定/低金利 ・プロジェクトファイナンス ・他ファイナンス (JICA, JBIC等)との併用可 ・そもそも低収益事業に相対する民間ファンドが創設可能か		
9	重田建設企業株式会社									
10	水道テクニカルサービス株式会社									
11	水ing株式会社			自己資金		期待する	期待する			

			3．ベトナム国展開時の資金調達について							4．その他、要望・課題等
		④ 行政機関への支援方策の要望（政府間パネルの採択技術、財政支援、機材供与等）	（1）貴社が（ベトナム国を含む）外国に既に進出している場合には、資金調達方法、本邦公的機関・本邦金融機関からの資金面以外でのサポート内容（もしあれば）について記載してください	（2）ベトナム国でビジネスを行う際の資金調達方法について以下から選択してください	（3）資金調達に関して課題と捉えている事項について記載してください	（4）ベトナム国でビジネスを行う企業が利用できる水ファンドの創設について本調査にて検討しています。水ファンドに対して期待する事項、希望する条件等について記載してください。			（5）本邦地域金融機関に期待する事項について記載してください	その他要望・課題等がありましたら、下欄に記載してください。
	会社名					運転資金等の融資：	水ファンドからの信用保	（希望するファンドの条		
12	大成建設株式会社		自己資金のみ	自己資金	主たる事業は請負業なので、工事契約内の前渡金の増額交渉、施工中の部分払い早期受領を念頭に本部からの送金を如何に少なくするかが課題。					
13	月島機械株式会社	円借案件における日本タイドの適用拡大（STEP、無償等） 技術標準化、安定運転のための機器・プロセス品質管理・仕様の指導 最終処分まで責任をもった処理、回収、再利用実施の指導	既に納入した設備や機器は民間企業向け、及び日系民間企業経由のものであり、資金調達は納入先企業にて調達しています。	自己資金 JBIC等の本邦公的資金 本邦金融機関借り入れ	適用範囲 金利（特にベトナム国金融機関の高金利） 為替変動	期待する	期待する	環境等の低収益事業領域への戦略的供給 同上におけるリスクの引き受け	環境等の低収益事業領域への戦略的供給と要件緩和 同上におけるリスクの引き受け JICA、JBIC等との連携強化	
14	帝人株式会社	・プロジェクト形成のみならず、円滑な遂行のためにも、日本の政府/自治体による、相手国政府/自治体経由でのCounterpartとの関係作り・維持への強力なバックアップが必要と考える。 ・日本側による財政支援だけでなく、相手国の資金源開発についても、日本の政府/自治体の支援が必要と		JBIC等の本邦公的資金	維持費の安定的な調達					
15	株式会社トーエル			自己資金		期待しない	期待しない			
16	株式会社西原環境			自己資金	機器供給を前提としており特になし					
17	日之出産業株式会社	私達中小企業はベトナム国における現地への参加はなかなか困難であると感じている。民間企業の水処理分野での薬剤および技術コンサル等の業務を現在のところ目標としており当面の課題は国内企業の海外進出に関して薬剤等の提供や業務契約の一部での参加意向がある。 他社とのコラボレーションまたインターンシップの受け入れによる教育面での支援は行いたい。								私達中小企業はベトナム国における現地への参加はなかなか困難であると感じている。民間企業の水処理分野での薬剤および技術コンサル等の業務を現在のところ目標としており当面の課題は国内企業の海外進出に関して薬剤等の提供や業務契約の一部での参加意向がある。
18	三井住友建設株式会社	ステップ円借款案件としての採択。	資金は自己資金とし、その原資は国内外他工事の余剰金、および国内での邦貨建て短期借入金である。資金面以外では、入札、履行、前渡金返還、保留金解除保障の発行、輸入L/Cの発行、為替予約の手配において本邦金融機関からのサポートを受けている。	自己資金 本邦金融機関借り入れ	第三国通貨(USD)調達が相当量に上がり、邦貨(JPY)の２通貨建てで受領する工事代金とのミスマッチが常に生じ、為替リスクを施工者が抱え込む構図が払拭できない。 ２通貨に限定せず、円借款案件においてもっと支払通貨について柔軟に認めていただきたい。	期待する	期待する		与信評価の現地化をすすめていただきたい。	
19	三菱化工機株式会社									
20	三菱電機株式会社			自己資金		期待しない	期待しない			
21	三菱レイヨン株式会社									

			３．ベトナム国展開時の資金調達について							４．その他、要望・課題等
		④ 行政機関への支援方策の要望（政府間パネルの採択技術、財政支援、機材供与等）	（１）貴社が（ベトナム国を含む）外国に既に進出している場合には、資金調達方法、本邦公的機関・本邦金融機関からの資金面以外でのサポート内容（もしあれば）について記載してください	（２）ベトナム国でビジネスを行う際の資金調達方法について以下から選択してください	（３）資金調達に関して課題と捉えている事項について記載してください	（４）ベトナム国でビジネスを行う企業が利用できる水ファンドの創設について本調査にて検討しています。水ファンドに対して期待する事項、希望する条件等について記載してください。			（５）本邦地域金融機関に期待する事項について記載してください	その他要望・課題等がありましたら、下欄に記載してください。
	会社名					運転資金等の融資：	水ファンドからの信用保	（希望するファンドの条		
22	メタウォーター株式会社	案件形成支援を強く求めたい ・水道事業権の取得支援 (GtoG対話、交渉) ・アンソリシテッドの案件に対する優先交渉権の獲得 ・事業権獲得した場合のODA(無償・有償)によるサポート ・ODA案件後のO&M実施の事業権獲得 ODA案件の本邦企業取得支援 ・STEP化、本邦技術のスペックイン ・LCC評価型、O&Mパッケージ型案件の形成 ・サブソブリン案件への直接貸与推進	PPP案件を検討中に、民間バンク目線での事業性、リスク評価を頂き、大変参考になった。	自己資金 JBIC等の本邦公的資金 ベトナム国金融機関借り入れ(邦銀現地含む)	PPPや事業権を取得しての水ビジネスの展開には、譲許性の高い資金援助が不可欠と考えている。中でもJICA海外投融資に対する期待は大きい。制度的にまだ民間にとっては使いにくい物であり、踏み込んだ制度設計が必要と感じる。具体的には、SPCへの直接融資、ローカルカレンシーによる貸与の実現、更にはエクイティでのSPCへの参加を期待する。	期待する	期待する	①キャッシュフロー資金として 水ビジネスにおけるPPPやBOT案件は、立ち上げ数年間は水量が低い可能性がある。その際のキャッシュフロー確保のために無利子(低利)、無担保で融資願いたい。 ②ホスト国向けVGF資金 PPP事業において、ホスト国の公社等にバルクで買い取る(上水)、水量保障(下水)などの条件をつける。この際の資金供給として、ホスト国に低利で貸す。 これをJICA無償のセクターローンでやって貰えるとすばらしい。	ローカルカレンシーでの融資 円－ローカルの為替、為替予約 地場銀行との協調融資 情報収集、優良案件の目利き	
23	ヤスダエンジニアリング株式会社	日本では主に公共事業(下水道整備)は国や自治体が行っている。なのでそのノウハウは国や自治体が所有している。わが社は推進工事の専門業者なので、施工の技術は有するが、基本的な下水道整備の概要や規格、基準、設計指針、歩掛など相手国に対してそのノウハウを提供して頂きたい。	国内の取引先金融機関から調達	自己資金 本邦金融機関借り入れ	わが社は技術力には自信があるが、中小企業である。なので海外で投資をする場合、それに対しての借り入れが思うようにいかない。なので、公的機関から支援をして頂ければ非常にありがたい。	期待する	期待する	ベトナム国でのインフラ整備は、かなり長期的な計画になるであろう。なので明確な企画、運営、責任などが必要であると思う。	地金の取引先は中小企業がメインである。その中小企業は、これから海外進出を考えているだろう。なので、地金もその取引先である中小企業に対して積極的に融資を行う必要がある。また同業他社、ライバル会社などが、海外進出に対してパートナーを組んでいくという構図を行えば、リスクの回避につながるであろう。そこを金融機関がそのような発想を持ち、取引先に提案をしていけば良いのでないか。	
24	横河ソリューションサービス株式会社									

Appendix 3-2

＜企業会員＞

			1-1	1-2-1											1-2-2											1-3							1-4								1-5															1-6				
			1．ベトナム国に対するビジネス展開の現状・計画																																																									
		回答者情報	（１）貴社のベトナム国におけるビジネスの状況を以下から選択してください。	（２）貴社がベトナム国にてビジネスを行っている技術、今後のビジネス展開を検討されている技術を以下から選択してください																						（３）貴社がベトナム国に展開されるビジネスの形態を以下から選択してください							（４）貴社ビジネスの取引先を以下から選択してください								（５）貴社がベトナム国での展開を検討するに当たって直面している課題のうち、特に重要度が高いと感じていらっしゃるものについて、以下から上位3つまで選択してください。															（６）貴社ビジネスの取引先を以下から選択してください				
				1）ビジネス展開実施中											2）ビジネス展開予定																																													
ID	会社名			1	2	3	4	5	6	7	8	9	10	意見	1	2	3	4	5	6	7	8	9	10	意見	1	2	3	4	5	6	意見	1	2	3	4	5	6	7	意見	1	2	3	4	5	6	7	8	9	10	11	12	13	14	意見	1	2	3	4	意見
1	アイコムソフト株式会社	ソリューション第１システム部/久鍋　保	海外ビジネス展開において、ベトナム国は対象としていない																																																								
3	アイム電機工業	小野隆二郎	ベトナム国にてビジネスを行っている		1	1																						1						1	1	1						1				1				1								1		
4	芦森工業株式会社	パルテム営業部/北川英二	海外ビジネス展開において、ベトナム国は対象としていない																																																								
7	麻生商事株式会社	社会インフラ部土木一課/田中善洋	ベトナム国へのビジネス展開を検討中である												1														1				1											1				1		1						1		1		
9	株式会社いしかわエンジニアリング	黒崎事業所/佐伯直哉	海外ビジネス展開において、ベトナム国は対象としていない																																																								
20	株式会社環境開発	北九州支店/山形五代次	ベトナム国へのビジネス展開を検討中である																	1						1			1				1											1		1				1										
27	九州機電株式会社	施設部/窪田忠雄	ベトナム国へのビジネス展開を検討中である																					1	ポンプ、ホイスト等産業機械			1						1																				1	日本国内プラントメーカーへの営業活動		1			
30	協和機電工業株式会社	常務取締役 水処理システム本部本部長/中ノ瀬正敏	ベトナム国へのビジネス展開を検討中である														1							1	製缶、機械類及び電気制御盤の調達			1	1		1	資材調達	1						1	進出している日系企業へのサービスの提供		1						1				1					1			
35	株式会社ケイ・イー・エス	北九州支店/徳永和夫	ベトナム国へのビジネス展開を検討中である																	1							1						1					1					1	1									1			1		1		
43	三勝電機株式会社	営業/磯貝康信	海外ビジネス展開において、ベトナム国は対象としていない																																																								
46	ＪＦＥアドバンテック株式会社	九州支店 水環境事業部 九州営業グループ/田村勝善	ベトナム国にてビジネスを行っている							1											1							1							1							1	1			1										1		1		
47	株式会社ジェネック	物流営業開発グループ/加来太一	ベトナム国へのビジネス展開を検討中である																					1	国際一貫輸送サービス						1	国際一貫輸送サービス												1		1						1					1	1		
50	白石鉄工株式会社	営業部/徳島和久	海外ビジネス展開において、ベトナム国は対象としていない																																																								

＜企業会員＞　　2-1　2-2-1　2-2-2　2-3　3-2　3-4-1　3-4-2

ID	会社名	（７）ベトナム国に事務所・関係会社を有していれば、住所・連絡先を記載ください。		２．ベトナム国における水ビジネス展開支援策の利用状況					３．ベトナム国展開時の資金調達について									４．その他、要望・課題等（Business Matching等）
		１）事務所	２）関係会社	①VietWaterでJETROの主催するJapan Booth	②Business Matching	参加された企業はその効果についてお答えください。	③ 日本政府の支援する普及事業等（JICA中小企業支援事業等）	④ 行政機関への支援方策の要望（政府間パネルの採択技術、財政支援、機材供与等）	（１）貴社が（ベトナム国を含む）外国に既に進出している場合には、資金調達方法、本邦公的機関・本邦金融機関からの資金面以外でのサポート内容（もしあれば）について記	（２）ベトナム国でビジネスを行う際の資金調達方法について以下から選択してください） 自	J	本	ベ	（３）資金調達に関して課題と捉えている事項について記載してください	（４）ベトナム国でビジネスを行う企業が利用できる水ファンドの創設について本調査にて検討しています。水ファンドに対して期待する事項、希望する条件等について記載してください。 運転資金等の融資：	水ファンドからの信用保証：	（希望するファンドの条件）	（５）本邦地域金融機関に期待する事項について記載してください	その他要望・課題等があればご記載してください。
1	アイコムソフト株式会社																	
3	アイム電機工業			知っている	参加していない		実績無し	現地でのサポート ローカル企業の調査 市場調査 など	香港⇒独資（自己資金） 情報収集支援 タイ⇒合弁（自己資金） 特になし	1				特になし	期待しない	期待しない	活用方法が今のところ良く理解を出来ていない。	現地における情報交換、相談などが可能であることを望む。	ベトナムを含め海外展開は、基本的には現地企業と協業してローカル企業をターゲットに市場開拓（製品供給）を進めているが、現地だけでは入ってこない案件情報、プロジェクトなどを 収集できるアンテナが増えることを期待する。 ビジネスマッチングの機会があれば参加の検討をしていきたい。
4	芦森工業株式会社			知らない	参加していない		実績無し	現在は特にありません。											現在は特にありません。
7	麻生商事株式会社			知っている	参加した	効果がなかった	実績無し				1	1			期待する	期待する			
9	株式会社いしかわエンジニアリング			知っている	参加していない		実績有り	JICA様と北九州市様の支援によりインドネシアスラバヤにて事業調査が出来ることとなりました。	まだFSの段階なので、そこまで問題点は発生しておりません。										当社といたしましては、インドネシアのスラバヤ市での飲料水供給事業に全力を傾注する次第です。その後の展開につきましては、様々な地域が考えられますので、ベトナムやカンボジアの話は魅力ある場所だと感じております。今後ともご指導宜しくお願い致します。
20	株式会社環境開発			知っている	参加していない		実績無し	ベトナム等海外へのビジネスについて検討しているが、情報不足や施工機材の輸出等に問題があり、今のところ実現は困難な状態であるが将来を見据え、今後の展開に生かすようセミナー等に参加し他社との意見交換を数多く行いたい						２－④の通り 今後の課題	期待する	期待する			
27	九州機電株式会社	現在ありません	現在ありません	知らない	参加していない				当社扱い製品は日本国内プラントメーカーへの販売が主となる為、特にかんがえていません。以下(1)～(5)同じです。										日立製品特約店の為、日本国内プラントメーカーへの機器売りとなります。今のところ直接ベトナムにおいての活動は考えていません。今後の展開において検討している段階です。
30	協和機電工業株式会社		日立製作所(HITACHI Ltd/Hanoi Representative Office) 12A01, Viglacera Tower, Vietnam (84)904-851-405 日本国内での取引業社	知らない	参加した	効果不明	今後、応募したい	JICAの中小企業支援事業の水に関する事業計画を増やしてほしい。 大変案件でなく、中小企業が対応可能な案件をお願いしたい。		1	1	1		中国への進出は現在自己資金で行っているので、今後ベトナムへの進出を考えるとした場合、JBIC等の検討を行いたい。 よって、まだ、そのような検討はやっておりません。						弊社としては、大きなプラント会社に比較した場合、エンジニアリング力、施工力については、それなりに持っているつもりですが、ベトナムでの経験がない為、又、資本力についても弱いので、ベトナムに進出されている自治体様、企業を紹介していただき、ご一緒に仕事が出来るチャンスが無いかを検討したいので、是非そのような機会がありましたらご紹介ください。
35	株式会社ケイ・イー・エス			知っている	参加していない		実績無し	積極的なODA支援による、ビジネスチャンスの情報		1	1	1		検討まで至っていない。	期待する	期待する	検討まで至っていない。	検討まで至っていない。	弊社は主に、上下水道関係のO&Mの仕事に従事しているため、自社製造製品等は持っていない。 その為、上下水道施設に対して、官・メーカー等とDBOなどで参画できないか模索中である。 また、現地上下水道O&Mに特化した人材育成等でのビジネス参入ができないか検討中である。 ただ、ソフト面での参入は知的財産の流出などリスクも大きいと考えられ、継続的ビジネスが成り立つかどうか課題だと思っている。
43	三勝電機株式会社																	
46	ＪＦＥアドバンテック株式会社			知っている	参加していない		実績無し	・相手国自治体間での技術支援提携促進 ・ワークショップ開催などによる日本メーカー技術紹介の支援		1					期待しない	期待しない			
47	株式会社ジェネック			知らない	今後、参加する		実績無し		本邦金融機関からの顧客紹介。	1		1			期待する	期待する			
50	白石鉄工株式会社			知らない	参加していない		実績無し												

＜企業会員＞

1．ベトナム国に対するビジネス展開の現状・計画

ID	会社名	回答者情報	1-1	1-2-1											1-2-2										
			（1）貴社のベトナム国におけるビジネスの状況を以下から選択してください。	（2）貴社がベトナム国にてビジネスを行っている技術、今後のビジネス展開を検討されている技術を以下から選択してください																					
				1）ビジネス展開実施中											2）ビジネス展開予定										
				1	2	3	4	5	6	7	8	9	10	意見	1	2	3	4	5	6	7	8	9	10	意見
51	株式会社シンクフリー	第一事業/平田敏之	ベトナム国へのビジネス展開を検討中である																1	1	1				
52	株式会社神鋼環境ソリューション	水環境事業部 海外部/大野　進	ベトナム国にてビジネスを行っている		1	1			1		1		1	グラスライニング製熱交換器、反応機、貯槽容器の生産										1	グラスライニング製熱交換器、反応機、貯槽容器の東南アジア地域への販売
56	新明和工業株式会社	流体事業部 営業本部 海外営業グループ/豊原久司	ベトナム国にてビジネスを行っている										1	水処理設備機器　水中ポンプ・ブロワ等										1	同上
57	水道機工株式会社	環境事業部/難波康成	ベトナム国にてビジネスを行っている			1											1								
58	株式会社菅原	社会システム営業本部	ベトナム国へのビジネス展開を検討中である																					1	検討中
62	株式会社タカギ	セントラル浄水事業推進室/井村哲也	ベトナム国にてビジネスを行っている			1														1			1		
67	株式会社データベース	九州支店/正木浩昭	ベトナム国へのビジネス展開を検討中である																	1					
68	東京計器株式会社	計測機器システムカンパニー 計測営業部 第３営業課/町田直人	ベトナム国にてビジネスを行っている							1															
71	株式会社東洋電機工業所	代表取締役/荒岡利文	ベトナム国にてビジネスを行っている										1	基礎工事で使用される水中サンドポンプ											
74	株式会社酉島製作所	TGTｲﾝﾌﾗﾋﾞｼﾞﾈｽ部/西村宗範	ベトナム国にてビジネスを行っている										1	発電所-BOP、ポンプ販売		1	1								
79	日鉄住金環境株式会社	北九州支店/井戸垣　敏	ベトナム国へのビジネス展開を検討中である														1					1			

ID	会社名	1-3							1-4								1-5															1-6				
		（3）貴社がベトナム国に展開されるビジネスの形態を以下から選択してください							（4）貴社ビジネスの取引先を以下から選択してください								（5）貴社がベトナム国での展開を検討するに当たって直面している課題のうち、特に重要度が高いと感じていらっしゃるものについて、以下から上位3つまで選択してください。															（6）貴社ビジネスの取引先を以下から選択してください				
		1	2	3	4	5	6	意見	1	2	3	4	5	6	7	意見	1	2	3	4	5	6	7	8	9	10	11	12	13	14	意見	1	2	3	4	意見
51	株式会社シンクフリー		1	1	1					1							1					1		1								1	1			
52	株式会社神鋼環境ソリューション	1	1		1	1	1	現地法人設立による事業展開、現地工場の建設、製造、販売	1					1								1		1	1							1	1	1		
56	新明和工業株式会社			1							1									1		1							1				1	1		
57	水道機工株式会社	1		1										1					1									1				1				
58	株式会社菅原														1	検討中				1		1							1							
62	株式会社タカギ	1		1										1				1	1					1								1	1	1		
67	株式会社データベース		1		1				1									1	1						1							1	1			
68	東京計器株式会社			1							1	1													1	1			1					1		
71	株式会社東洋電機工業所			1							1											1											1			
74	株式会社酉島製作所			1						1		1												1	1	1						1				
79	日鉄住金環境株式会社	1			1				1																1	1							1	1		

＜企業会員＞

				2-1	2-2-1	2-2-2	2-3		3-2					3-4-1	3-4-2			
		（７）ベトナム国に事務所・関係会社を有していれば、住所・連絡先を記載ください。		２．ベトナム国における水ビジネス展開支援策の利用状況					３．ベトナム国展開時の資金調達について									４．その他、要望・課題等（Business Matching等）
ID	会社名	１）事務所	２）関係会社	①VietWaterでJETROの主催するJapan Booth	②Business Matching	参加された企業はその効果についてお答えください。	③ 日本政府の支援する普及事業等（JICA中小企業支援事業等）	④ 行政機関への支援方策の要望（政府間パネルの採択技術、財政支援、機材供与等）	（１）貴社が（ベトナム国を含む）外国に既に進出している場合には、資金調達方法、本邦公的機関・本邦金融機関からの資金面以外でのサポート内容（もしあれば）について記	（２）ベトナム国でビジネスを行う際の資金調達方法について以下から選択してください）				（３）資金調達に関して課題と捉えている事項について記載してください	（４）ベトナム国でビジネスを行う企業が利用できる水ファンドの創設について本調査にて検討しています。水ファンドに対して期待する事項、希望する条件等について記載してください。			（５）本邦地域金融機関に期待する事項について記載してください	その他要望・課題等がありましたら、下欄に記載してください。
										自	J	本	ベ		運転資金等の融資：	水ファンドからの信用保証：	（希望するファンドの条件）		
51	株式会社シンクフリー			知っている	参加した	効果がなかった	実績無し	我々のような中小企業にとっては参加費用などかなり先行投資的な事業になるので助成金等の支援があればありがたい。(手続きも簡略化していただけると助かる)		1	1				期待する	期待する			
52	株式会社神鋼環境ソリューション		KOBELCO ECO-SOLUTIONS VIETNAM CO., LTD. 9th Floor, Minh Long Tower, 17 Ba Huyen Thanh Quan Street, District 3, HoChin City, Vietnam TEL +84-8-3933-0646 現地法人、100%出資子会社	知っている	参加していない		実績有り		現在、JICA海外投融資活用検討中。	1	1		1	為替変動リスク	期待する	期待する			
56	新明和工業株式会社			知っている	参加した	効果不明	実績無し	アジア（韓国等）、欧州勢の川上営業に対抗し、日本技術が優位採用される為の、G to Gの関係構築、財政支援。	特になし					特になし			特になし	特になし	日本の技術を一方的に紹介する場にならぬよう、現地ニーズがより詳細に把握できていると、提案する側からもより魅力的な提案ができるようになると思います。
57	水道機工株式会社			知っている	参加していない		実績無し			1					期待しない	期待しない			
58	株式会社菅原			知っている	参加していない		実績無し	現在のところございません	ございません					海外展開検討中であり、資金調達に関する課題までいきついておりません。			同上		
62	株式会社タカギ		Takagi Vietnam co.,ltd Lot C1, C2 Thang Long IP II - Hung Yen ,VN TEL+843213974584 子会社	知っている	参加していない		実績無し	ビジネスマッチングの強化（個別案件と個別企業とのきめ細かいマッチングまで） 煩雑な手続き等に対するサポート 煩雑で複雑な行政体制に対する改善を要望して頂きたい 産学官交流	親子間ローンを本邦金融機関による借り入れに2013年に変更。	1		1		ベトナム中央銀行への届け出等が煩雑で、手間を要する。	期待する	期待しない	必要資金が事業進捗により大きく変化する必要があり、運用手続きの簡素化、期間の短さを求めたい。	ベトナムに限らず、東南アジア諸国の金融状況や諸手続きに関する情報提供を望む。	
67	株式会社データベース			知らない	今後、参加する		今後、応募したい			1	1	1	1						
68	東京計器株式会社			知らない	参加していない		実績無し	・タイドＯＤＡの実施 ・行政機関殿にて培われた現地上下水道事業者の実権者やキーパーソンとのご関係を活用いただき，協議会会員への橋渡しをお願いしたい。											
71	株式会社東洋電機工業所			知らない	参加していない		実績無し			1					期待しない	期待しない			
74	株式会社酉島製作所			知らない	参加していない		実績無し		本邦の二次下請けがTax Previledgeを受けられるようにならない	1		1			期待する	期待する	まだとくにありません		
79	日鉄住金環境株式会社			知らない	参加していない		実績無し							具体的構想が未だ無い為、資金調達に関する障壁の想定が出来ていない。	期待する	期待する			

<企業会員>

1．ベトナム国に対するビジネス展開の現状・計画

ID	会社名	回答者情報	1-1 （1）貴社のベトナム国におけるビジネスの状況を以下から選択してください。
80	日鉄住金パイプライン＆エンジニアリング株式会社	西日本支社 営業部 水道営業室/中谷全宏	ベトナム国へのビジネス展開を検討中である
88	株式会社ピーエムティー	精機部 ﾒｶﾄﾛGr 環境事業/那須一男	ベトナム国にてビジネスを行っている
94	フジワラ産業株式会社	社長付特別顧問 兼 海外プロジェクト担当/村田雅彦	ベトナム国へのビジネス展開を検討中である
101	株式会社ミゾタ	福岡支店/織田 克	ベトナム国へのビジネス展開を検討中である
107	株式会社安川電機	システムエンジニアリング事業部 社会システム事業推進部/本居正樹	ベトナム国にてビジネスを行っている
109	株式会社ヤマウ	技術本部 海外事業担当/浦田正則	海外ビジネス展開において、ベトナム国は対象としていない
110	株式会社ヤマウチ	代表取締役/山内知之	ベトナム国へのビジネス展開を検討中である
116	アイレック技建株式会社	九州支店/園村幸紀	ベトナム国へのビジネス展開を検討中である
合計	依頼社数 78 社	回答社数 32 社	

（2）貴社がベトナム国にてビジネスを行っている技術、今後のビジネス展開を検討されている技術を以下から選択してください

ID	1-2-1 1）ビジネス展開実施中 1	2	3	4	5	6	7	8	9	10	意見	1-2-2 2）ビジネス展開予定 1	2	3	4	5	6	7	8	9	10	意見
80												1										
88																					1	精密加工
94														1	1							
101													1									
107										1	インバータ、サーボモータなど機器の販売											
109																						
110												1										
116												1										
合計	0	2	4	0	0	1	2	1	0	5		4	2	5	1	1	5	2	1	1	7	

ID	1-3 （3）貴社がベトナム国に展開されるビジネスの形態を以下から選択してください 1	2	3	4	5	6	意見	1-4 （4）貴社ビジネスの取引先を以下から選択してください 1	2	3	4	5	6	7	意見
80														1	まだ検討に至っていないため、具体案なし
88			1	1								1			
94			1			1	弊社製品の据付工事への技術者派遣		1	1	1				
101									1						
107			1									1			
109															
110	1														
116	1													1	現地コントラクターの元でサブコンとして展開
合計	7	4	14	8	1	4		7	6	6	4	2	4	4	

ID	1-5 （5）貴社がベトナム国での展開を検討するに当たって直面している課題のうち、特に重要度が高いと感じていらっしゃるものについて、以下から上位3つまで選択してください。 1	2	3	4	5	6	7	8	9	10	11	12	13	14	意見	1-6 （6）貴社ビジネスの取引先を以下から選択してください 1	2	3	4	意見
80														1	まだ検討に至っていないため、具体的になし					
88		1				1					1						1	1		
94					1	1			1	1						1	1	1		実績ではなく希望として
101							1	1		1							1			
107									1	1								1		
109																				
110																	1			
116																				
合計	1	6	5	6	1	11	1	7	7	9	1	3	4	2		10	14	13	0	

＜企業会員＞

2-1　2-2-1　2-2-2　2-3　3-2　3-4-1　3-4-2

ID	会社名	（７）ベトナム国に事務所・関係会社を有していれば、住所・連絡先を記載ください。		２．ベトナム国における水ビジネス展開支援策の利用状況					３．ベトナム国展開時の資金調達について									４．その他、要望・課題等（Business Matching等）
		１）事務所	２）関係会社	①VietWaterでJETROの主催するJapan Booth	②Business Matching	参加された企業はその効果についてお答えください。	③ 日本政府の支援する普及事業等（JICA中小企業支援事業等）	④ 行政機関への支援方策の要望（政府間パネルの採択技術、財政支援、機材供与等）	（１）貴社が（ベトナム国を含む）外国に既に進出している場合には、資金調達方法、本邦公的機関・本邦金融機関からの資金面以外でのサポート内容（もしあれば）について記	（２）ベトナム国でビジネスを行う際の資金調達方法について以下から選択してください）				（３）資金調達に関して課題と捉えている事項について記載してください	（４）ベトナム国でビジネスを行う企業が利用できる水ファンドの創設について本調査にて検討しています。水ファンドに対して期待する事項、希望する条件等について記載してください。			（５）本邦地域金融機関に期待する事項について記載してください	その他要望・課題等がありましたら、下欄に記載してください。
										自	J	本	ベ		運転資金等の融資：	水ファンドからの信用保証：	（希望するファンドの条件）		
80	日鉄住金パイプライン＆エンジニアリング株式会社		NIPPON STEEL & SUMIKIN ENGINEERING CO.,LTD. Ho Chi Minh Representative office Room712, 7th Floor, Sun Wah Tower, 115 Nguyen Hue Blvd, Dist.1., HCMC TEL+84-8-3827-8064 親会社の海外拠点	知らない	参加していない		実績無し	まだ検討に至っていないため、特になし。						まだ検討に至っていないため、特になし。				まだ検討に至っていないため、特になし。	
88	株式会社ピーエムティー	プレテックワールド株式会社 〒321-0964　栃木県宇都宮市駅前通り３－７－１　ｵｳﾞｪｽﾄ宇都宮ｻﾞ・ﾀﾜｰ708号		知らない	参加していない		実績無し												
94	フジワラ産業株式会社			知っている	参加していない		実績無し	沈殿槽（池）に設置する機器・装置のメーカーで、我々単独での進出は困難。 プラント全体をまとめるコンサルタントやゼネコンの傘下で機器・装置の供給を行いたい。 この対象のコンサルタントやゼネコンが現地企業でも良いが出来れば日本の企業と協同で進めたい。 この様なビジネス形態に合った支援を切望している。 またその為に必要な事項のアドバイスも欲しい。	２．④と関連。 相手企業が日本か外国かを問わず、当方の要求する（許容できる）支払い条件で支払いが実現すれば進められる。 もし条件と大きく差が生じる場合、その間の支払いを相手に代わって支払ってもらえる制度を大歓迎する。	1	1			上記３．（１）と同様	期待する	期待する	３．（１）と関連。 代金回収までの無担保、無利息の融資。		日本国内で開催されるビジネスマッチングに参加して製品に強い関心と興味を持ってもらっても その後の進展が当方（メーカー）だけでは進まない。 この辺のサポートは出来ないでしょうか？
101	株式会社ミゾタ			知らない	参加していない		実績無し			1					期待しない	期待しない			
107	株式会社安川電機	Yaskawa Electric (Singapore) Pte Ltd Vietnam Representative Office Suite 1104, 11st Floor, Saigon Tower, 29 Le Duan Boulevard, District 1, Ho Chi Minh City, Vietnam TEL +84-8-3822-8680		知っている	参加した	効果がなかった	実績無し	特になし	特になし	1				特になし	期待しない	期待しない	特になし	特になし	特になし
109	株式会社ヤマウ																		
110	株式会社ヤマウチ			知らない	参加していない		実績無し			1		1			期待する	期待する			
116	アイレック技建株式会社			知らない	参加していない		実績無し												
合計	依頼社数 78 社									16	7	8	2						

Appendix 4-1

Water quality results in Vietnam Jan. 2014

Station Name	Hanoi				
	Raw	Sediment	Filt	TW	Source
Date				Jan.7	Jan.7
Time				16:00	11:30
Temp.					21.6
EC				190	300
Turb.				0	13.6
Color					20
pH				7.5	7.6
DO				-	5
COD				3	4
NO_2-N				-	0.005
NO_3-N				-	0.5
NH_4-N				<0.2	0.3
PO_4-P				-	<0.1
AlkalinityP				-	1D
AlkalinityM				-	C:1d, D:10d
Fe^{2}				-	<0.2
Fe^{3}				-	<2
ABS				-	<0.05
C-detergent				-	<0
Residual-Cl				不検出	
Remarks				Tap At IET	Duang River

Water quality results in Vietnam Jan. 2014

Station Name	Haiphong No2				
	Raw	Sediment	Filt	TW	Source
Date	9-Jan	9-Jan	-	-	-
Time	15:20	16:00	-	-	9:50
Temp.	20.2	-	-	19.9	18.5
EC	230	-	-	-	240
Turb.	12.9	1.3	-	0.6	8.6
Color	27	6	-	4.5	38.5
pH	7.5	-	-	7.2	7.4
DO	3.5	-	-	-	6
COD	-	-	-	3	6
NO_2-N	0.005	-	-	-	0.01
NO_3-N	0.5	-	-	1	0.7
NH_4-N	0.2	-	-	<0.2	
PO_4-P	<0.2	-	-	-	<0.1
AlkalinityP	-	-	-	-	c:1d, D:9d
AlkalinityM	c2d	-	-	-	C:1d, D:9d
Fe^{2}	<0.2	-	-	-	<0.2
Fe^{3}	<2	-	-	-	<2
ABS	-	-	-	-	0.1
C-detergent	<0.5	-	-	-	<0
Remarks	E260: 0.033	R-Cl: 0.0		R-Cl: 0.64	Vat Cat River

Water quality results in Vietnam Jan. 2014

Station Name	Quang Ninh				
	Raw	Sediment	Filt	TW	Source
Date	11-Jan	11-Jan	11-Jan	11-Jan	11-Jan
Time	11:05	10:00	10:10	10:30	13:30
Temp.	18	17.7	17.7	17.9	18.0
EC	20	-	-	-	20
Turb.	4.3	3.1	1.3	1.2	3.4
Color	40.5	35.5	13.0	10.5	41
pH	6.2	-	-	6.8	6.3
DO	9	-	-	-	9
COD	5	-	-	5	6
NO_2-N	<0.005	-	-	-	<0.005
NO_3-N	<0.2	-	-	0.2	≦0.2
NH_4-N	0.3	-	-	0.4	0.4
PO_4-P	<0.1	-	-	-	<0.1
AlkalinityP		-	-	-	-
AlkalinityM	d:2d	-	-	-	d:2d
Fe^{2}	<0.2	-	-	<0.2	<0.2
Fe^{3}	<2	-		<2	<2
ABS	0.07	-	-	-	0.08
C-detergent	0	-	-	-	<0
Remarks	E260: 0.43	R-Cl: 0.0	R-Cl: 0.0	R-Cl: 0.1	Lake

Water quality results in Vietnam Jan. 2014

Station Name	Nam Dinh				
	Raw	Sediment	Filt	TW	Source
Date	14-Jan	14-Jan	-	14-Jan	14-Jan
Time	11:30	11:15	-	10:50	12:00
Temp.	18	-	-	17.5	18
EC	230	-	-	260	240
Turb.	19.5	2.7	-	0.2	20
Color	31	10.5	-	5	30
pH	7.4	-	-	7.2	7.4
DO	9	-	-	-	7.5
COD	7	-	-	4	5.5
NO_2-N	0.03	-	-	-	0.04
NO_3-N	1	-	-	-	1
NH_4-N	0.3	-	-	<0.2	0.3
PO_4-P	<0.1	-	-	-	<0.1
AlkalinityP	-	-	-	-	-
AlkalinityM	-	-	-	-	C:1d, D:12d
Fe^{2}	<0.2	-	-	-	<0.2
Fe^{3}	<2	-	-	-	<2
ABS	0.08	-	-	-	0.08
C-detergent	0	-	-	-	<0
Remarks		R-Cl: 00		R-Cl: 0.52	

Water quality results in Vietnam Jan. 2014

Station	Hai Duong (Big WTP)					Hai Duong (Small WTP)				
Name	Raw	Sediment	Filt	TW	Source	Raw	Sediment	Filt	TW	Source
Date		15-Jan	15-Jan	15-Jan	15-Jan	15-Jan	15-Jan	15-Jan	15-Jan	15-Jan
Time		14:10	-	13:40	14:20	16:50	16:40	16:10	15:55	17:35
Temp.		-	-	18.6	-	-	-	-	-	-
EC		240	-	230	230	180	190	-	190	180
Turb.		1.9	-	0.2	16.7	20	2.3	0.9	0.6	20
Color		8.5	-	6.5	38.5	36.5	11	6.5	9	34.5
pH		-	-	7.2	7.4	7.6	-	-	7.5	7.6
DO		-	-	-	8	6	-	-	-	7
COD		4.5	-	4	5	3.5	2.5	-	3	3
NO_2-N		-	-	-	0.02	<0.005	-	-	-	0.005
NO_3-N		-	-	-	1	0.6	-	-	-	0.5
NH_4-N		<0.2	-	<0.2	0.3	<0.2	<0.2	-	<0.2	<0.2
PO_4-P		-	-	-	<0.1	<0.1	-	-	-	<0.1
AlkalinityP		-	-	-	-	-	-	-	-	-
AlkalinityM		-	-	-	C:1d, D:11d	C:2 D:1	-	-	-	-
Fe^{2}		-	-	-	<0.2	<0.2	-	-	-	-
Fe^{3}		-	-	-	<2	<2	-	-	-	-
ABS		-	-	-	0.3	0.08	-	-	-	0.08
C-detergent		-	-	-	<0	<0	-	-	-	<0
Remarks		R-Cl: Low		R-Cl: 0.86			R-Cl: 0.0	R-Cl: Low	R-Cl: 0.38	Thai Bimn River
				N:20°48'52.9"	N:20°48'51.1"				N:20°57'09.5"	N:20°57'22.6"
				E:106°24'22.1"	E:106°24'18.6"				E:106°18'42.4"	E:106°18'45.6"

Water quality results in Vietnam Jan. 2014

Station	Khanh Hoa				
Name	Raw	Sediment	Filt	TW	Source
Date	20-Jan	20-Jan	20-Jan	20-Jan	
Time	16:15	11:40	15:50	11:00	
Temp.	24	24	24	24	
EC	40	-	-	50	40
Turb.	13.1	3.1	0.3	0.2	12.6
Color	50	19.5	8.5	10	50
pH	6.6	-	-	6.9	
DO	4	-	-	-	
COD	5	4		3	5
NO_2-N	0.02	-	-	-	
NO_3-N	0.2	-	-	-	
NH_4-N	0.2	<0.2	-	<0.2	0.3
PO_4-P	<0.1	-	-	-	
AlkalinityP	-	-	-	-	
AlkalinityM	-	-	-	-	
Fe^{2}	<0.2	-	-	-	
Fe^{3}	<2	-	-	-	
ABS	0.08	-	-	-	
C-detergent	<0	-	-	-	
Remarks		R-Cl: 0.04	R-Cl: 0.00	R-Cl: 0.66	100m to WTP no need to check

Water quality results in Vietnam Jan. 2014

Station Name	Binh Duong				
	Raw	Sediment	Filt	TW	Source
Date	22-Jan	22-Jan	22-Jan	22-Jan	21-Jan
Time	9:45	9:30	9:15	8:45	16:30
Temp.	-	-	-	24.1	27
EC	240	220	230	270	110
Turb.	14.5	0.6	0.3	0.2	11.3
Color	50	17.5	12.0	9.3	50
pH	6.2	-	-	6.8	6.1
DO	4	-	-	-	4
COD	11	7	4	2	8
NO_2-N	0.03	-	-	-	0.07
NO_3-N	0.8	-	-	-	0.4
NH_4-N	0.5	<0.2	<0.2	<0.2	0.3
PO_4-P	<0.1	-	-	-	0.1
AlkalinityP	-	-	-	-	-
AlkalinityM	-	-	-	-	-
Fe^{2}	<0.2	-	-	-	<0.2
Fe^{3}	<2	-	-	-	<2
ABS	0.08	-	-	-	0.1
C-detergent	<0	-	-	-	<0
Remarks		R-Cl: 0.0	R-Cl: 0.00	R-Cl: 0.34	Saigon River 2km to WTP

Water quality results in Vietnam Jan. 2014

Station Name	Tieng Giang				
	Raw	Sediment	Filt	TW	Source
Date	22-Jan	22-Jan	22-Jan	22-Jan	
Time	16:00	16:40	16:50	16:00	
Temp.	-	-	-	-	
EC	260	300	300	290	
Turb.	20	2.3	0.2	0.4	
Color	50	18	11.0	10.5	
pH	6.8	-	-	7.2	
DO	3	-	-	-	
COD	11	8	7	7	
NO_2-N	0.03	-	-	-	
NO_3-N	0.8	-	-	-	
NH_4-N	0.6	0.4	<0.2	<0.2	
PO_4-P	0.2	-	-	-	
AlkalinityP	-	-	-	-	
AlkalinityM	-	-	-	-	
Fe^{2}	<0.2	-	-	-	
Fe^{3}	<2	-	-	-	
ABS	0.1	-	-	-	
C-detergent	0	-	-	-	
Remarks		R-Cl: 0.0	R-Cl: 0.00	R-Cl: 0.64	10m to WTP no need to check

Water quality results in Vietnam Jan. 2014

Station Name	Da River				
	Raw	Sediment	Filt	TW	Source
Date	-	-	-	13-Jan	13-Jan
Time	-	-	-	11:00	
Temp.	-	-	-	19.4	19
EC	-	-	-	170	170
Turb.	-	-	-	0.2	4.1
Color	-	-	-	7.5	13
pH	-	-	-	7.2	7.2
DO	-	-	-	-	7.5
COD	-	-	-	2	3
NO_2-N	-	-	-	-	<0.005
NO_3-N	-	-	-	-	0.5
NH_4-N	-	-	-	<0.2	<0.2
PO_4-P	-	-	-	-	<0.1
AlkalinityP	-	-	-	-	-
AlkalinityM	-	-	-	-	-
Fe^{2}	-	-	-	-	<0.2
Fe^{3}	-	-	-	-	<2
ABS	-	-	-	-	0.07
C-detergent	-	-	-	-	0
Remarks				R-Cl: 0.78	Lake

N : 20°58'03.1" N : 20°58'47.5"
E : 105°23'01.2" E : 105°21'35.4"

Appendix 4-2

01 Duong River

VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY
INSTITUTE OF ENVIRONMENTAL TECHNOLOGY
Dept. of Environmental Toxic Analysis (VILAS 386)

Rm. 700, Bld. A30, 18 Hoang Quoc Viet - Cau Giay - Hanoi
Tel: (84-4) 3791 2614 - Fax: (84-4) 3791 4911
Website: www.ietas.vn

VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
(The analytical results are only valid for the samples send to the laboratory)

Số/No: N1401/47A

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Sông Đuống - Bắc Ninh/** *Duong River - Bac Ninh*
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 01
Ngày gửi mẫu/ *Sampling date* : 2014/1/13
Ngày phân tích/ *Date of analysis* : 2014/1/13 to 2014/2/12

TT/ *No*	**Chỉ tiêu/** *Parameters*	**Đơn vị/** *Unit*	**Kết quả phân tích/** *Analytical results*	**Phương pháp phân tích/** *Methods of analysis*	**QCVN 08:2008/BTNMT (Cột A2/** ***A2 Column*****)**
			Nước sông Đuống/ *Duong River water*		
1	(NH_4_N / *Ammonium nitrogen*	mg/l	<0,01	TCVN 6179-1:1996	**0.2**
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	TCVN 6002:1995	-
3	Fe/ *Dissolved Iron*	mg/l	0.032	TCVN 6177:1996	1
4	THM_s(THMFP)/ *Trihalomethane Formation Potential*			*EPA 8260*	
4.1	Chloroform	µg/l	7.8		-
4.2	Bromodichloromethane	µg/l	1.6		-
4.3	Chlorodibromomethane	µg/l	0.1		-
4.4	Bromoform	µg/l	<0.5		-

BM 5.10.01 Promulgation time : 01.10 Page 1/2

VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY
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Tel.: (84-4) 3791 2614 - Fax: (84-4) 3791 4911
Website: www.ist.ac.vn

TT/ *No*	**Chỉ tiêu/** *Parameters*	**Đơn vị/** *Unit*	**Kết quả phân tích/** *Analytical results*	**Phương pháp phân tích/** *Methods of analysis*	**QCVN 08:2008/BTNMT (Cột A2/** ***A2 Column*****)**
			Nước sông Đuống/ *Duong River water*		
5	TOC	mg/l	2.26	*IET-ĐCMT /TOC/ TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ ***Note:*** *sample name and sample type are specified by sending sample units.*
QCVN 08:2008/BTNMT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước mặt/ *National technical regulation on surface water quality.*
Cột A2: Dùng cho mục đích cấp nước sinh hoạt nhưng phải áp dụng công nghệ xử lý phù hợp; bảo tồn động thực vật thủy sinh, hoặc các mục đích sử dụng như loại B1 và B2/ *A2 Column - Suitable for domestic water supply purposes but to apply appropriate processing technology, conservation of aquatic plants, or use as B1 and B2.*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
Department of Environmental Toxic Analysis

Nguyen Quang Trung

VIỆN CÔNG NGHỆ MÔI TRƯỜNG
INSTITUTE OF ENVIRONMENTAL TECHNOLOGY
Phó Viện Trưởng/ *Deputy Director*

VIỆN CÔNG NGHỆ MÔI TRƯỜNG

Nguyen Thi Hue

BM 5.10.01 Promulgation time: 01.14 Page 2/2

02 HaiphongNo2

VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY
INSTITUTE OF ENVIRONMENTAL TECHNOLOGY
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VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
(The analytical results are only valid for the samples send to the laboratory)

Số/No: N1401/46-45

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Công ty Cổ phần kinh doanh nước sạch số 2 - Hải Phòng**
/ Hai Phong No.2 Water Businesses Joint Stock Company, Hai Phong
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/9
Ngày phân tích/ *Date of analysis* : 2014/1/12 to 2014/2/12

TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
1	(NH_4_N / *Ammonium nitrogen*	mg/l	0.092	<0.01	TCVN 6179-1:1996	**3**
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	**0.3**
3	Fe/ *Dissolved Iron*	mg/l	0.124	0.03	TCVN 6177:1996	**0.3**
4	THM_s(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8260*	
4.1	Chloroform	µg/l	7.7	+		-
4.2	Bromodichloromethane	µg/l	2.6	+		-
4.3	Chlorodibromomethane	µg/l	0.4	+		-
4.4	Bromoform	µg/l	<0.5	+		-
5	THM_s/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	5.0		**200**

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TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
5.2	Bromodichloromethane	µg/l	+	2.4	*EPA 8260*	**100**
5.3	Chlorodibromomethane	µg/l	+	0.5		**60**
5.4	Bromoform	µg/l	+	<0.5		**100**
6	TOC	mg/l	1.82	0.38	*IET-ĐCMT /TOC/ TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ ***Note:*** *sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality.*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed.*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
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Nguyen Thi Hue

03 Quang Ninh

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INSTITUTE OF ENVIRONMENTAL TECHNOLOGY
Dept. of Environmental Toxic Analysis (VILAS 386)

VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
(The analytical results are only valid for the samples send to the laboratory)

Số/No: NI401/44A-44

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Nhà máy nước Diễn Vọng - Quảng Ninh/** *Dien Vong Water Plant, Quang Ninh*
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/11
Ngày phân tích/ *Date of analysis* : 2014/1/12 to 2014/2/12

TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
1	(NH_4_N / *Ammonium nitrogen*	mg/l	0.248	0.04	TCVN 6179-1:1996	3
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	0.3
3	Fe/ *Dissolved Iron*	mg/l	0.385	0.201	TCVN 6177:1996	0.3
4	THM_s(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8760*	
4.1	Chloroform	µg/l	6.2	+		-
4.2	Bromodichloromethane	µg/l	1.1	-		-
4.3	Chlorodibromomethane	µg/l	0.2	-		-
4.4	Bromoform	µg/l	<0.5	+		-
5	THM_s/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	0.4		**200**

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TT/ *No*	**Chỉ tiêu/** *Parameters*	**Đơn vị/** *Unit*	**Kết quả phân tích/** *Analytical results*		**Phương pháp phân tích/** *Methods of analysis*	**QCVN 01:2009/BYT**
			Trước hệ thống xử lý/ *Before treatment*	**Sau hệ thống xử lý/** *After treatment*		
5.2	Bromodichloromethane	µg/l	+	<0.2	*EPA 8260*	**100**
5.3	Chlorodibromomethane	µg/l	+	<0.1		**60**
5.4	Bromoform	µg/l	-	<0.5		**100**
6	TOC	mg/l	2.08	0.89	*IET-ĐCMT /TOC/ TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ ***Note:*** *sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality.*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed.*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
Department of Environmental Toxic Analysis

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Nguyen Thi Hue

04 Nam Dinh

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VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
(The analytical results are only valid for the samples send to the laboratory)

Số/No: N1401/59-60

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Xí nghiệp kinh doanh nước sạch Vụ Bản - Nam Định**
/ Vu Ban Water Buxinesxes Enterprise, Nam Dinh
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/14
Ngày phân tích/ *Date of analysis* : 2014/1/16 to 2014/2/12

TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
1	(NH_4_N / *Ammonium nitrogen*	mg/l	0.29	0.039	TCVN 6179-1:1996	**3**
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	**0.3**
3	Fe/ *Dissolved Iron*	mg/l	0.793	0.01	TCVN 6177:1996	**0.3**
4	THM_s(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8260*	
4.1	Chloroform	µg/l	21.8	+		-
4.2	Bromodichloromethane	µg/l	<0.2	+		-
4.3	Chlorodibromomethane	µg/l	0.1	+		-
4.4	Bromoform	µg/l	<0.5	+		-

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TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
5	THMs/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	1.6		**200**
5.2	Bromodichloromethane	µg/l	+	1.7		**100**
5.3	Chlorodibromomethane	µg/l	+	0.8		**60**
5.4	Bromoform	µg/l	+	<0.5		**100**
6	TOC	mg/l	1.02	<0.3	*IET-DCMT /TOC/ TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ ***Note:*** *sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality.*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
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05 Hai Duong

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VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
(The analytical results are only valid for the samples send to the laboratory)

Số/No: N140I/61-62

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Xí nghiệp kinh doanh nước sạch số 6 Hải Dương**
/ Hai Duong No.6 Water Businesses Enterprise, Hai Duong
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/15
Ngày phân tích/ *Date of analysis* : 2014/1/16 to 2014/2/12

TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
1	(NH_4_N/ *Ammonium nitrogen*	mg/l	0.12	0.034	TCVN 6179-1:1996	**3**
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	**0.3**
3	Fe/ *Dissolved Iron*	mg/l	0.998	<0.01	TCVN 6177:1996	**0.3**
4	THM_4(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8260*	
4.1	Chloroform	µg/l	82.8	+		-
4.2	Bromodichloromethane	µg/l	4.7	+		-
4.3	Chlorodibromomethane	µg/l	1.1	+		-
4.4	Bromoform	µg/l	<0.5	+		-

BM 5.10.01 Promulgation time : 01.14 Page 1/2

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TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
5	THMs/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	3.0		200
5.2	Bromodichloromethane	µg/l	+	1.2		100
5.3	Chlorodibromomethane	µg/l	+	0.2		60
5.4	Bromoform	µg/l	+	<0.5		100
6	TOC	mg/l	0.94	<0.3	*IET-DCMT /TOC/ TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ *Note: sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality.*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
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06 Khanh Hoa

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VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
The analytical results are only valid for the samples send to the laboratory)

Số/No: N1402/31A-32A

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Nhà máy nước Võ Cánh – Nha Trang – Khánh Hòa**
/ Vo Canh Water Plant, Nha Trang, Khanh Hoa
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/20
Ngày phân tích/ *Date of analysis* : 2014/1/27 to 2014/2/12

TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
1	NH_4_N / *Ammonium nitrogen*	mg/l	0.17	<0.01	TCVN 6179-1:1996	**3**
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	**0.3**
3	Fe/ *Dissolved Iron*	mg/l	0.17	0.065	TCVN 6177:1996	**0.3**
4	THM_s(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8260*	
4.1	Chloroform	µg/l	164	+		-
4.2	Bromodichloromethane	µg/l	4.0	+		-
4.3	Chlorodibromomethane	µg/l	0.3	+		-
4.4	Bromoform	µg/l	<0.5	+		-

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TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
5	THM_s/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	6.0		**200**
5.2	Bromodichloromethane	µg/l	+	1.9		**100**
5.3	Chlorodibromomethane	µg/l	+	<0.1		**60**
5.4	Bromoform	µg/l	+	<0.5		**100**
6	TOC	mg/l	1.15	0.5	*IET-ĐCMT / TOC/ TN-2006*	–

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ ***Note:*** *sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed.*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
Department of Environmental Toxic Analysis/

Nguyen Quang Trung

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Nguyen Thi Hue

BM 5.10.01 Promulgation time : 01.14 Page 2/2

07 Binh Duong

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VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/
(The analytical results are only valid for the samples send to the laboratory)

Số/No: N1402/29A-30A

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Nhà máy nước Thủ Dầu Một – Bình Dương** / *Thu Dau I Water Plant, Binh Duong*
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/22
Ngày phân tích/ *Date of analysis* : 2014/1/27 to 2014/2/12

TT/ *No*	**Chỉ tiêu/** *Parameters*	**Đơn vị/** *Unit*	**Kết quả phân tích/** *Analytical results*		**Phương pháp phân tích/** *Methods of analysis*	**QCVN 01:2009/BYT**
			Trước hệ thống xử lý/ *Before treatment*	**Sau hệ thống xử lý/** *After treatment*		
1	(NH_4_N / *Ammonium nitrogen*	mg/l	0.072	0.013	TCVN 6179-1:1996	**3**
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	**0.3**
3	Fe/ *Dissolved Iron*	mg/l	0.20	0.046	TCVN 6177:1996	**0.3**
4	THM_4(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8260*	
4.1	Chloroform	µg/l	397	+		-
4.2	Bromodichloromethane	µg/l	36.0	+		-
4.3	Chlorodibromomethane	µg/l	8.9	+		-
4.4	Bromoform	µg/l	<0.5	+		-

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Website: www.itl.ac.vn

TT/ *No*	**Chỉ tiêu/** *Parameters*	**Đơn vị/** *Unit*	**Kết quả phân tích/** *Analytical results*		**Phương pháp phân tích/** *Methods of analysis*	**QCVN 01:2009/BYT**
			Trước hệ thống xử lý/ *Before treatment*	**Sau hệ thống xử lý/** *After treatment*		
5	THM_s/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	6.6		**200**
5.2	Bromodichloromethane	µg/l	+	9.9		**100**
5.3	Chlorodibromomethane	µg/l	+	6.3		**60**
5.4	Bromoform	µg/l	+	1.0		**100**
6	TOC	mg/l	0.76	0.54	*IET-ĐCMT/ TOC/ TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ ***Note:*** *sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality.*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed.*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
Department of Environmental Toxic Analysis

Nguyen Quang Trung

VIỆN CÔNG NGHỆ MÔI TRƯỜNG
INSTITUTE OF ENVIRONMENTAL TECHNOLOGY
Phó Viện Trưởng/ *Deputy Director*

VIỆN CÔNG NGHỆ MÔI TRƯỜNG

Nguyen Thi Hue

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08 Tien Giang

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Website: www.ita.ac.vn

VILAS 386

KẾT QUẢ PHÂN TÍCH
ANALYTICAL RESULTS

(Mẫu này chỉ có giá trị đối với mẫu được gửi tới phòng thí nghiệm/ The analytical results are only valid for the samples send to the laboratory)

Số/No: N1402/27A-28A

Đơn vị yêu cầu lấy mẫu/ *Client* : **NIPPON KOEI CO., LTD.**
Địa chỉ lấy mẫu/ *Sampling location* : **Xí nghiệp cấp nước Cai Lậy –Tiền Giang** */Cai Lay Water Supply Enterprise, Tien Giang*
Loại mẫu/ *Sample type* : **Nước/** *Water*
Số lượng mẫu/ *Quantity* : 02
Ngày gửi mẫu/ *Sampling date* : 2014/1/22
Ngày phân tích/ *Date of analysis* : 2014/1/27 to 2014/2/12

TT/ *No*	Chỉ tiêu/ *Parameters*	Đơn vị/ *Unit*	Kết quả phân tích/ *Analytical results*		Phương pháp phân tích/ *Methods of analysis*	QCVN 01:2009/BYT
			Trước hệ thống xử lý/ *Before treatment*	Sau hệ thống xử lý/ *After treatment*		
1	NH_4_N / *Ammonium nitrogen*	mg/l	0.44	0.038	TCVN 6179-1:1996	3
2	Mn/ *Dissolved Manganese*	mg/l	<0.01	<0.01	TCVN 6002:1995	0.3
3	Fe/ *Dissolved Iron*	mg/l	0.042	0.039	TCVN 6177:1996	0.3
4	THM_s(THMFP)/ *Trihalomethane Formation Potential*				*EPA 8260*	
4.1	Chloroform	µg/l	419	+		-
4.2	Bromodichloromethane	µg/l	16	+		-
4.3	Chlorodibromomethane	µg/l	0.9	+		-
4.4	Bromoform	µg/l	<0.5	+		-
5	THM_s/ *Trihalomethane*				*EPA 8260*	
5.1	Chloroform	µg/l	+	11.8		**200**

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Tel: (84-4) 3791 0614 - Fax: (84-4) 3791 4011
Website: www.iet.ac.vn

TT/ *No*	**Chỉ tiêu/** *Parameters*	**Đơn vị/** *Unit*	**Kết quả phân tích/** *Analytical results*		**Phương pháp phân tích/** *Methods of analysis*	**QCVN 01:2009/BYT**
			Trước hệ thống xử lý/ *Before treatment*	**Sau hệ thống xử lý/** *After treatment*		
5.2	Bromodichloromethane	µg/l	+	4.5	*EPA 8260*	**100**
5.3	Chlorodibromomethane	µg/l	+	1.2		**60**
5.4	Bromoform	µg/l	+	<0.5		**100**
6	TOC	mg/l	0.98	0.32	*IET-ĐCMT / TOC/TN-2006*	-

Chú ý: Tên mẫu và loại mẫu được quy định bởi đơn vị gửi mẫu/ *Note: sample name and sample type are specified by sending sample units.*
QCVN 01:2009/BYT: Quy chuẩn kỹ thuật quốc gia về chất lượng nước ăn uống/ *National technical regulation on drinking water quality.*
Dấu +: Không phân tích/ *Sign +: Represent not analyzed.*
Dấu -: Quy chuẩn không quy định/ *Sign -: Represent not regulated*

Hanoi, February 12th, 2014
Phòng Phân tích Độc chất môi trường/
Department of Environmental Toxic Analysis

Nguyen Quang Trung

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Phó Viện Trưởng/ *Deputy Director*

VIỆN CÔNG NGHỆ MÔI TRƯỜNG

Nguyen Thi Hue

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Appendix 4-3

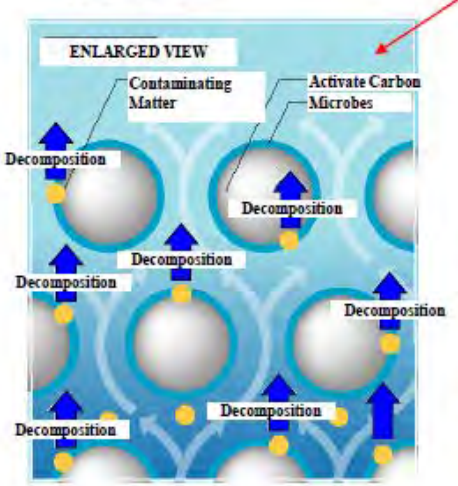
History of U-BCF (Upward Biological Contact Filtration)

ONGA river water which is used main water supply resource has been polluted by domestic waste water.

Kitakyushu Water itself invented an advanced treatment method applying the biological power against the water pollution of ONGA river, as a result of itself researching from 1987 to1997.

In 1997, Kitakyushu Water had applied for a Japanese patent on the new treatment method named "Upward Biological Contact Filtration" (U-BCF).

In 2006, the Japan Patent Office registered U-BCF as P-3831055.



本城浄水場 上向流式生物接触ろ過池

Construction Record of U-BCF in Kitakyushu City

In 2000, installed **71,000**m3/D into the HONJO water treatment plant

In 2003, installed **171,000**m3/D into the ANOH water treatment plant

In 2009, installed **32,500**m3/D additionally into the HONJO water treatment plant (Total U-BCF capacity of HONJO is **103,500**m3/D)

Procedure for Encouraging Broad Use of U-BCF in Vietnam

【1st Step】 JICA Partnership Program（2010 to 2012）
Place : Haiphong City, Vietnam (Friendship-city with Kitakyushu)
Contents: Implementation of the Pilot Study on U-BCF
Technical Cooperation on The Water Treatment Process in Japan

Confirmed Good Effectiveness of U-BCF on The Pilot Study (1 Year)

【2nd Step】 Installation of U-BCF into BIN VAO Treatment Plant
The Haiphong Water have decided to install U-BCF into the small scale treatment plant (5,000 m3/D) using own budget.
Breaking of the construction in May, 2013 (Completed in December, 2013)

To confirm the operation and maintenance of U-BCF

【3rd Step】 Installation of U-BCF into the Main Treatment Plant
The Haiphong Water will have a plan to install U-BCF into the main treatment plant (100,000m3/D) in Haiphong City.

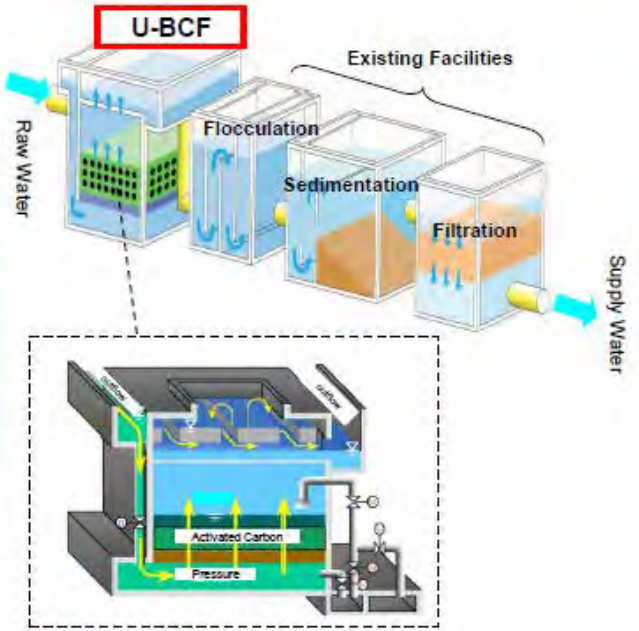
Other hand, Haiphong Water and Kitakyushu Water have engaged in **mutual activities to encourage the broad use of U-BCF**, because the use of **U-BCF will be the most effective and advanced water treatment method in Vietnam**.

Expectation to encourage the broad use of U-BCF

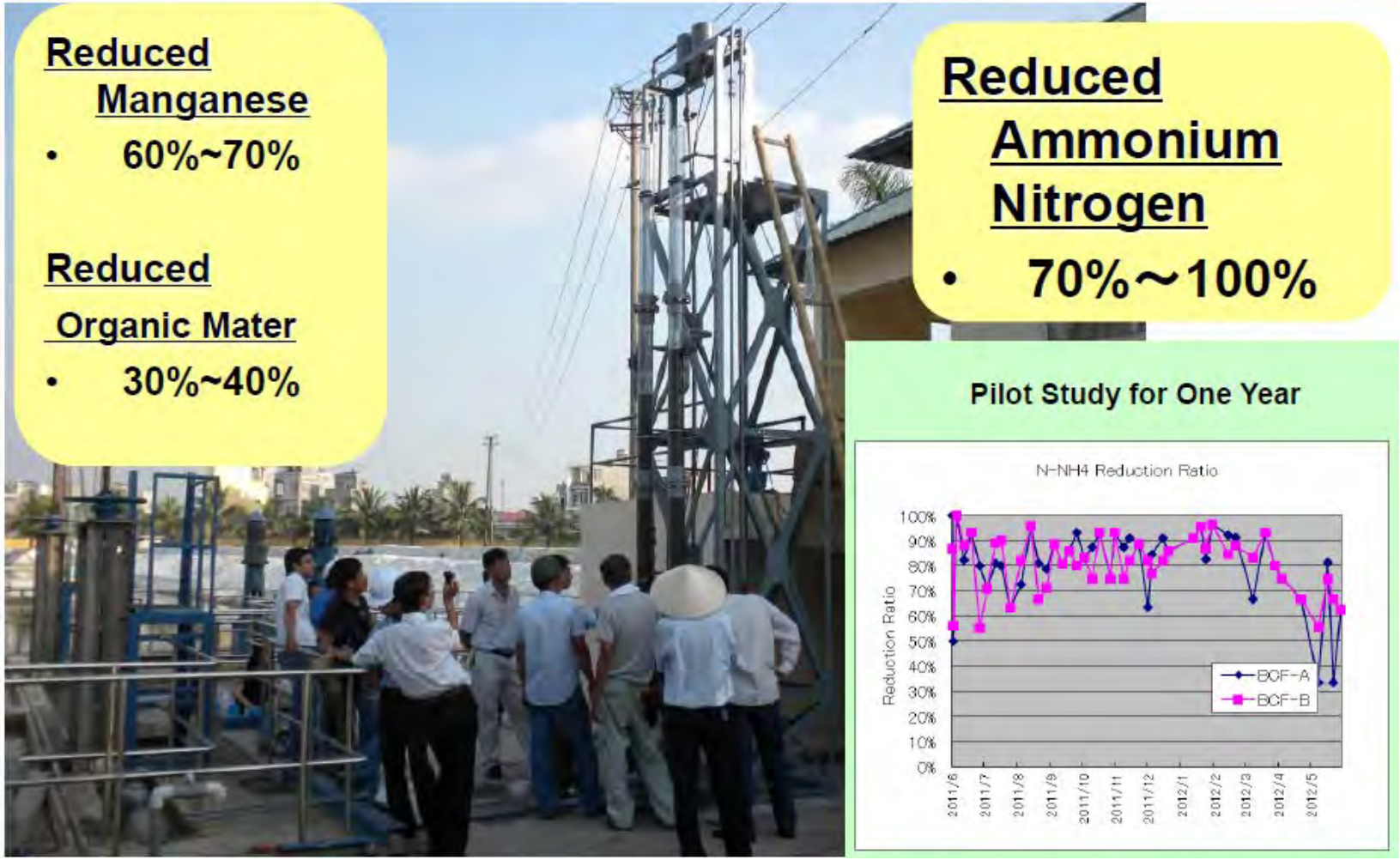
Contribution to supply safe water for the residence in Vietnam

Upward Biological Contact Filtration (U-BCF) System
The City of Kitakyushu is the inventor of U-BCF and its patentee in Japan.
The U-BCF is one of Japanese advanced treatment method applying the biological action to remove the ammonium nitrogen, manganese, iron and organic substance economically and effectively.

Cost estimation
- Construction cost of U-BCF is about **half price** compared to the **ozonation facility**.
- **Operation Cost**: around **0.36JPY/m3 (0.36US cent/m3)**



Result of The Pilot Study for U-BCF in Haiphong City, Vietnam



Activities between Haiphong and Kitakyushu, Japan

U-BCF Mutual Cooperation (May 2013)

Haiphong Water and Kitakyushu Water have engaged in mutual activities to encourage the broad use of U-BCF, because the use of U-BCF will be the most effective and advanced water treatment method in order to supply safe water for the residents in Vietnam.

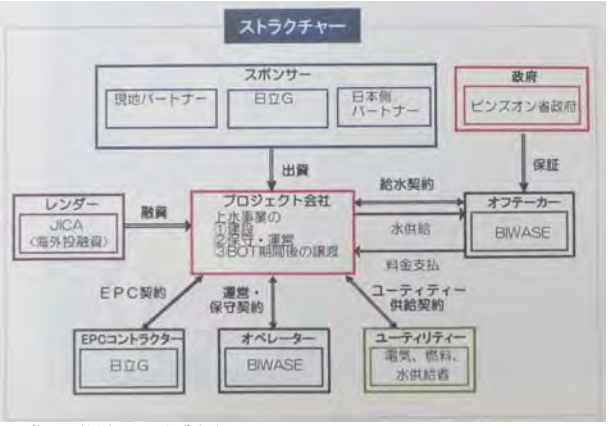
Breaking Ceremony of U-BCF at Vinh Bao (Haiphong) (May 2013)

Construction U-BCF at Vinh Bao (August 2013)

Appendix 5

Sector Loan Potential Project: プロジェクトプロファイル（水道）

Province & City	Binh Duong Province		
Project Relevant PPP/ODA Project	ビンズオン省北部新都市・工業地域上水道整備事業 (PPP インフラ)		
	Intake	Public	
	Transmission	Public	
	WTP	SPC	
	Distribution & HC	Public	
Project Profile		Implementation Plan	Long Term Plan
	Served area	N.A. ha	ha
	Served population	N.A. cap.	cap.
	Pipe length（送水管）	km	10 km
	WTP capacity	300,000 m^3/day	300,000 m^3/day
Implementation status	FS: Completed Year (2024.7 月予定)		
Implementation schedule	Project implementation starts: 2014 Operation starts: 2019		
Estimated Project Cost	導水・貯水池 118.3 mil. USD 送水・配水 51.5 mil. USD 計 118.3～169.8 mil. USD		

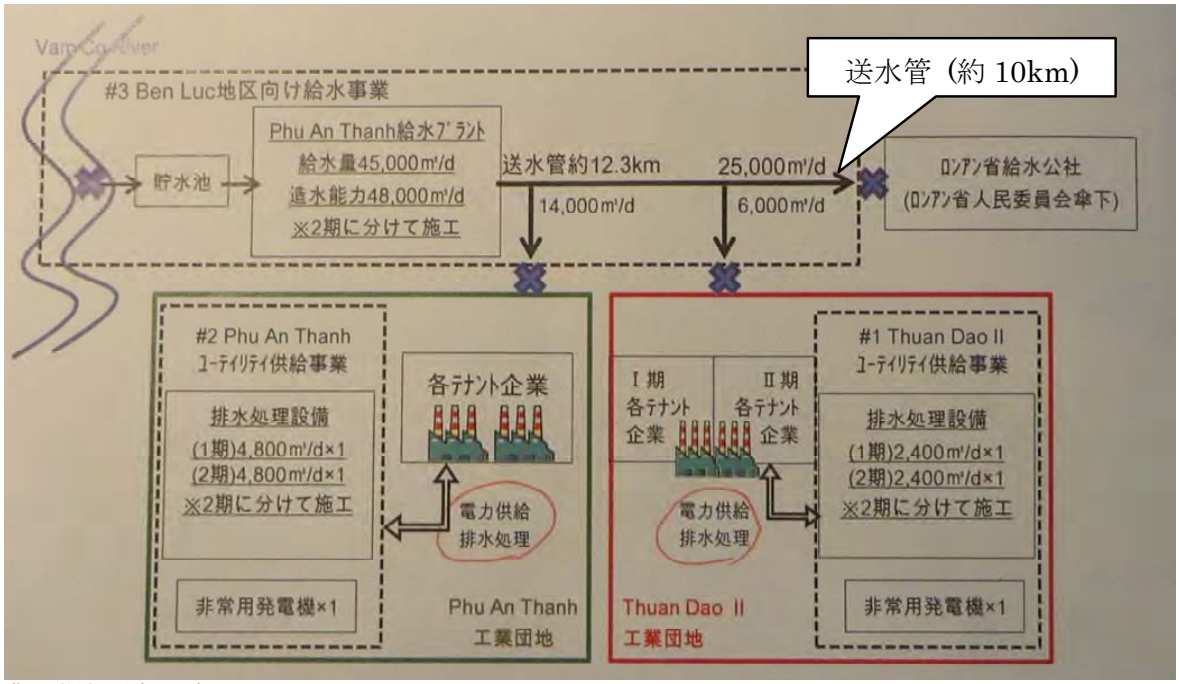


出典：（株）日立製作所

案件概要	
地点	ベトナム国ビンズオン省北部新都市·工業地域
事業内容	ビンズオン省水道公社向け上水道整備·水供給事業
設備規模	日量300,000m3/日
総事業費	推定:USD 386.0Million
D:E比率	70:30
レンダー	JICA(海外投融資)
スポンサー	想定:現地パートナー(水道公社が出資の意向あり) 日立グループ、その他パートナー
オフテーカー	ビンズオン省水道公社(BIWASE)
EPCコントラクター	日立グループ
オペレーター	ビンズオン省水道公社(BIWASE)
建設/操業開始	2014年着工/2016年稼動予定
Equity Back Finance	プロジェクトが計画通りに進行，水道公社がプロジェクト会社に30%出資の場合、2014年に USD34.74Millionを申請
Viability Gap Funding	Two Step Loan金利(二桁)負担の軽減等 (BOT期間中のキャッシュフロー平準化)

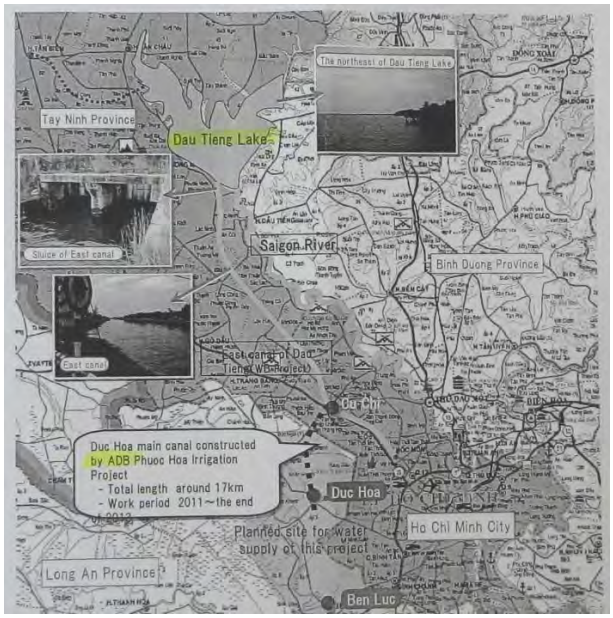
出典：（株）日立製作所

Province & City	Long An Province		
Project Relevant PPP/ODA Project	ロンアン省給水会社送水管建設事業 Ben Luc Water Supply Project		
	Intake	SPC	
	Transmission	SPC	
	WTP	SPC	
	Distribution & HC	Public	
Project Profile		Implementation Plan	Long Term Plan
	Served area	ha	ha
	Served population	cap.	cap.
	Pipe length（送水管）	10 km	10 km
	WTP capacity	25,000 m^3/day	48,000 m^3/day
Implementation status	FS: Completed Year (2010)　On-going　Not-implemented		
Implementation schedule	Project implementation starts:　2013 Operation starts:　2016		
Estimated Project Cost	Pipe & PS　mil. JPY WTP　mil. JPY Total　mil. JPY		
Estimated ODA Loan	Approx.　1,000 mil. JPY		
Remarks	Beneficiaries and advantages ➢ 神鋼環境ソリューショングループ、ロンアン省給水公社等が進める給水事業で、確約されたもの。Ben Luc 地区の水需要増加に早期に応えることが可能である。 ➢ 韓国が Duc Hoa 及び Ben Luc 地区の水道事業 (80,000 m^3/日) を進めているが、Ben Luc 地区では事業化の見通しが立っていない。 ➢ Phu An Thanh 給水プラントの稼働率を高めて、Ben Luc 地区向け給水事業の経営を支援する。		



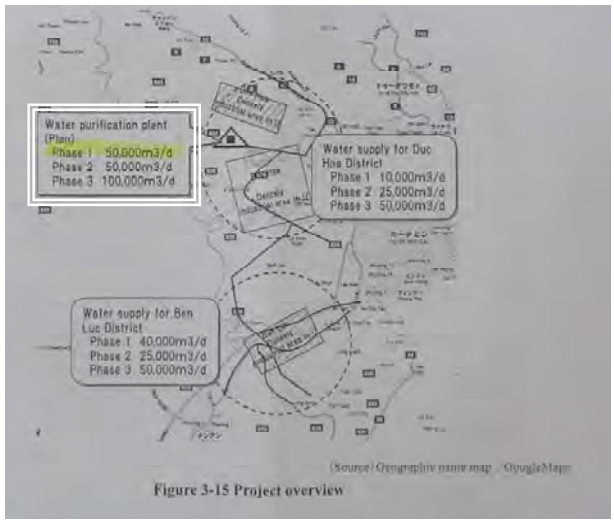
出典：（株）神鋼環境ソリューション

Province & City	Lon Anh 省		
Project Relevant PPP/ODA Project	Phu My Vinh Water Supply Project ロンアン省工業団地水供給・水処理事業 Hoa Khanh Tay Water Supply Project (Korea ODA)		
	HC & Service pipe		
	WWTP		
Project Profile		Implementation Plan	Long Term Plan
	Served area	NA	NA
	Served population	NA	NA
	Sewer length	NA	NA
	WWTP capacity	50,000 m^3/day	200,000 m^3/day Phase-1: 50,000 m^3/day Phase-2: 50,000 m^3/day Phase-3:100,000 m^3/day
Implementation status	FS: Not-implemented (METI FS)		
Implementation schedule	Project implementation starts: Operation starts: 2015		
Estimated Project Cost	Pipe 19,332 mil. JPY WWTP & Tans 15,195 mil. JPY (incld. Intake, PS & Transmission) Total 34,527 mil. JPY		
Estimated ODA Loan	Approx 30,000 mil. JPY		
Remarks	Beneficiaries and advantages ホーチミン都市圏に位置し、増大する都市用水の需要に寄与する。		



ADB Phuoc Hoa Irrigation Project
Total length: around 17 km
Work period: 2011-end of 2013
Total Fund: 131.65 mil. USD

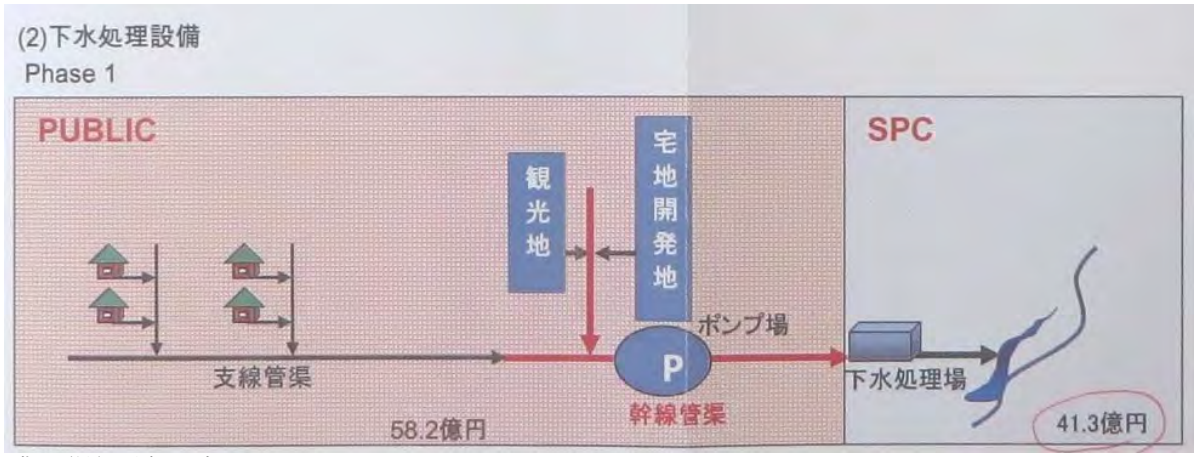
出典：（株）神鋼環境ソリューション



Phu My Vinh Water Supply Project

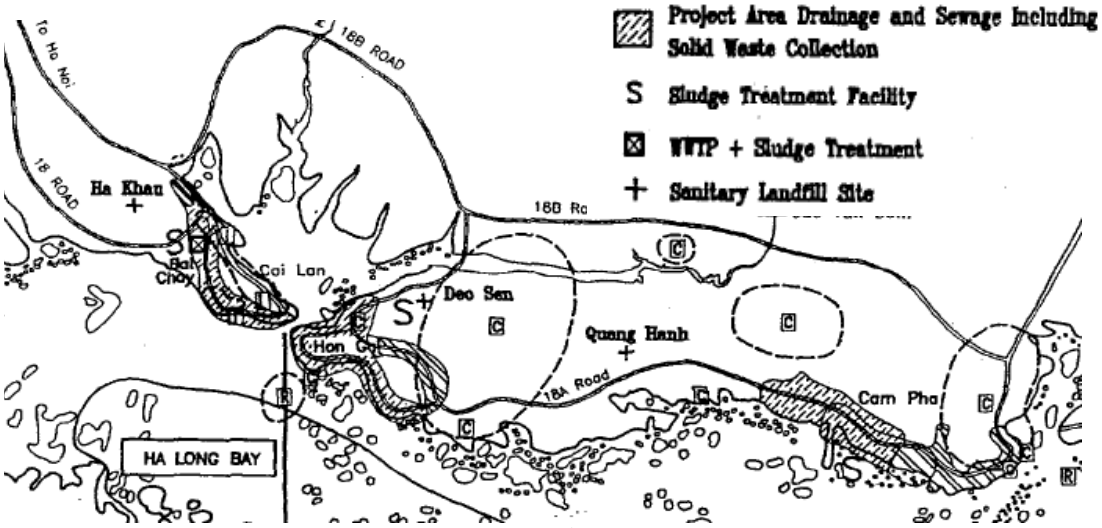
Sector Loan Potential Project：Project Profile（下水道）

Province & City	キエンザン省フーコック島		
Project Relevant PPP/ODA Project	フーコック島下水道整備 フーコック島水インフラ総合開発事業（上下水道事業）		
	HC & Service pipe	Public	
	WWTP	SPC	
Project Profile		Implementation Plan	Long Term Plan
	Served area	-	-
	Served population	-	-
	Sewer length	-	-
	WWTP capacity	7,500 – 15,000 m^3/day	30,000 m^3/day
Implementation status	FS: Completed Year (2013)		
Implementation schedule	Project implementation starts: Operation starts: 2020		
Estimated Project Cost	Pipe & PS 5,820 mil. JPY WWTP 4,130 mil. JPY Total 9,950 mil. JPY		
Estimated ODA Loan	Approx. 5,820 mil. JPY		
Remarks	Beneficiaries and advantages 観光地・住宅地開発：開発者負担を求めて、行政負担を削減する。 観光開発の裨益効果を、既成市街地にもたらす。 従来型の ODA 或いは新規の ODA スキームを適用して、補助金等、省が資金負担しない事業手法を要望している。開発者負担金、政府補助金（観光客負担金）をオプションとして検討。		



出典：（株）神鋼環境ソリューション

Province & City	Ha Long City, Quang Ninh Province
Project Relevant PPP/ODA Project	Halong City Environmental Protection Project No.
Project Profile	計画処理水量 （東）6,500m^3/日 （西）5,000 m^3/日 （計）60 億円
Implementation status	FS: Completed Year (2008) On-going Not-implemented ローカルコンサルタントによるもので、JICA 評価が必要。
Implementation schedule	Project implementation starts: N.A. Operation starts: N.A.
Estimated Project Cost	Total 60 mil. USD
Estimated ODA Loan	Approx. JPY
Remarks	FS ローカルコンサルタント作成（見直し必要） EIA 未作成 用地取得：既存の処理場用地に増設する。住民移転無し

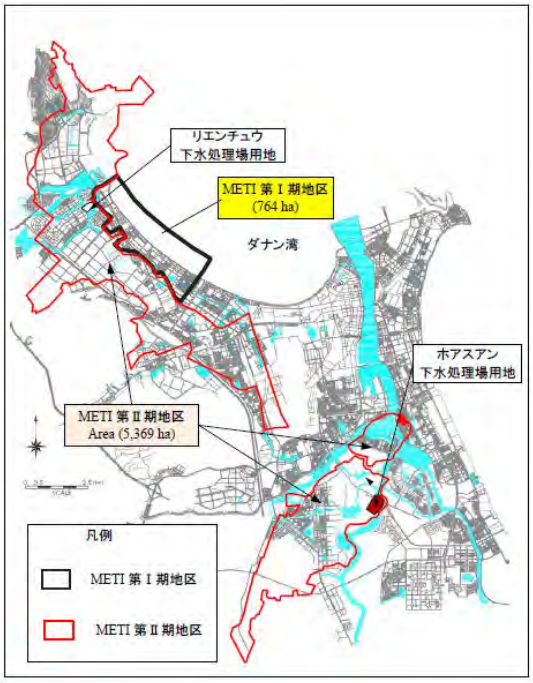


下水道計画

(WB EIA Report)

Province & City	Binh Duong		
Project Relevant PPP/ODA Project	Southern Binh Duong Province Water Environment Improvement Project (Phase-3)		
	HC & Service pipe	Public	
	WWTP	SPC	
Project Profile		Implementation Plan	Long Term Plan
	Served area		
	Served population		
	Sewer length		
	WWTP capacity		
Implementation status	FS: Completed Year ( ) On-going Not-implemented		
Implementation schedule	Project implementation starts: Operation starts:		
Estimated Project Cost	Pipe & PS WWTP Total		
Estimated ODA Loan	Approx. JPY		
Remarks	Phase-2 Project (2011-2018)の継続プロジェクト、事業内容は、Phase-2 の執行状況を見て判断される見込み。		

Province & City	Da Nang	
Project Relevant PPP/ODA Project	リエンチュー下水処理場建設 No	
	HC & Service pipe	Public
	WWTP	SPC
Project Profile	計画処理人口（全体）264,700 人 計画区域（全体）5,369 ha 計画処理水量（全体) 75,500 m^3/日 （第 1 期） 16,400 m^3/日	
Implementation status	2010 年 JETRO FS	
Implementation schedule	Project implementation starts: N.A. Operation starts: N.A.	
Estimated Project Cost	第 1 期分 97.31 億円	
Estimated ODA Loan	Approx. JPY	
Remarks	Phu Loc 下水処理場の改築事業実施中（BOT 2014 完成） （リエンチュー処理区の隣接処理区） 用地取得：水田跡地の湿地帯で、用地決定済み。 住民移転：なし ODA FS：未作成	



出典：ダナン市衛生環境改善事業調査報告書

Appendix 6

BỘ XÂY DỰNG - CỤC HẠ TẦNG KỸ THUẬT

JAPAN INTERNATIONAL COOPERATION AGENCY

"Đào tạo và phát triển nguồn nhân lực ngành thoát nước ở Việt Nam"

"Human Resources Training and Development for Drainage and Sewerage Sector in Vietnam"

20/05/2014, Ha Noi - Vietnam

- Table of Contents -

1. **Workshop Agenda**
2. **Presentations**
   - 2-1. Primary issues on sewerage management and Wastewater disposal in urban areas in Vietnam
   - 2-2. Primary Information of water supply & sewerage sector and Needs of Training Center and JICA Technical Assistance Program
   - 2-3. Human resources for management of urban drainage/sewerage and wastewater treatment – Issues of concern
   - 2-4. Current status of Human Resources and existing issues in operation and maintenance management of drainage/sewerage and wastewater treatment systems in provinces. Recommendations and proposals
   - 2-5. Basic contents in training programs on operation management of urban drainage and sewerage systems
   - 2-6. Proposed training center learned from overseas experiences
   - 2-7. Experience in managing water training centers in Vietnam

HỘI THẢO
"Đào tạo và phát triển nguồn nhân lực ngành thoát nước ở Việt Nam"

WORKSHOP ON
Human Resources Training and Development for Drainage and Sewerage Sector in Vietnam

DỰ KIẾN CHƯƠNG TRÌNH
TENTATIVE AGENDA

Thời gian: Từ 8h00 đến 12h30, Ngày 20 tháng 5 năm 2014 / ***Time : 8h00- 12h30, May 20th, 2014***

Địa điểm: Phòng họp, Viện Quy hoạch đô thị và nông thôn Việt Nam, số 10 Hoa Lư, Hai Bà Trưng, Hà nội

Venue: Conference room, Vietnam Institute for Urban and Rural Planning, 10 Hoa Lu, Hai Ba Trung, Hanoi

THỜI GIAN *TIMING*	NỘI DUNG *ACTIVITY*	TRÌNH BÀY *DELIVERABLE(s)*
8.00 – 8.30	Đăng ký đại biểu *Participants Registration*	
8.30 – 8.45	Phát biểu khai mạc và giới thiệu đại biểu *Welcome speeches and introduction of participants*	MOC: Mr. Nguyễn Hồng Tiến - Ms. Mai Thị Liên Hương JICA: Mr. Yamamoto Kenichi
8.45 – 9.05	Một số vấn đề cơ bản về quản lý thoát nước và xử lý nước thải tại các đô thị Việt Nam *Primary issues on sewerage management and Wastewater disposal in urban areas in Vietnam*	Ms. Trần Thị Thảo Hương, Cục Hạ tầng Kỹ thuật- BXD *Ms. Tran Thi Thao Huong, Administration of Technical Infrastructure- MOC*
9.05– 9.25	Thông tin cơ bản về Ngành cấp và thoát nước, Nhu cầu về Trung tâm Đào tạo và Chương trình Hỗ trợ Kỹ thuật của JICA *Primary information of water supply & sewerage sector and the Needs of Training Center and JICA Technical Assistance Program*	Mr. Inoue Yakuro, Trưởng Đoàn nghiên cứu JICA *Mr. Inoue Yakuro, JICA Study Team Leader*
9.25 – 9.45	Nguồn nhân lực cho quản lý thoát nước và xử lý nước thải đô thị - Những vấn đề cần quan tâm *Human Resources for management of urban drainage/sewerage and wastewater treatment – Issues of concern*	Mr. Trần Quang Hưng, Hội Cấp thoát nước Việt Nam (VWSA) *Mr. Tran Quang Hung, Vietnam Water Supply and Sewerage Association(VWSA)*
9.45 – 10.15	Thực trạng nguồn nhân lực và các vấn đề còn tồn tại trong quản lý vận hành và bảo dưỡng hệ thống thoát nước và xử lý nước thải tại địa phương. Các vấn đề đề xuất và kiến nghị.	- Mr. Lê Thanh, Giám đốc Công ty Phú Điền & Mr. Nguyễn Phương Quý, Tổng Giám đốc Công ty SFC Việt Nam - Mr. Đào Ngọc Tĩnh, Chủ tịch-

	Current status of Human Resources and existing issues in operation and maintenance management of drainage/sewerage and wastewater treatment systems in provinces. Recommendations and Proposals	Giám đốc Công ty TNHH MTV Thoát nước và Phát triển Hạ tầng đô thị Thái Nguyên *-Mr. Le Thanh, Director of Phu Dien Company & Mr. Nguyen Phuong Quý, General Director of Vietnam SFC* *- Mr. Dao Ngoc Tinh, President-Director of Thai Nguyen One-member Drainage and Infrastructure Development Company Ltd.*
10.15 – 10.35	Những nội dung cơ bản về đào tạo quản lý vận hành hệ thống thoát nước đô thị *Basic contents in training programs on operation management of urban drainage and sewerage systems*	Mr.Trần Đức Hạ, Trường Đại Học Xây dựng HN *Mr. Tran Duc Ha,* *Hanoi Civil Engineering University*
10.35 – 10.50	Nghỉ giải lao *Tea break*	
10.50 – 11.10	Trung tâm đào tạo đề xuất theo kinh nghiệm của nước ngoài *Proposed Training Center learned from Overseas Experiences*	Mr. KAWAI Takehiro, Thành viên đoàn nghiên cứu của JICA *Mr. KAWAI Takehiro,* *JICA Survey Team member*
11.10 – 11.30	Kinh nghiệm quản lý trung tâm đào tạo ngành nước ở Việt Nam *Experience in managing water training centers in Vietnam*	Mr. Bùi Hồng Huế, Trường Cao đẳng xây dựng công trình đô thị *Mr. Bui Hong Hue,* *College of Urban Works Construction*
11.30 – 12.20	Thảo luận *Discussion*	Tất cả các đại biểu *All Participants*
12.20 – 12.30	Tổng kết và kết thúc Hội thảo *Sum up and Closing*	
12.30 – 13.30	Nghỉ trưa (Mời các đại biểu ăn trưa tại Nhà hàng Kiến- số 10 Hoa Lư, Hai Bà Trưng Hà nội) *Lunch (Participants are invited for Lunch at ANT Café and Restaurant , 10 Hoa Lu, Hai Ba Trung, Ha noi)*	

Ngôn ngữ: Việt/Anh/Nhật

Language: Vietnamese/English/Japanese

MINISTRY OF CONSTRUCTION

PRIMARY ISSUES ON SEWERAGE MANAGEMENT AND WASTEWATER DISPOSAL IN URBAN AREAS IN VIETNAM

TRAN THAO HUUONG– ADMINISTRATION OF TECHNICAL INFRASTUCTURE

Hanoi, May 20, 2014

MOC– 37 Le Dai Hanh– Hai Ba Trung– Ha noi – Vietnam

CONTENT

1. DRAINAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM
2. INSTITUTIONAL FRAMEWORKS AND POLICIES
3. SOME ISSUES NEED TO BE PAID ATTENTION

SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

- Since1998 – sewerage works has been improved and non-stop developed
- For service ratio coverage; wastewater and sewage sludge
- For drainage, urban inundation control in correlation with climate changes
- For centralize, decentralized WWT, model, technology and selection criteria
- For sewage sludge reuse

SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

- Drainage service charge, environmental protection fee
- Organization models in management activities and operation in drainage activities
- Management and operation contract
- House connection
- Regulations of after-treated WW quality

SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

- **Construction investment of drainage system**
  - Nationwide/total drainage & sewerage projects/ WWTP (WB, ADB, KFW, JICA, Denmark, france…)
  - General characteristics: can not utilize capacity for operation, financial commitment and withdrawal cost.

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SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

Enhance capacity in drainage management & WWT works

- Training method: In-house, technology transfer, in site, short/long term
- Training content: Technical, finance, arrangement, management, operation and customer relation.

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SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

- **Some pictures in construction investment of drainage system.**
- Source: WB - Le Duy Hưng

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SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

Nha Trang city

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SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

WWTP in the south of Nha Trang city

8

NHA TRANG WWTP

9

SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

SANITATION PROGRAM AT SCHOOL AND PUBLIC COMMUNICATION

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SCHOOL TOILET
Before and after construction- Quy Nhon- Binh Dinh

11

1-3

IMAGE OF PHU HOA CANAL BEFORE AND AFTER CONSTRUCTION

ENVIRONMENT SANITATION SUB-PROJECT IN QUY NHON
ITEM 1: DRAINAGE AND WASTEWATER COLLECTION

12

IMAGE OF BAU SEN LAKE– QUY NHON, BEFORE AND AFTER CONSTRUCTION

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QUY NHON WWTP

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QUY NHON WWTP

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INFLUENT AND EFFLUENT WW SAMPLE OF QUY NHON WWTP

HẠNG MỤC 2: NHÀ MÁY XỬ LÝ NƯỚC THẢI CEPT

MẪU NƯỚC ĐẦU VÀO VÀ RA CỦA NHÀ MÁY XỬ LÝ NƯỚC THẢI

Chất lượng nước đầu vào	
pH	7,26
BOD	428
COD	112
SS	160
N_{TS}	32,8
P_{TS}	2,77

Chất lượng nước đầu ra	
pH	8,19
BOD	7,6
COD	49,6
SS	6
N_{TS}	5,6
P_{TS}	0,90

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SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

REVOLIVING FUND – BEFORE AND AFTER BORROW

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SEWERAGE AND WASTEWATER TREATMENT IN URBAN AREAS IN VIETNAM

ENVIRONMENTAL SANITATION SUB-PROJECT IN DONG HOI CITY

Nam Ly lake before and after construction

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PHONG THUY CANAL IN DONG HOI, QUANG BINH BEFORE AND AFTER CONSTRUCTION

19

CAU RAO RIVER IN DONG HOI, QUANG BINH BEFORE AND AFTER CONSTRUCTION

20

DONG HOI PUMPING STATION

21

CONTROL PANEL OF DONG HOI PUMPING STATION

22

DONG HOI WWTP

23

COMMUNITY AWARENESS

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INSTITUTIONAL FRAMEWORKS AND POLICIES

- Law (environment protection and water resources)
- Sewerage law is not available
- Decree, orientation
- Circular
- Regulation, sewerage regulation in local municipalities
- Local standard

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INSTITUTIONAL FRAMEWORKS AND POLICIES

➢ **Environment protection:**

- Regulation on environment protection activities; policy, countermeasure and human resources for environment protection

Environment protection in transportation activities, goods transit import, tourism, craft village, service business…

Characteristics: general regulations, discharged object into environment, not specify discharged object Into the drainage system (including right, responsibility and payment for service supply fees..)

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INSTITUTIONAL FRAMEWORKS AND POLICIES

➢ **Water resources Law:**

- Manage, summarize water resources, protection, exploitation and suitable utilize water resources.

Focus on basic investigation on water resources, set up monitoring system, supervision, warning and projecting on water resources, database, pollution prevention plan and overcome difficulties caused by water and planning on control, distribution of water resources.

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INSTITUTIONAL FRAMEWORKS AND POLICIES

- Just only has Decree on urban and industrial drainage.
- **At present, MOC is submitting drainage , sewerage and WW treatment draft to the Prime Minister**
- Basic contents of Decree draft
- **Sewerage and WW treatment law is not available**

• (Important issues of sewerage and drainage hasn't been regulated in the law
•Implementation sancetion, wastewater tariff...)

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INSTITUTIONAL FRAMEWORKS AND POLICIES

- **Circular**: regulate and instruct basic content s related to urban WW treatment, wastewater, sewage sludge reuse, drainage and inundation prevention.
- **Regulation, stipulation of sewerage in local municipalities: Institutionalize regulations on sewerage following specific conditions of local municipalities**
- **Local standard: discharge into centralized sewerage system form decentralized treatment system.**

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PROPOSAL AND RECOMMENDATION

- Support to study , build sewerage law
- Support to set up sewerage training center

Reinforce of international cooperation, experiences exchange

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Q&A

- THANK YOU AND
- BEST REGARDS

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WORKSHOP ON
Human Resources Training and Development
for Drainage and Sewerage Sector in Vietnam

Primary Information of Water Supply & Sewerage Sector, and Needs of Training Center & JICA Technical Assistance Program

May 20, 2014

Yakuro INOUE, JICA Survey Team

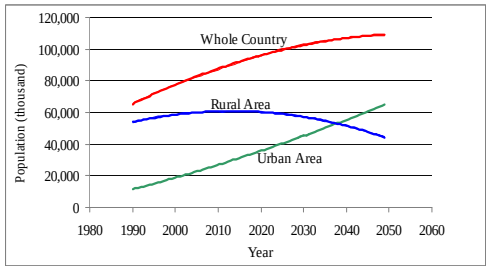
Part-1
Primary Information of Water Supply and Sewerage Sector

Population Projection

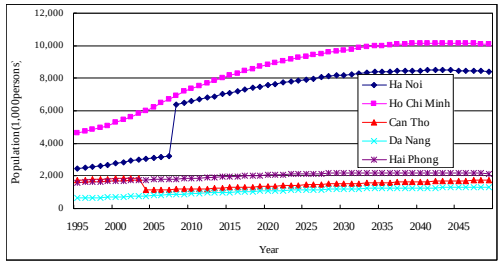
Population increases in urban area.

WS & WW Project Circumstances

- Rapid urbanization due to population increase in urban area.
- Water supply demand increases stably.
- Serious water environment pollution & enormous project needs of WS & WW management medium/small cities as well as large cities



Change of urban/rural population



Population change of five central cities

Project Needs: Orientation 2025 & Vision 2050

Water Supply Sector

- Increase of Water Supply Coverage to 100%
- Increase of Water Consumption due to life style change.
- Reduction of Non-Revenue Water
- Rehabilitation of Water Treatment Facility & Up-grading Quality

Sewerage Sector

- Service Coverage
  70-80% for IV or higher and 50% for V & Craft Village by 2025,
  100% for All Urban Areas by 2050

Financial Needs of WS & WW Sector by 2020/ 2050

Water supply : Less project needs than sewerage due to service rate of 70% at present. Replacement and NRW mitigation projects required.

Sewerage : Enormous financial needs exceeding 2011-20 orientation (8.25 billion USD) estimated by MPI.
Existing cost data uses large scale project, accordingly low cost technology and focusing on priority projects are indispensable.

Public fund investment mechanism : Low interest rate & long repayment period as well as huge financial source are indispensable.

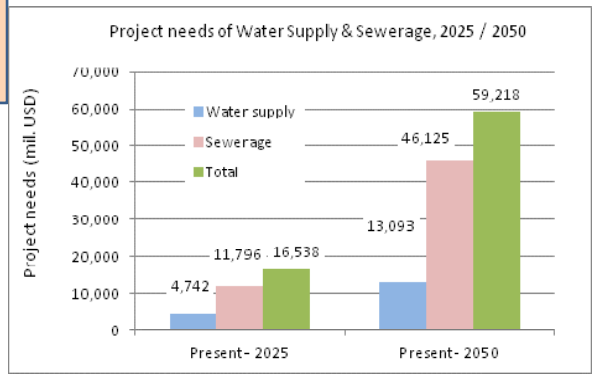
Financial Gap of Sewerage

Present: 250 mil.USD/year
2025/2050: approx. 1,000 mil. USD/year

Project Needs of Water Supply and Wastewater Sector
(Unit: mil. USD

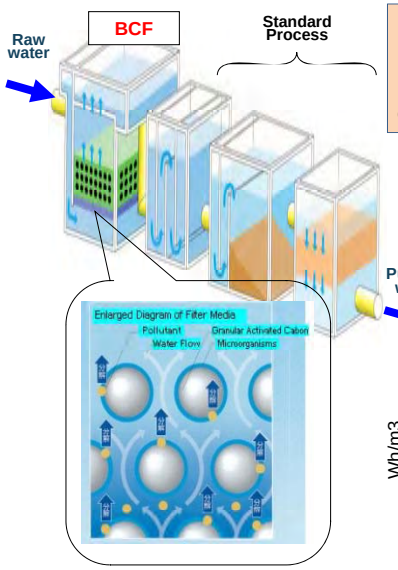
Year	Present - 2025	Present - 2050
Water supply	4,742	13,093
Sewerage	11,796	46,125
Total	16,538	59,218

Source: JICA Survey Team



Advanced Technology of Water Supply

U-BCF (Upward Biological Contact Filtration)



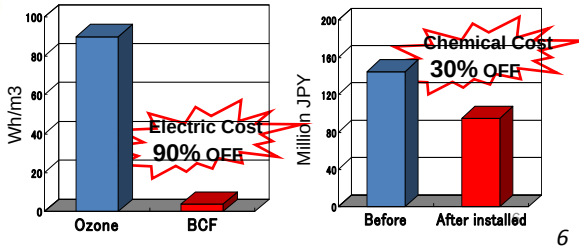
Issues
High NH_3 & Organic due to Discharged WW raises Cl dosing rate & THM formation.

Removal Rate

NH_3-N	70- -100%
Mg	60 – 70%
Organic	30 - 40%

Cost estimation

- Construction cost of U-BCF is about **half price** compared to the **ozonation facility**.
- **Operation Cost**: around **0.36US cent/m³**



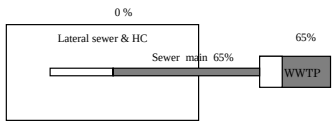
Project Programing Know-how of Sewerage

Step-wised Sewerage Development

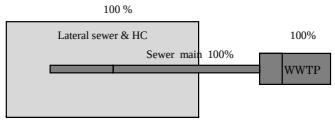
- ✓ Sewerage role in Vietnam: improvement of water environment & sanitation
- ✓ Septic tank remains & Septage will be treated by WWTP

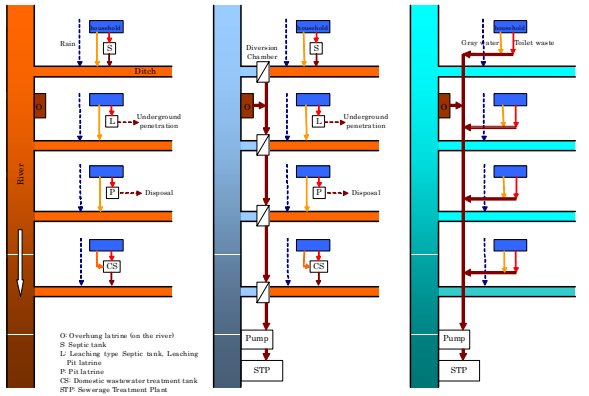
Phased project programming

Sewerage Development Year 2025



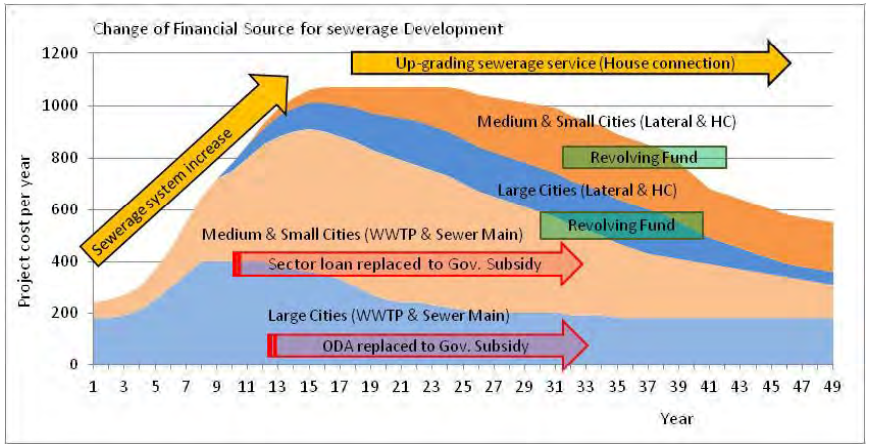
Sewerage Development Year 2050





How to Accomplish the Project Needs in Sewerage Sector?

(Financial and Human Sources for the Project Implementation)



Two Stream of Large and Medium/Small Projects

- ➢ Large cities & tourist resort followed by medium & small cities
- ➢ Sewer main & WWTP followed by Lateral sewer & House connection

Various financial source of public and private shall be provided.

Part-2
Needs of Training Center & JICA Technical Assistance Program in Sewerage Sector

Background of Training Center

Sewerage projects are urgently prevailing to whole country, and the sustainability of O&M is the most important requirement.
However, sewerage engineers and know-how are seriously lacked especially in medium and small municipalities.

Issues & regulations to be considered:

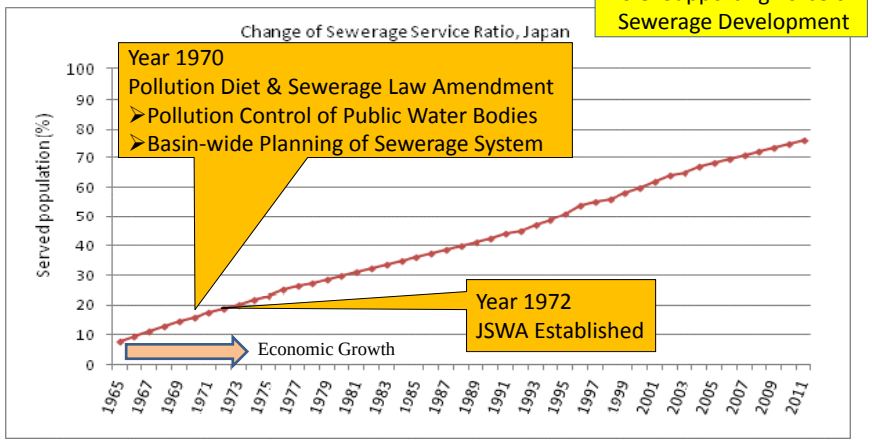
1. Sewerage and drainage planning to be in line with the Urban Planning
2. Standards and norms for wastewater discharged
3. Connecting to public sewerage and drainage, and exemption
4. Centralized and decentralized wastewater treatment models; management of WWTP
5. Monitoring of wastewater quality (households, agencies, service and industrial enterprises…)
6. Sanctions for violations of organizations and individuals.
7. MOC' contribution: or cities III & downwards…
8. Development of database, criteria for selection of technology & treatment models, investment forms (PPP), sludge treatment…
9. Mechanism and policies for investment in sewerage and wastewater treatment
10. Management responsibilities at central and local levels in sewerage, drainage, flood control and environmental management.
11. Wastewater tariff:

Training & Consultation Center learned from Overseas

(1) Historical Background: Japan Sewage Works Agency

Role of JSWA (Japan Sewage Works Agency)
- ➢ Planning, Design & Construction Super Vision of Sewerage Project
- ➢ Training of Staffs of Municipality Gov. **& Technical Certification**
- ➢ Research & Technology Development

Role: Supporting Force of Sewerage Development



Training & Consultation Center learned from Overseas

Roles: Japan Sewage Works Agency

- Japan experienced severe water pollution at the public water bodies due to rapid economic growth in 1960's.
- To cope with the above pollution problem, Japanese Central Government provided huge allocation of budget for sewerage works and established a support agency for local municipalities to promote sewage works.
- The Japan Sewage Works Agency (JS) shall construct and carry out operation and maintenance of main facilities of sewer systems based on requests received from local governments.
- The JS shall promote improvement of sewer systems by offering technical assistance related to wastewater works, by training wastewater engineers, and by pursuing research and technology development on water pollution control for possible practical applications.

Recommendation: Similar model can be applied to Vietnam.

Project Implementation Support

(1) Necessity of the Project Implementation Support for the Operation of Water Sector Loan

- Governments have insufficient experience and human resources for the management of the sector loan and its sub-project so far.

(2) Function of Implementation Support Team (Consultant)

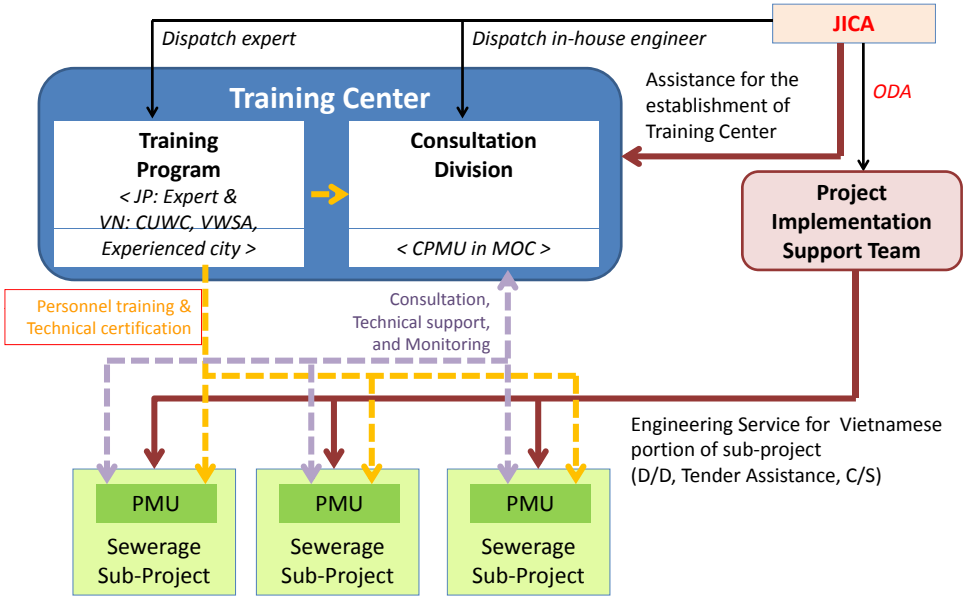
1) Short Term (First Tranche): Financed by JICA Sector Loan

- Engineering works (D/D, Tender Assistance, and C/S) for Vietnamese portion of the project.

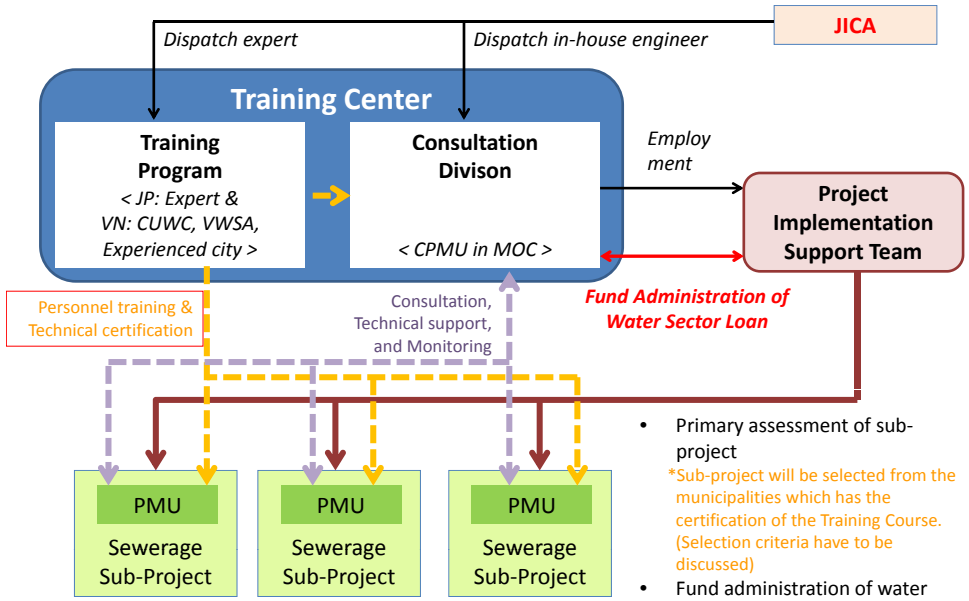
2) Middle Term (Third Tranche or later): Hired by MOC

- Primary assessment of sub-project
- Fund administration of the water sector loan

Project Implementation Support (Short Term)



Project Implementation Support (Mid. & Long Term)



- Primary assessment of sub-project
  *Sub-project will be selected from the municipalities which has the certification of the Training Course. (Selection criteria have to be discussed)
- Fund administration of water sector loan

Thank you

&

Xin Cám ơn

HUMAN RESOURCES FOR URBAN DRAINAGE MANAGEMENT WASTEWATER TREATMENT – ISSUES NEED TO BE CONCERNED

Mr. Trần Quang Hưng

Vice Chairman cum General Secretary, Vietnam water supply and sewerage Association (VWSA)

1. General Background of urban drainage

There has been over 770 urban areas at all types with more than 34 million people at 63 provinces so far. If new urban areas was considered as urban level, even the lowest category (type V), urban infrastructure with drainage system will be formulated. However, only urban with type III upward, water supply and drainage works have been relatively done to meet the people's requirements. Therefore, drainage system with management system and O&M are just only available at 78/770 equivalent to 10% of urban areas.

Different from urban water supply sector, management of urban drainage is spread. At present, there are 73 enterprises involve in urban drainage management in the whole country in which 6 urban areas have separated drainage companies such as Hai phong, Hanoi, Thai Nguyen, Da Nag, HCM city and B area- Vung Tau; 29 water supply companies and 38 urban work companies concurrently manage drainage field. Drainage management force at sewerage and drainage companies or urban works companies will be divided into enterprises or sewerage and drainage management team.

Investment, construction, management, operation of drainage system and wastewater treatment facilities are also scattered in the whole country. Almost the investment and construction period are assigned to a unit under the PPC for its management. After completion of construction, the work will be transferred to drainage enterprise for O&M work. However, some local municipalities assign this work to irrigation unit or urban flood control center or lease an operation management company under the contract between urban management authority and special company.

There are 300 industrial zones and economic zones in Vietnam. These zones are responsible for drainage sewerage and wastewater management by itself but wastewater treatment system just covered 60% of industrial zones. Hospitals, craft villages are almost lacking of WWTP system. Drainage and sewerage companies collect water tariff through house connection in to combined sewer system but WW quality monitoring, pollution level determination when connect it to the combined sewer system are implemented by environment management agency or environment police decides to sanction of violations.

Therefore, urban sewerage, drainage management and urban and industrial WWT are mainly under the management of local municipalities but it is under the regulation and influence of multiple agencies as MONRE, MOC and MOIT etc…

The situation of spreading of current institution arrangement have much influence on management and operation work of urban sewerage and drainage in general and on enhancement of human resources capacity to meet the demand of urban, socio-economic development.

2. Current situation of human resources in the field of WW management and requirements need to be solved

Following the current statistics, total staff of urban sewerage and drainage companies are about 13.000 people. Woman staff and woman worker is account for 25% and 18%, respectively. Showing that sewerage and drainage is hard work sector, woman worker is in low rate.

- **Age:** On average, 64% of staffs is under 40 years old, 13% is more than 50 years old. In which 80% of management officers at the level of head and vice divisions, manager of enterprises is under 50 years old. 75% of professional staffs and 62% of technical staffs are under 40.
- **Qualification:** more than 90% of management officer graduated universities in which leader:27% , management staff: 21% and officer: 18% are from water supply, drainage and environment faculty.
  60% of technical staff reached skill of level 4 upward but there are only 44% of which is not really trained in this sector.

On the other hand, urban sewerage and drainage management company usually seasonally outsource. They hire social labor force or agricultureal labor to do the simply work but not continuously such as: channel revetment, flood protection, or flood tide etc.., these labors are not in the list of company's workforce but fluctuate from 10- 20% of main labor force of the company per year.

Regarding training, There are 12 universities possess environment faculty but graduated trainees can meet the market's requirements are from university of civil Engineer, HAU, water resources university and university of technology. Some colleges under the MOC train technical workers specialty in pipe line installation, operation treatment area for both water supply and WW. There's no college or vocational school specialty in operation of WWTP.

Besides universities, colleges and vocational schools, drainage management companies of urban areas especially in urban area Type 1 also hold the training courses to facilitate the management, operation skills of staffs or sometime hold the raise salary contest. ODA projects from Japan,, German, Denmark and projects under the program of WWB or ADB also arrange traning courses and programs on management and operation works. Since 2011 up to now, with the assistance from

German water association and some German institutes, VWSA held some pilot training courses aiming to enhance capacity for management staffs of surrounding drainage companies. Subjects of training courses focus on drainage system palnning, urban flood control and general knowledge on O&M, WW tariff.

Generally, current human resources of urban drainage management companies can meet the requirements of management, common urban drainage system maintenance. Also they can cope with weather occurs such as flood, storm and rain. Labor forces of drainage management companies of urban area as well as special urban area, type 1, 2 urban areas had experiences, knowledge and responsibility in management and operation of drainage system. Also they are dedicated to the work although the work is hard.

3. Innovation of model, pay attention to human resources development for urban and industrial sewerage and drainage management companies.

Vietnam is one of the countries with rapid economic growth, population and urbanization. Vietnam is also a country with a long coastline, complex weather and heavily suffered from climate changes as flood tide, rising sea level, storms, flood with the complicated occurs. All the fluctuation of population, urbanization, climate change affects to drainage management. Orientation of urban and industrial drainage to 2025 and vision 2050 approved by the Prime Minister has set out the very specific target for drainage sector and also set the basic solutions on science, technology, organization and human resources development respectively . Seeing the two basic targets from now to 2025, type 4 urban areas need to " *eliminate the frequent inundation by storm water and expand the service ratio of drainage system to 100%. Type IV urban areas and upwards will try to have WW collection system and centralized domestic WWTP; domestic wastewater ratio will be collected and treated at 70 - 80%, after treated wastewater will reach standard.".* Over the past 10 years, Although the Government has utilized ODA loan for drainage field, we have 18 commission WWTPs and more than 40 WWTPs will come into operation from now to 2020, Yen So pumping station in Hanoi and Nhieu Loc, Thi Nghe channel and WWTPs with capacity of over 200,000m3/day in HCM city, the government authorities has been headache whenever long hour rain comes. Hanoi still suffers from floods if rain lasts about one hour and HCM city has to cope with severe flood tide. Moreover, how to treat sewage sludge, bad odor of WWTPs and cost for management and operation of WWTPs is a big problem regardless the technology matching, following centralized or decentralized model in sewer connection, WW collection etc. It's not easy to solve all these above mentioned in several upcoming years.

Hence, human resources development of drainage sector, finance, technology, equipment investment are very important to handle with the above mentioned issues.

But a question need to be answered is how to arrange if we can not clarify the importance of drainage, urban and industrial wastewater treatment.

Drainage management agency has to bear consequences of many factors. Mistake in planning, low capability in selection of investment on technology and capital source and also the unconscious of the community in building, business and in daily life are subjective factors which Vietnamese side can overcome . Pay much attention to improve the quality of drainage management agency without raise awareness, responsibility of community and knowledge in macro vision on drainage and WW field, targets setting for the orientation will lack of feasibility.

VWSA highly appreciate guidelines, ideas of international organizations which are concerning to technical assistance, human resources quality enhancement for drainage management field. We are willing to cooperate, share experiences and mobilize members of the Association participate in every activities for the success of Water sector in Vietnam. VWSA's principle is that every activities for human resources development must base on "approach following demand" in order to bring practical learn to members. And also we expected that this program positively impact to government authorities, local authorities and community because only drainage management agency is no meaning in the process of improvement of this sector.

CURRENT STATUS OF HUMAN RESOURCES AND EXISTING ISSUES IN OPERATION AND MAINTENANCE MANAGEMENT OF DRAINAGE/SEWERAGE AND WASTEWATER TREATMENT SYSTEM IN PROVINCES. PROPOSALS AND RECOMMENDATIONS.

The report is written accordance to suggestion of Administration Technological Infrastructural – Ministry of Construction and JICA for workshop on: ***"Human Resources Training and Developing for Drainage and Sewerage Sector in Vietnam"*** *on 20/5/2014*

Writer: **Le Thanh**, Director of Phu Dien Company &
Nguyen Phuong Quy, General Director of SFC Vietnam Environment Corp.

Phu Dien Construction Investment and Trading Joint Stock Company and SFC Investment Development for Environment Corp. have many experiences about BT – BOT Investment, Operation and Maintenance (O&M), supply technology, design, construction, training, starting up and commissioning, transfer technology (EPC) for wastewater treatment plant in Vietnam. During the actual construction of more than 30 wastewater treatment plants in Vietnam, accordance to the suggestion of Administration of Technological Infrastructural - Ministry of Construction, we would like to present some contents about: Current status of Human resources and existing issues in Operation and Maintenance managemet for Drainage/Sewerage and Wastewater treatment system in provinces; we also would like to present the proposals as well as recommendations. In the framework of this report, we also only mention issues related to waste water treatment sector that PHU DIEN and SFC have many experiences and capital, particularly **WASTEWATER TREATMENT PLANT (WWTP)**, not including operation and maintenance management for the drainage system.

I. REQUIREMENTS FOR HUMAN RESOURCES

Operation Management for WWTP is difficult balance process between keeping operation to archive environmental standard and rising not much secondary waste which harm for environment and human's health with suit cost. It also includes asset management, failures and repairs management to archive requirement about longevity and efficiency for the project as well as machinery. Thus, human resources must be equipped the knowledge of many fields, not only in technology, equipment but also in management skills ,**THE KNOWLEDGE ABOVE IS OBTAINED NOT ONLY IN TRAINING PROCESS AT THE SCHOOL BUT ALSO IN ACTUAL EXPERIENCES**.

- Knowledge about entire technology process;
- Knowledge about the technology of each treatment stage;
- Knowledge about the machine, equipment;
- Knowledge about the characteristics of the influent and the fluctuations;
- Knowledge about the related standards and regulations
- Knowledge about the value and efficiency of the current operation of machinery and entire technological process
- Knowledge about operated history and failures, incidents

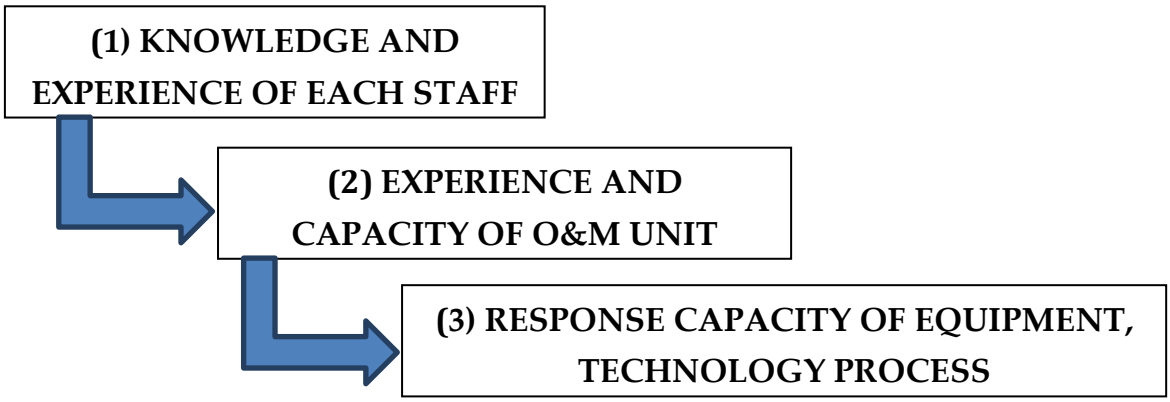
- Knowledge about consumption cost for each period;
- Knowledge and experience in community relations where projects operate;
- Knowledge about environmental assessment
- Ability to communicate and re-training for new operator;

Table 1. Skills and knowledge of operation management positions

Otherwise, wastewater treatment project – especially **WWTP – IS THE TECHNOLOGICAL PROJECT WHICH NEED KNOWLEDGE OF MULTI-FIELD: BIOLOGY, CHEMISTRY, MECHANIC, CONTROL, ELECTRIC ... AND MANAGERS MUST HAVE SYNTHETIC KNOWLEDGE**. Generally, WWTP includes many positions with human resources in many fields.

- General Manager - Assistant for Manager; - Administrative Assistant;; - Operation manager; - Maintenance manager; - Operation shift manager; - Operation technician; - Maintenance technician; - Operation trainer; - Maintenance trainer; - Technological process manager; - Lab manager - Chemical Manager; - Chemical Engineer; - Biological Engineer; - Lab staff; - Maintenance supervisor; - Technological Engineer - Mechanical Engineer; - Electrical Engineer - Control Engineer; - Asset Management - Technician, worker - Security, industrial cleaner, odds
Table 2. Human positions in WWTP operation chart

It is clear that the factors affect to efficiency of operation management for general WWTP as well as the hi – tech WWTP is **(1). KNOWLEDGE AND EXPERIENCE OF EACH STAFF , (2) EXPERIENCE AND CAPACITY OF OPERATION - MANAGEMENT UNIT AND (3) RESPONSE CAPACITY OF EQUIPMENT, TECHNOLOGY PROCESS OF WWTP.**



Fingure 1: Factors decide efficiency of operation – management WWTP

Because operation management WWTP need multi – field knowledge, thus team work is very important. Because of the multi – field, experience and synthesis knowledge are very important. Thus, besides **HUMAN RESOURCE** factor, **EXPERIENCE AND CAPACITY FACTORS OF OPERATION MANAGEMENT UNIT ARE VERY IMPORTANT**. **PERIOD OF OPERATION MANAGEMENT WWTP IS VERY IMPORTANT, FOR ALONG TIME, IS A DECIDED PERIOD FOR EFFECTIVE INVESTMENT**. In investment stage, there are many legal document to state about selecting consultant contractor, construction contractor which have enough capacity, however there is not legal document to state about capacity condition for the contractor as well as the operator resource who can manage and operate the project.

II. CURRENT RESPONSE

The training of human resources is devided into types as follows

1. <u>The training in universities, colleges, vocational schools:</u> equip to individuals with knowledge about chemistry, biology, economic…Some universities training about drainage that supply for trainer knowledge about wastewater treatment but mainly are technology and human for drainage, includes Ha Noi Universty of Technology, Ha Noi Contruction University, University of Economics, Thang Long Universty, Ha Noi Universty of Science….Ho

Chi MinhUniversty of Technology and some universities in Da Nang, Hue, Can Tho. These universities are mainly equipped with base knowledge, theory is mainly; attach special importance to higher education but lack of vocational school and skilled labour.

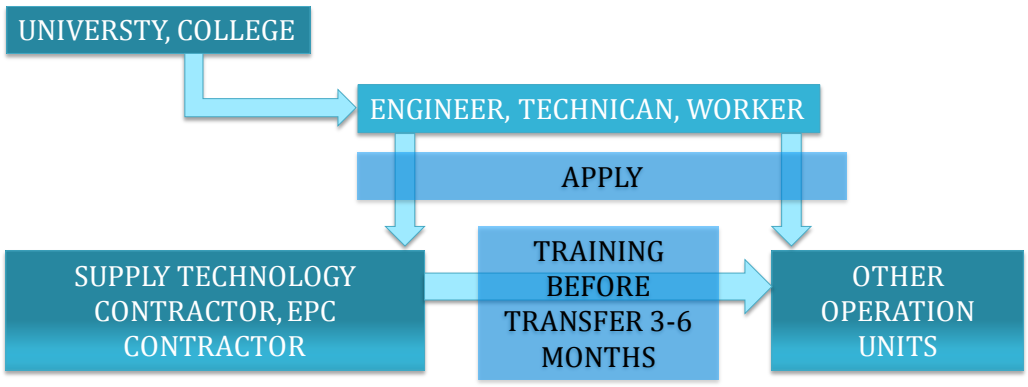
On the other hand, a very specific definition for wastewater treatment is applied various technology (drinking water treatment is only applied some of technologies) and the technology is developing very quickly. The technology is also provided and developed by the technology unit, the EPC contractor and only they can master technology (not design consultant and construction units). Therefore, to carry out the training in a school for a particular technology is difficult, and students cannot learn deeply conditioned to all technologies. Technology of a WWTP is only determined when building WWTP.

2. Training when transferring technology for units which are not understand the technology and operation management: shall be carried out by the construction company, transfer the technology to units that designated operation- usualy is a local dranage and supply company during execution process. The tranining process for a period is from 3-6 months. Operators are appointed from human resources or recruited new staffs by drainage and supply Water Company. For a limited period, workers are trained a new job without experience ; the training and certification performed by the Contractor that makes the draiage and supply water company was not able to get the operation within the limited time, or incurred additional training cost, or are difficult to ensure quality as well as operating costs . For large-scale WWTP, the training often does not bring efficiency. In Yen So WWTP, Binh Hung WWTP, the training unit was still not operatedWWTPimmediately after the training process.
3. Training regularly, supplementation, replacement personnel: The fact that operator must be required to train through basic training in the university or college but then must necessarily practical training in WWTP. In the fluctuation labor situation, the operating units are trained to perform the replacement operation or

management of new updated technology. The technology do not understand, as well as lack of experienced personnel will not be made for training replacement workers - especially with the new technology is a major challenge for the local Drainage and Supply Company.

4. <u>For the companies that master the technology and have a skillful staff:</u>

   Join-Venture Phu Dien-SFC is the master technology, experienced through construction work , training and technology transfer for WWTP in a large cities ; available manpower . The company as Phu Dien, SFC will be able to get the right management operation without any training process by training and technology transfer company . In fact as Yen So WWTP, Phu Dien and SFC just need 5 days to take over operation and maintenance and has been successful. The human resources of Phu Dien and SFC has been training through universities, colleges, vocational school but experienced in many years and the company had trained regularly updated for new technology. The fact that a human must first be trained through schools with expertise and experience a reality at least from 2 to 10 years depending on position can meet job requirements



Fingure 2: Training process

There is not legal document clearly to stipulate for capacity of company, operation manager, so that the training of human resources are still many limitations.

III. PROPOSALS AND RECOMMENDATIONS

On the basis of the current situation above, we have the following recommendations to ensure the operational management WWTP promotes the most effective:

1. Need to have clear rules, in particular the capacity of company and individuals involved in the management and operation of WWTP.
2. Should have a training program for operator resources in WWTP, link between training company and the prestigious, ability and experience business of the operation, especially technology is mastered to ensure learning - just reach out the new technology as well as the management and operation skills in practice.

Ha Noi, Dated 15/5/2014

Lê Thanh: General Director of Phu Dien Construction Investment and Trading Joint Stock Copany;
Nguyễn Phương Quý: General Director of SFC Viet Nam Investment Development for Environment Corp

NHỮNG NỘI DUNG CƠ BẢN VỀ ĐÀO TẠO QUẢN LÝ VẬN HÀNH HỆ THỐNG THOÁT NƯỚC ĐÔ THỊ

PGS.TS TRẦN ĐỨC HẠ
Trưởng Bộ môn Cấp thoát nước – Môi trường nước, trường Đại học Xây dựng;
Phó Viện trưởng Viện Nghiên cứu Cấp thoát nước và Môi trường

1. Hiện trạng thoát nước và XLNT đô thị và khu công nghiệp

- Hệ thống thoát nước ở các đô thị Việt Nam chủ yếu là HTTN chung (dùng chung đường cống hay kênh mương cho cả nước mưa và nước thải).
- Bình quân khoảng 50% đến 60% diện tích đô thị có cống và mương thoát nước.
- Khoảng 60% hộ gia đình được đấu nối thoát nước vào hệ thống cống chung (WB, 2013)

Hiện trạng thoát nước và XLNT đô thị và khu công nghiệp

- 19 nhà máy xử lý nước thải (XLNT) đô thị đã đi vào vận hành và 31 nhà máy XLNT đô thị khác đang được xây dựng với tổng công suất khoảng 670.000 m^3/ngày;
- 66% khu công nghiệp đã xây dựng trạm XLNT tập trung với số lượng 118 trạm và tổng công suất 431.510 m^3/ngày.

2. TÌNH HÌNH ĐÀO TẠO CÁN BỘ VÀ CÔNG NHÂN KỸ THUẬT VỀ THOÁT NƯỚC

- Toàn quốc hiện nay có khoảng gần 10.000 cán bộ công nhân ngành nước nhưng lực lượng này phân bố không đều, tạo thành hình nấm trong cơ cấu nhân lực (Hội Cấp thoát nước Việt Nam).
- 40 trường đại học, cao đẳng và trung cấp kỹ thuật có đào tạo liên quan đến lĩnh vực Cấp thoát nước , Kỹ thuật môi trường và Kỹ thuật tài nguyên nước. Trong đó chỉ có 4 trường đại học được đào tạo kĩ sư ngành cấp thoát nước (mã số: 52110104), 4 trường cao đẳng và 3 trung tâm đào tạo về cấp nước đô thị.
- Không có một trường trung học chuyên nghiệp hoặc trung học nghề nào đào tạo chuyên về thoát nước và XLNT.

/Nguồn: IWASSE, 2013/

3. NHU CẦU ĐÀO TẠO VỀ VẬN HÀNH VÀ BẢO DƯỠNG HTTN & XLNT

Cơ cấu đội ngũ lao động phục vụ trong lĩnh vực kỹ thuật hạ tầng

- Các nhà phát minh và đổi mới công nghệ : 2,5%;
- Các nhà quản lý : 6,5%;
- Các nhà kỹ thuật công nghệ: 9%;
- Công nhân lành nghề : 22%;
- Công nhân không lành nghề và lao động giản đơn: 65%.

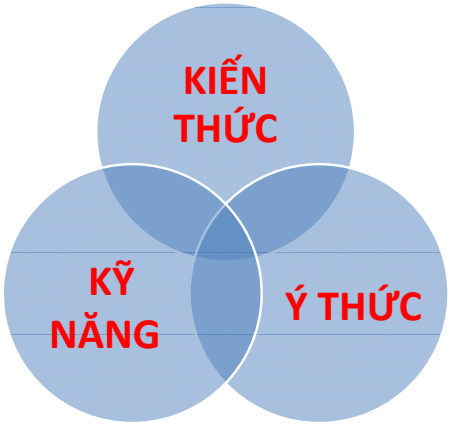
(**Theo tổ chức lao động Quốc tế (ILO) của Liên hợp quốc**)

NHU CẦU ĐÀO TẠO VỀ VẬN HÀNH VÀ BẢO DƯỠNG HTTN & XLNT

- Việt Nam có 770 đô thị (Bộ Xây dựng, 2013) và 283 khu công nghiệp (Bộ Kế hoạch và Đầu tư, 2012).
- Quyết định số: 1930/QĐ-TTg ngày 20/11/2009 của Thủ tướng Chính phủ phê duyệt định hướng phát triển thoát nước đô thị và khu công nghiệp Việt Nam đến năm 2025 và tầm nhìn đến năm 2050:

"Củng cố, mở rộng các trường dạy nghề và nâng cao chất lượng đào tạo công nhân ngành nước phục vụ yêu cầu quản lý, vận hành và bảo dưỡng hệ thống thoát nước."

4. Nội dung đào tạo quản lý vận hành HTTN và XLNT đô thị



A. Kiến thức thoát nước và XLNT đô thị

Khái niệm thoát nước đô thị:

- Tổ chức thoát nước và XLNT (XLNT tập trung, XLNT phân tán/ tại chỗ, ...)
- Các loại HTTN (chung, riêng, nửa chung, nửa riêng,...)
- Mạng lưới thoát nước mưa, nước thải và các công trình trên MLTN;
- Cấu tạo các loại công trình thoát nước (cống/ mương thoát nước, giếng thăm/hố ga, hồ điều hòa, trạm bơm nước mưa, trạm bơm nước thải, giếng tách nước thải/ xả nước mưa CSO, cống xả nước thải,.....

Kiến thức thoát nước và XLNT đô thị

Xử lý nước thải đô thị

- Các phương pháp và công trình XLNT (xử lý cơ học, xử lý sinh học, xử lý hóa lý,...);
- Các phương pháp và công trình xử lý bùn cặn (tách nước, ổn định bùn cặn, làm khô bùn cặn,...);
- Các phương pháp và xử lý mùi;
- Các phương pháp khử trùng;
- Các phương pháp và công trình xả nước thải ra nguồn tiếp nhận.

Kiến thức thoát nước và XLNT đô thị

Các kiến thức bổ sung khác:

- Tổ chức quản lý vận hành hệ thống thoát nước và nhà máy XLNT
- Các tiêu chuẩn và quy chuẩn kỹ thuật kiểm soát chất lượng nước và quá trình xử lý nước
- Các kiến thức cơ bản về cơ khí, điện kỹ thuật và tự động hóa trong quá trình vận hành bảo dưỡng các công trình, thiết bị thoát nước và XLNT;
- Các kiến thức về an toàn lao động trong quá trình vận hành và bảo dưỡng công trình và thiết bị thoát nước và XLNT.

B. Kỹ năng vận hành bảo trì các công trình, thiết bị thoát nước và XLNT

Lắp đặt, vận hành và bảo trì đường ống và thiết bị:

- Lắp đặt, vận hành và bảo trì, sửa chữa các thiết bị cơ điện (máy bơm, máy thổi khí, máy khuấy, máy ép bùn,...);
- Lắp đặt cống và đường ống thoát nước (cống tự chảy, đường ống áp lực,...)
- Lắp đặt, vận hành và sửa chữa các thiết bị điện và thiết bị điều khiển (tủ điều khiển, tủ điện, thiết bị đo on-line,...)
- Lắp đặt và kiểm soát các thiết bị đo lưu lượng, giếng đấu nối nước thải,...
- Vận hành các thiết bị nạo vét bùn cống thoát nước.

Kỹ năng vận hành bảo trì các công trình, thiết bị thoát nước và XLNT

Vận hành và bảo trì hệ thống thoát nước và XLNT:

- Vận hành và bảo trì mạng lưới thoát nước mưa và các công trình trên đó;
- Vận hành và bảo trì mạng lưới thoát nước thải và các công trình trên đó;
- Vận hành và bảo trì các trạm bơm thoát nước mưa và nước thải;
- Vận hành và bảo trì các công trình XLNT (các công trình xử lý bậc 1, xử lý sinh học bậc 2 và bậc 3, xử lý bùn cặn, xử lý mùi, khử trùng nước thải,...)
- Vận hành và bảo trì các cống xả nước thải và nước mưa ra nguồn tiếp nhận.

Kỹ năng vận hành bảo trì các công trình, thiết bị thoát nước và XLNT

Kiểm soát quá trình XLNT và bùn cặn:

- Thử nghiệm jar-test để xác định liều lượng hóa chất quá trình XLNT và bùn cặn;
- Nuôi cấy vi sinh vật và đưa công trình XLNT bằng phương pháp sinh học vào hoạt động;
- Phân tích các chỉ tiêu chất lượng nước thải và bùn cặn trong phòng thí nghiệm;

Kỹ năng vận hành bảo trì các công trình, thiết bị thoát nước và XLNT

Tổ chức hoạt động của hệ thống thoát nước và nhà máy XLNT:

- Sử dụng PLC để điều khiển quá trình vận hành hệ thống thoát nước và XLNT
- Vận hành hệ thống quan trắc tự động chất lượng nước thải xả ra nguồn tiếp nhận
- Đấu nối nước thải từ các hộ gia đình vào cống thoát nước thải

5. TỔ CHỨC VÀ PHƯƠNG PHÁP ĐÀO TẠO

A. TỔ CHỨC ĐÀO TẠO

- Hình thức 1: Đào tạo tập trung theo chương trình đào tạo nghề hoặc trung cấp kỹ thuật 2 năm;
- Hình thức 2: Đào tạo chuyên đề ngắn hạn theo khóa học;
- Hình thức 3: Đào tạo tại chỗ (tại các nhà máy XLNT).

B. PHƯƠNG PHÁP ĐÀO TẠO

- Đào tạo lý thuyết cung cấp các kiến thức cơ bản về thoát nước và xử lý nước thải;
- Đào tạo thực hành tại các xưởng thực nghiệm, phòng thí nghiệm, mô hình pilot,... để tạo kỹ năng nghề.
- Ngoại khóa: tham quan trao đổi kinh nghiệm, seminar theo nhóm,...để nâng cao hiểu biết, kỹ năng và ý thức nghề nghiệp.

WORKSHOP ON
Human Resources Training and Development
for Drainage and Sewerage Sector in Vietnam

Proposed Training Center learned from Oversea' Experiences

May 20, 2014

Takehiko KAWAI, JICA Survey Team

6-1

4.1 Necessity of Training Center

(1) Necessity of Training Center

- Together with the financing mechanism proposed in the previous section, a sustainable capacity building mechanism is necessary especially for sewerage development in medium and small urban areas due to insufficient their human resources.
- Sewerage sector is developing rapidly in Vietnam.

Result of Interview Survey

- *Many sewerage projects will be implemented*
  - ✓ *Commissioned 21 WWTPs in 10 cities*
  - ✓ *Under implementation 31 WWTPs in 21 cities*
- *Sewerage tariff is not sufficiently implemented*
- *MOC needs the capacity building in the water and sewage works sector*

Result of Questionnaire Survey

- *All training programs in the past 3 years were provided by foreign institutions.*
- *There is an insufficient number of trainers in the organization.*
- *Upcoming implementation of Yen Xa project*

Ha Noi, HCM & MOC strongly request practical training & consultation center

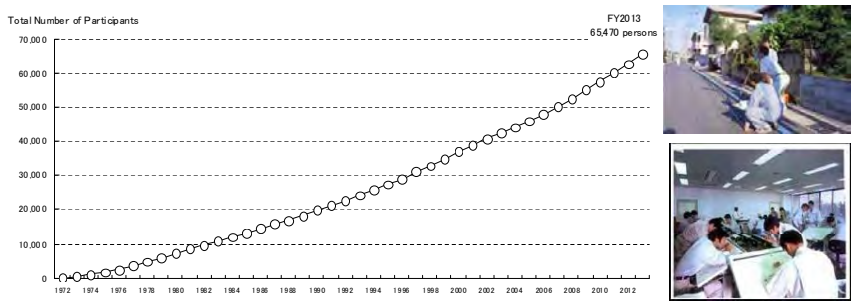
4.1 Necessity of Training Center

(2) Japanese Experience: Japan Sewage Works Agency (JS)

- Japan experienced severe water pollution in public water bodies due to a rapid economic growth in the 1960s.
- To cope with the above pollution problems, Japan's Central Government provided a huge allocation of budget for sewage works and at same time established a technical assistance agency to build the capacity of local governments.
- The Japan Sewage Works Agency (JS) constructs, operates and maintains the main facilities of sewerage systems based on requests received from local governments.
- JS promotes the improvement of sewerage systems by offering technical assistance in the field wastewater works, by training wastewater engineers, and by conducting research and technology development on water pollution control for possible practical applications.
- A similar model can be applied in Vietnam.

4.1 Necessity of Training Center

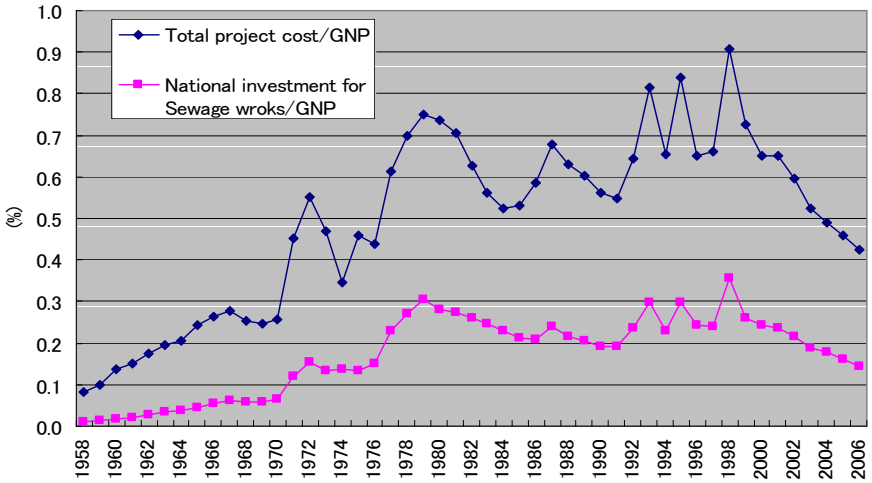
(3) Japanese Experience: Total Number of Trainees in the JS Training Center



- Over the past 40 years, the total number of trainees at the JS Training Center is more than 60,000 persons.
- According to an analysis made from JS in 1991 on former trainees, the percentage of sewage works engineers engaged in local governments who were trained at the JS Training Center was 32.3 %.

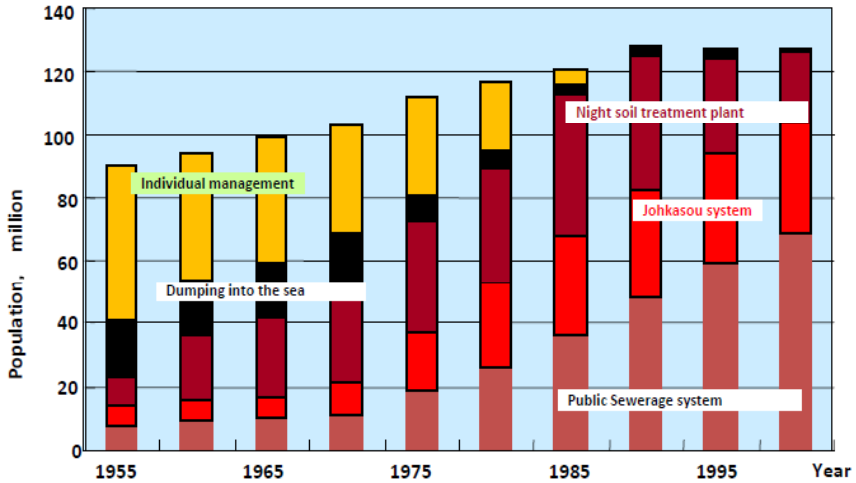
4.1 Necessity of Training Center

(4) Sewerage Investment Cost/GDP in Japan(1958-2006)



4.1 Necessity of Training Center

(5) Population trends for on-site and off-site sanitation systems in Japan



Development of domestic wastewater management in Japan (1955-2000)

4.2 Current Situation of Training

(1) Training Program in Vietnam

(Inside Vietnam)

- Vietnam Water Supply and Sewerage Association (VWSA): organizes workshops and seminars on sewage works in association with international institutions and organizations
- College of Urban Works Construction (CUWC): in water supply field only
- Hanoi Architectural University (HAU): for "Water Supply" and "Sewerage, drainage and wastewater disposal" etc.

(Outside Vietnam)

JICA provides the group and region-focused trainings as follows:

- "Sewage Works Engineering and Stormwater Drainage Technology "
  - Only one engineer per year can participate in this course for three month training.
- JICA counterpart training in Japan
  - JICA long-term expert provides once a year for almost 20 persons for two weeks to learn sewage works in Japan.

MLIT also provided two weeks training on the microtunneling method.

These trainings outside Vietnam are not enough not only in number of participants but also in the contents of training.

4.2 Current Situation of Training

(2) Training Program in Japan

- Technical requirement for engineers on planning, design and O&M regulated by Sewerage Law
  - ✓ Technical experience such as 7 years of business experience
  - ✓ Certification of training program and licensing examination
- Training course provided by the Japan Sewage Works Agency (JS)
  - ✓ Sewer design
  - ✓ Sewer construction supervision
  - ✓ WWTP design
  - ✓ O&M of WWTP
  - ✓ Finance & Institution
- Certification of qualification test provided by JS Law
- The Japan Sewage Works Association and other related organizations provide technical seminars and workshops on new technologies.

Closing Ceremony

4.2 Current Situation of Training

(3) Training Program in Private Company: Indah Water Konsortium (IWK)

- Indah Water recognizes that the sewerage sector workforce must possess relevant knowledge, skills and competencies.
- They effectively plan, operate and maintain the sewerage facilities of the country through a structured training and development program. Emphasis has been placed on human capacity development throughout the years.
- In 2011, 1,743 or 62% of the 2,801 average headcount attended at least one training program. This represents an 11% increase from 2010 in which 51% of the 2,726 average headcount received training.

(Source) Sustainability Report 2011, Indah Water Konsortium Sdn. Bhd

4.3 Proposal of Training Center

(1) Function of Training Center

- To develop required capacity for sewerage development and management:

☐ Training of Trainer

➔ Experts of Training Center develop trainer group

➔ Consultation Division in Training Center will do same function.

☐ For the executing agency and private company:

➔ Technical capacity for the planning and designing work

☐ For the central government:

➔ Programming, implementation, and management capacity of the project

- To support the project through accumulating experience and know-how
- To assist Vietnamese & Japanese private companies which work for the project operation

4.3 Proposal of Training Center

(2) Scheme of Training Program

Trainer Group

- ☐ Large Cities (Ha Noi, HCM)
- ☐ MOC & VWSA
- ☐ Private Company
- ☐ Japanese Large City

Transfer of Know-how & Experience

Trainee Group

- ☐ Large Cities (Ha Noi & HCMC) (In-house training)
- ☐ Medium & Small Municipality
- ☐ Provincial Gov.
- ☐ Private Company

Training subjects

Programming phase	Construction phase	Operation phase
☐ Sewerage Technology ☐ Financing & Institution ☐ Planning ☐ Design, Drawing & Survey	☐ Sewerage Technology ☐ Construction Supervision ☐ PR (Public Relation)	☐ Sewerage technology ☐ O&M, WQ management ☐ PI (Performance Indicator) ☐ PR & Tariff Collection ☐ Business WW Monitoring

4.3 Proposal of Training Center

(3) Location of Training Center

Items for Evaluation	VWSA	CUWC	HAU
Relationship with MOC	Administration officer assigned from MOC	Under MOC	Under MOC
Physical Distance from MOC	Close	One hour by car	Forty minutes by car
Rooms for lectures or practical work	Need to arrange in other place	Available	Available
WWTP for practical work	None	Space for the construction of plant available	Close to the site for construction project of Yen Xa WWTP
Result of evaluation	Limited activity such as arrangement of trainers	Best option	Acceptable

Water quality analysis

Activated sludge process

Microscope & monitor

Activated sludge (microscopic view)

4.3 Proposal of Training Center

(4) Sewerage Training Program

Training courses shall be prepared for covering all the phases of the project.

1) Planning (including off-site and on-site systems)
2) Design, Bidding and Supervision
3) Operation and Maintenance of Sewerage Facilities
4) Regulations and Measures for Accepting Wastewater to Sewerage System
5) Public Announcement of Sewage Works
6) Management of Organization
7) Training of Vietnamese Trainers (TOT)

(5) Organization

Management Unit to unify the following divisions in ATI of MOC

1) Division of Training Engineers

Planning of the training courses, management of applicants for training and trainees, assignment of trainers and arrangement of lecture rooms, preparation of textbooks, etc.

2) Division of Trainers

Responsible for studying the contents of training and preparing the textbooks for the training of the Vietnamese trainers. Foreign Experts and candidates of Vietnamese trainers will be assigned.

4.3 Proposal of Training Center

(6) Step-wised Implementation

1st Step

- Set up training program including:
  - Lectures and practical training for engineers and administrators of the sewage works project
  - TOT program for potential trainers
  - O&M training in a WWTP on the location of the training center or in an existing WWTP in Ha Noi City
- Start of consulting advice to sewage works projects by Japanese experts in the training course.

2nd Step

- Set-up consulting function, organization or division in the Training Center .

Final Step

- Establish the Vietnam Sewage Works Agency

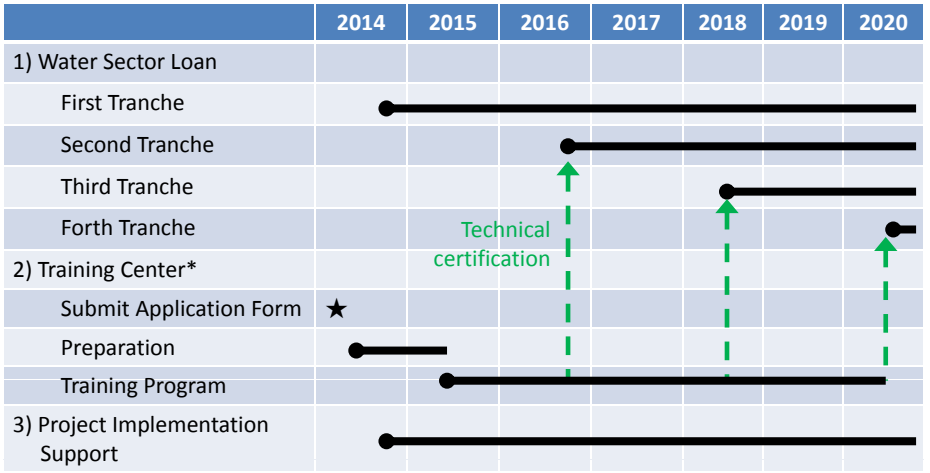
4.3 Proposal of Training Center

(7) Estimation Cost of the Initial Training Course (2 years)

Item	Cost (Million JPY)	Equivalent in 1,000 USD[1*)]
1) Initial Cost	**150**	**1,500**
Procurement of Facilities and Instrument	100	1,000
Construction of WWTP for Training	50	500
2) Assignment of Foreign Experts	**172**	**1,720**
Long-term expert (2 persons)* 25 million JPY/year x 2 persons x 2 years	100	1,000
Short-term expert (3 persons)* 3 million JPY/month x 4 times/year x 3 persons x 2 years	72	720
3) Operation Cost	**35.6**	**356**
Cost for Trainings (16 courses, 10 persons / course) 16 times x 10 persons x 0.05 million JPY/person x 2 years	16	160
Translation and Preparation of Text	10	100
Translator (2 persons) 0.15 million JPY/month/person x 12months x 2persons x 2years	7.2	72
Car Rental Services 0.1 million JPY/month x 12 months x 1 car x 2 years	2.4	24
Total 1)+2)+3)	**357.6**	**3,576**
Administration Cost by Vietnamese Gov.	**Provided in due course**	

* Long time foreign experts: Planning Sewerage System, Mechanical and Electrical Equipment
* Short time foreign experts: Sewer Design and Construction Supervision, Water Quality Control , Management of Sewerage System

4.4 Implementation Schedule (Tentative)



Note: Candidate of sub-projects to be financed under the Water Sector Loan will be selected and loan appraisal will be carried out by JICA in First Tranche.
Note: The function of sub-project appraisal will be transferred to MOC after Third Tranche.

EXPERIENCE IN MANAGING WATER TRAINING CENTERS IN VIETNAM

Mr. Bùi Hồng Huế

Dean of the College of Urban Works Construction – Ministry of Construction

The College of Urban Works Construction (CUWC) which is an institution under Ministry of Construction locates at Yenthuong, Gialam, Hanoi.

Our college currently manages two water training centers, including: Training Center for Water & Environment and Training Center for Water in the Central region.

This article consists of 3 main parts:

- Brief Introduction of the Training Centers;
- Experience in managing Training Centers; and
- Recommendations and proposals.

I. BRIEF INTRODUCTION OF THE TWO WATER TRAINING CENTRES

1.1. Hanoi Training Center for Water & Environment

- It was founded according to the Decision No. 705 /QD-BXD on April 27th, 2004 signed by the Minister of Construction.
- The Head Quarter locates inside CUWC at Yen Thuong, Gialam, Hanoi
  Phone: (04) .3.878. 0619 - Fax: 04.3.827.1305 - Email: cneehanoi@gmail.com
- The total cost of the project: € 1,000,000 (One Million Euro)

Main tasks:

1 – Providing re-training and refresher courses for staffs and workers on business management, technical management, operation, installation and maintenance of water supply and drainage/sewerage works;

2 - Coordinating with universities, institutes, enterprises, national and international organizations in conducting scientific researches, experiments, technical consultancy, technology transfer related to water sector;

3 - Implementing effectively the project of the training center for water and environmental sponsored by French Republic Government;

4 - Performing laboratory tasks such as testing, analyzing water for training, scientific research and other consulting services;

- From 1997 to 2006, the Center was appointed to implement the project with the Government of the French Republic through two phases: Phase 1 (from 04/04/1997 to

04/04/1998); Phase 2 (from 2000 to 2006) with the goal of building a national training center for water and environment and establishing a sustainable training system for the center .

- From 2007 to 2009, the Center carried out the Project of technical assistance for water supply companies funded by Denmark.

Since its establishment, the Center has trained and improved skills for thousands of managers and workers from water companies nationwide each year.

2.2. Training Center for Water in the Central Region

- Founded according to the Decision No. 1118 / QD-BXD on November 30, 2009 by the Minister of Construction.
- The Headquarter locates in the Division of CUWC at Phu Bai, Huong Thuy, Thua Thien Hue.

Phone: (054) .3.954. 997 - Fax: 054.3.954.997 - Email: ttnuocmt@gmail.com

The total cost of the project (according to the Decision No. 246: QD-BXD) is: $ 4,004,608 (Four million, four hundred thousand, six hundred and eight U.S. dollars); in which:

+ Non-refundable aid by Japanese government: 316,312,000 Japanese Yen, equivalent to $3,721,318 (1 USD = 85 yen)
+ Counterpart fund by Vietnam Government: 5,807,463 billion VND, equivalent to $ 283,290 ($ 1 = 20,500 dong).

Main tasks:

In addition to the same tasks as Hanoi Center, the center also has been assigned to implement effectively the project for the human resources development of water supply companies in the central region funded by Japan Government (6/2010 - 6/2013)

As results of the Project (completed in June 2013), the Center had provided 21 courses for 418 trainees from water supply companies in the Central region.

II. EXPERIENCE IN MANAGEMENT OF WATER TRAINING CENTERS OVER THE PAST YEARS

- The two training centers have been taking steps towards sustainable development and achieving positive results: annually, thousands of managers and technicians attend refresher courses related to water sector such as: administration - customer service management; operation and maintenance of equipments, water distribution and water quality management, etc. Typically, the Hanoi Training Center for Water and Environment so far has trained more than 10,000 people from water supply and drainage companies nationally; the Training Center for water in Central Region has conducted 23 courses (18 courses under the project implementation and 5 other courses after the project's completion) for more than 600 people from 18 urban water supply companies in the Central region.
- We have achieved remarkable mentioned-above results thanks to the great cooperation between the agencies and organizations, especially the efforts of the Centers, the interest and support of the leaders of Ministry of Construction, Administration of Technical Infrastructure under Ministry of Construction, relevant local governments and Japan International Cooperation Agency (JICA).
- We would like to share some experience in order to support water training centers to develop sustainably:

1. Personnel management and development:

In order to help training centers grow continuously and sustainably, it requires a competent human resources capable of managerial skills and good professional knowledge who are well-trained and are able to train human resources for existing water supply companies .

Thus, we have carried out organizational restructure of the Training Centers aiming to run the centers as enterprises-like operation. The full-time staff of the centres are mainly experts and staff trained during the implementation phase of the project. We also send officials and experienced lecturers from our Water Supply and Drainage Division to work part-time for Training Centres. These people have many years of participation in the water and environment projects. Experts support the Water Training Center in the Central Region in a number of areas such as finance management, planning, training management, equipment maintenance and so on.

2. Development and implementation of training programs:

- As soon as the the project ended, we conducted a survey of training and retraining needs of water supply companies in three regions (mostly in the North and the Central) . This is also the basis for preparing annual training and retraining plans.
- After the survey we have edited, adjusted and developed training programs adopting the advanced technology of developed countries (such as Japan and France). These training programs have been sent to water companies, experts for comments as well as presented in wokshops for recommendations. Finally, a bank of training programs have been selected in accordance with qualifications and training needs of the existing water supply companies.
- After adjusting and developing training programs, we edited teaching materials which were developed during the project time. We have received help of experienced experts from water supply companies, Vietnam Water Supply Association (VWSA), University of Civil Engineering and University of Architecture. We have compiled and printed:

+ 1000 Handbooks on Water Treatment written by Degremont Company of Water treatment & Environmental Protection;
+ 01 Technical Dictionary for Water Sector (1030 prints) in 03 languages: English, French, Vietnamese under permission of Degremont Company;
+ 01 book on Urban Wastewater Treatment Technology (500 copies published) written by Mr. André Lamouche, an experienced and an expert from France;
+ 01 book on Ductile Iron Pipe Installation compiled by the Centre with Pont - a – mouson's permission;
+ 01 book of Training for Water sector Workers using modules-base method

- Those training programs along with training cost estimates have been offered to water supply companies. After reaching agreements, parties have signed contracts to provide training and retraining courses for staffs and workers from water companies in the North, the Central and the South of the country.
- Assessments have been conducted before, during after individual course for experiences learning. The criteria include: the organization of the course, the appropriateness of the contents of training programs, communication skills of teachers, and the applicability of trainees after training, etc.

3. Facilities:

We have managed and used efficiently all machinery and equipment supplied by the project fund as well as well carried out maintenance works. Every year, we deduct a part of

the profits to upgrade and renovate some components of works for the training process as well as for activities of the Centers.

Besides the equipment supported by the project, we have bought more machines, teaching models for training such as automation and PLC lab, some laboratory facilities, power engines practical rooms , outworks, pipe installation establishments, etc.

4. Finance:

The Training Centers operate independently in term of finance. The goal of the training centers is getting higher revenues and profits. The College supports just partial funding for the first year of operation.

The College creates favorable conditions for Training Centers to actively promote their capabilities, and to build their own strategies. The two Training Centers should compete with each other in a positive way so that they can co-exist and develop. Currently, the Hanoi Training Center is very competitive with a broad market, high revenue and profit. To facilitate the development of the Water Training Center in the Central region, we have divided the market between the two centers. The Hanoi Training Centre orients the customers from water companies, universities and colleges providing water-related training programs from Thanh Hoa to the North outward and the Water Training Center in the Central region orients customers from Nghe An towards the Southern region.

In addition to training for staffs from water supply companies, the centers also focus on improvement of practical skills for students from universities and colleges providing water-related training.

III. RECOMMENDATIONS AND PROPOSALS

- To establish a Training Center for human resource development in drainage and sewerage sector in Vietnam, the great supports from MOC and JICA are needed and highly appreciated.

- With the available infrastructure and experienced officials in the management of water-related Training Centers as mentioned above, we suggest that the proposed Training Center for drainage and sewerage sector should be located in CUWC.

Thank you for your attention.