Annex

Foreign Trade (1/6) Total Export

		70tai 2p			(Unit : The	ousand US\$
			1992	1993	1994	1995
Tot	al Ex	sport (FOB)	46,195,623	51,885,965	60,882,218	79,823,45
ĭ	Agr	iculture and Forestry	1,679,337	1,960,977	2,220,959	3,323,46
H	Live	estock and Fishing	433,020	543,236	457,434	692,69
Ш	Min	ing	7,775,739	6,763,563	6,994,362	8,004,66
IV	Mai	nufacturing	36,168,722	42,500,081	51,075,243	67,634,90
	A.	Food, beverages and tobacco	1,364,821	1,589,639	1,895,620	2,529,15
	B.	Textile and footwear	2,316,738	2,770,151	3,255,787	4,907,27
	C.	Wood products	498,565	573,806	586,133	620,54
	D.	Printing	654,848	662,324	561,644	873,02
	E.	Petroleum products	623,804	718,970	544,459;	652,8
	F.	Petrochemicals	263,251	214,124	262,948	339,9
	G.	Chemicals	2,298,306	2,343,856	2,756,356	3,972,6
	H.	Plastic and rubber products	794,279	1,005,277	1,064,373	1,218.5
	Ĭ.	Non-metal products	919,009	1,125,141	1,214,795	1,405,5
	J.	Iron and steel	1,145,085	1,398,532	1,534,714	3,088,8
	K.	Minerometalurgia	929,213	1,024,006	1,085,078	1,801,2
	L.	Machinery and metal products	23,711,483	28,352,389	35,324,351	44,913,4
		1. for agriculture and livestock	48,521	89,384	105,303	135,3
		2. for railway	15,339	30,646	19,335	30,4
		3. for other transportation and communications	7,356,143	8,960,010	10,867,081	15,339,2
		automobiles	3,378,022	4,251,471 ;	5,076,920	7,575,0
		automobiles for cargo	588,386	670,494	827,152	1,852,5
		chassis for all kinds of vehicles	80,982	134,313	212,771 •	216,5
		motors for automobiles	1,202,724	1,302,179	1,778,112	2,122,6
		motors for boat	13,995	15,759	15,959	18,6
		springs and sheets for automobiles	63,015	106,036	125,719	125,7
		parts for automobiles	1,524,715	1,888,961	2,106,949	2,300,7
		parts for airplanes	44,941	44,128	55,063	44,7
		parts for motors	271,530	316,752	404,798	468,7
		others	187,833	229,914	263,638	613,8
		4. special machinery for various industries	3,683,029	4,233,407	6,007,049	7,297,2
		5. professional and scientific equipment	547,026	591,822	652,258	755,
		6. electric & electronic apparatus	11,729,615	14,031,700	17,276,585	20,893,0
		electric accumulator and its parts	176,360	190,009	94,613	214,0
		cable and wire	2,060,880	2,762,137	2,929,841 497,551	3,426,9 520,7
		magnet tape and photographic disk	387,735 86,806	404,003 ± 151,558 ‡	112,499	520,6 328,3
		instruments for electric communication electric motor	381,099	510,074	571,744	601,8
		other electric instruments	1,655,863	1,690,189	2,098,406	2,481,0
		parts for radio and TV	873,692	909,879	1,065,220	2,161,0 1,163,4
		electric battery	1,379	3,167	3,225	37.
		parts for electric installations	1,320,132	1,414,183	1,846,270	2,214,9
		refrigerator and its parts	162,301	174,717	204,660	296,7
		record player	73,173	137,756	185,471	185,7
		electric transformer	585,040	678,616	665,994	785,2
		others	3,965,148	5,005,413	7,001,086	8,636,9
		7. photography, optics and watch	331,808	415,420	396,745	462,
	M.		649,325	721,859	988,982	1,311,8
v.	Otl	hers	138,804	118,113	134,217	167,7
VI.	. No	n Classified Products	1	•	-	-
			ţ :	'	i	

Source : Banco de Mexico, "Indicadores del Sector Externo"

Foreign Trade (2/6) Export (Maquiladora)

(Unit : Thousand US\$)

				Comit. In	ousand US\$)
		1992	1993	1994	1995
Ехр	port (FOB)	18,680,054	21,853,024	26,269,246	31,311,095
I	Agriculture and Forestry	-	-	-	•
II	Livestock and Fishing	-	-	-	-
Ш	Mining	•	-		-
IV	Manufacturing	18,661,918	21,849,832	26,265,525	31,301,632
	A. Food, beverages and tobacco	234,368	226,363	243,118	248,13
	B. Textile and footwear	1,427,697	1,789,063	2,105,504	2,840,70
	C. Wood products	264,784	304,996	319,360	315,52
	D. Printing	437,847	472,352	332,225	374,29
	E. Petroleum products		-		•
	F. Petrochemicals	_	-	-	-
	G. Chemicals	199,063	226,887	274,282	329,32
	H. Plastic and rubber products	636,737	791,717	770,634	769,53
	I. Non-metal products	245,239	320,907	361,213	372,50
	J. Iron and steel	276,978	331,770	310,756	344,19
	K. Minerometalurgia	85,803	77,966	75,538	80,73
	L. Machinery and metal products	14,344,489	16,726,217	20,650,758	24,584,07
	1. for agriculture and livestock	29,148	67,053	76,588	91,77
	2. for railway	121	- ·	10	1
	3. for other transportation and communications	1,264,730	1,659,446	2,042,788	2,307,59
	automobiles	-	822	588	-
	automobiles for cargo	-	391	136	•
	chassis for all kinds of vehicles	-	-	1	•
	motors for automobiles	422	2,038	10,452	17,35
	motors for boat	874	673	1,550	2,49
	springs and sheets for automobiles	3,787	8,298	27,958	19,41
	parts for automobiles	1,054,242	1,392,101	1,635,109	1,75 4 ,95
	parts for airplanes	10,249	8,402	11,171	13,00
	parts for motors	112,932	148,051	206,039	285,52
	others	82,224	98,669	149,784	214,83
	special machinery for various industries	1,931,619	2,007,680	2,952,258	3,269,3
	professional and scientific equipment	510,134	559,468	614,464	702,2
	electric & electronic apparatus	10,476,406	12,315,898	14,850,333	18,097,5
	electric accumulator and its parts	149,229	163,900	61,692	172,39
	cable and wire	1,887,425	2,155,212	1,810,794	2,271,78
	magnet tape and photographic disk	289,356	318,531	400,215	395,72
	instruments for electric communication	63,213	114,784	85,906	286,12
	electric motor	349,271	462,373	522,694	521,35
	other electric instruments	1,248,765	1,292,699	1,681,608	2,052,89
	parts for radio and TV	832,986	878,822	1,042,732	1,143,63
	electric battery	371	1,227	2,007	22,83
	parts for electric installations	1,238,378	1,333,537	1,682,795	2,029,79
	refrigerator and its parts	68,726	65,795	78,968	91,39
	record player	71,169	110,923	133,388	105,45
	electric transformer	530,131	637,104	615,464	726,50
	others	3,756,380	4,780,993	6,732,065	8,277,52
	 photography, optics and watch Other industries 	132,334 508,918	116,669 581,593	114,322 822,134	115,5
				022,134	1,042,60
V.	Others	18,136	3,193	3,718	9,4
	I. Non Classified Products	1	_		_

Source : Banco de Mexico, "Indicadores del Sector Externo"

Foreign Trade (3/6) Export (Excluding Maquiladora)

	Export (Exoluting)			(Unit : Th	ousand US\$)
		1992	1993	1994	1995
Exp	oort (FOB)	27,515,569	30,032,941	34,612,972	48,512,364
ī	Agriculture and Forestry	1,679,337	1,690,977	2,220,959	3,323,463
II	Livestock and Fishing	433,020	543,236	457,434	692,692
Ш	Mining	7,775,739	6,763,563	6,994,362	8,004,666
ĮΫ	Manufacturing	17,506,804	20,650,249	24,809,718	36,333,275
	A. Food, beverages and tobacco	1,130,453	1,363,276	1,652,502	2,281,021
	B. Textile and footwear	889,041	981,088	1,150,283	2,066,573
	C. Wood products	233,781	268,810	266,773	305,011
	D. Printing	217,001	189,972	229,419	498,727
	E. Petroleum products	623,804	718,970	544,459	652,817
	F. Petrochemicals	263,251	214,124	262,948	339,932
	G. Chemicals	2,099,243	2,116,969	2,482,074	3,643,347
	H. Plastic and rubber products	157,542	213,560	293,739	449,050
•	I. Non-metal products	673,770	804,234	853,582	1,033,054
	J. Iron and steel	868,107	1,066,762	1,223,958	2,744,623
	K. Minerometalurgia	843,410	946,040	1,009,540	1,720,527
	L. Machinery and metal products	9,366,994	11,626,172	14,673,593	20,329,348
	1. for agriculture and livestock	19,373	22,331	28,715	43,54
	2. for railway	15,218	30,646	19,325	30,40
	3. for other transportation and communications	6,091,413	7,300,564	8,824,293	13,031,63
	automobiles	3,378,022	4,250,649	5,076,332	7,575,079
	automobiles for cargo	588,386	670,103	827,016	1,852,507
	chassis for all kinds of vehicles	80,982	134,313	212,770	216,538
	motors for automobiles	1,202,302	1,300,141	1,767,660	2,105,285
	motors for boat	13,121	15,086	14,409	16,112
	springs and sheets for automobiles	59,228	97,738	97,761	106,351
	parts for automobiles	470,473	496,860	471,840	545,83
	parts for airplanes	34,692	35,726	43,892	31,742
	parts for motors	158,598	168,701	198,759	183,19
	others	105,609	131,245	113,854	398,98
	4. special machinery for various industries	1,751,410	2,225,727	3,054,791	4,027,89
	5. professional and scientific equipment	36,892	32,354	37,794	53,63
	6. electric & electronic apparatus	1,253,209	1,715,802	2,426,252	2,795,53
	electric accumulator and its parts	27,131	26,109	32,921	41,61
	cable and wire	173,455	606,925	1,119,047	1,155,20
	magnet tape and photographic disk	98,379	85,472	97,336	124,33
	instruments for electric communication	23,593	36,774	26,593	42,18
	electric motor	40,828	47,701	49,050	80,49
	other electric instruments	407,098	397,490	416,798	428,72
	parts for radio and TV	40,706	31,057	22,488	19,77
	electric battery	1,008	1,940	1,218	14,32
	parts for electric installations	81,754	80,646	163,475	185,15
	refrigerator and its parts	93,575	108,922	125,692	205,33
	record player	2,004	26,833	52,683	80,25
	electric transformer	54,909	41,512	50,530	58,65
	others	208,768	224,420	269,021	359,46
	7. photography, optics and watch	199,474	298,751	282,423	346,70
	M. Other industries	140,407	140,266	166,848	269,24
v.	Others	120,668	114,920	130,499	158,26
VI	Non Classified Products		_		_
V I	- Non Classified Floducts		_		

Source : Banco de Mexico, "Indicadores del Sector Externo"

*

Foreign Trade (4/6) Total Import

(Unit: Thousand US\$) 1992 1993 1994 1995 72,475,939 **Total Import (FOB)** 62,129,350 65,366,542 79,345,901 2,993,314 I Agriculture and Forestry 2,402,001 2,324,262 2,478,930 Livestock and Fishing 308.682 378,065 164,695 II 456,154 520,180 390,004 438,104 600,453 Mining 61,567,742 74,424,845 67,523,033 Manufacturing 58,235,149 A. Food, beverages and tobacco 3,335,575 3,356,160 3,988,860 2,616,328 4,167,429 Textile and footwear 3,023,138 3,524,969 3,617,664 B. C. Wood products 550,526 570,647 694,537 349,977 D. Printing 2,188,927 2,366,361 3,039,149 2,898,716 E. Petroleum products 1,457,976 1,368,180 1,275,362 1,242,550 600,290 F. Petrochemicals 512,908 758,571 920,173 5,817,666 G. Chemicals 4,412,856 4,855,326 5,520,504 3,152,543 3,403,740 3,972,401 4,157,006 H. Plastic and rubber products Non-metal products 716,539 819,576 1,009,812 910,069 I. 3,693,062 3,312,284 3,930,863 J. Iron and steel 3,461,437 1,047,958 1,194,504 967,520 1,203,489 K. Minerometalurgia 43,489,559 Machinery and metal products 33,731,147 35,672,779 39,731,778 1. for agriculture and livestock 172,479 191,431 290,573 143,665 89,957 147,125 2. for railway 106,704 187,531 9,796,291 9,924,873 9,695,888 3. for other transportation and communications 12,120,113 384,289 404,575 1,249,526 446,461 automobiles automobiles with special equipment 122,667 86,571 149,127 27,300 airplane and its parts 595,638 424,652 598,722 151,262 truck - 1 55,445 27,830 23,732 10,340 truck - 2 3,166 4,778 10,722 4,695 chassis for automobiles 24,861 9,382 50,064 17,883 32,851 boat and its parts 40,012 52,771 23,843 assemble materials for automobiles 6,007,099 6,439,314 3,649,430 6,733,137 motors and its parts for automobiles 376,917 394,219 997,742 565,446 maintenance parts for automobiles and trucks 1,337,861 1,377,121 1,980,573 3,919,961 non automatic trailer for vehicles 41,606 22,456 31,481 26,588 806,729 701,125 677,164 420,378 4. special machinery for various industries 10,884,130 11,029,205 13,324,796 11,401,765 5. professional and scientific equipment 1,214,597 1,251,593 1,485,520 1,348,081 6. electric & electronic apparatus 10,969,890 12,511,059 15,310,284 16,443,060 apparatus of X-ray and its parts 45,879 77,797 73,382 38,685 electric soldering machine 59,591 59,110 88,185 69,899 apparatus for radio and record player 332,242 405,528 441,472 489,528 apparatus of telegraph 856,226 844,284 924,588 589,423 various apparatus and parts 224, 264 229,205 238,261 160,359 generators, transformer, and electric motors 536,750 606,782 771,597 912,581 electric oven 75,626 19,511 27,270 9.701 electric lamp valve and parts 1,312,559 1,418,695 2,080,933 2,968,269 manual tool and its parts 25,359 26,841 43,631 23,385 parts for electric installation 3,524,745 4,035,993 4,547,347 5,311,819 transmitter of radio and TV 1,091,275 1,117,124 1,355,299 946,587 maintenance parts for radio and TV 1,075,667 1,352,492 1,657,172 1,881,559 shade for lighting 12,273 12,932 15,513 18,023 others 1,797,432 2,303,761 3,045,635 3,023,251 7. photography, optics and watch 587,055 674,666 770,745 552,190 M. Other industries 643,623 749,909 1,086,139 661,709 V. Others 515,849 775,846 1,111,536 1,708,824 VI. Non Classified Products 17 1

Source: Banco de Mexico, "Indicadores del Sector Externo"

Foreign Trade (5/6) Import (Maquiladora)

(Unit: Thousand US\$) 1992 1993 1994 1995 Import (FOB) 13,936,719 16,442,963 20,466,167 26,178,810 22,465 39,036 32,239 20,944 Agriculture and Forestry Livestock and Fishing 8,307 6,875 7,621 10,484 III Mining 15,094 15,147 17,368 25,496 Manufacturing 13,603,732 15,857,147 19,581,831 24,794,252 Food, beverages and tobacco 36,262 29,611 57,111 42.834 Textile and footwear 1,055,626 1,397,685 1,817,483 2,276,614 Wood products 157,905 172,318 161,648 C. 138,488 601.642 748,161 859,476 D. Printing 608,666 Petroleum products 13,686 14,910 11,629 E. 15,637 13,846 14,070 20,029 F. Petrochemicals 6,865 451,855 562,173 797,128 G. Chemicals 432,527 1,762,178 1,882,126 2,009,276 2,408,697 Plastic and rubber products Non-metal products 180,605 213,599 285,900 380,147 I. J. Iron and steel 992,554 1,109,895 1,277,435 1,455,641 240,689 351,295 K. Minerometalurgia 252,173 441,463 Machinery and metal products 7,971,161 12,046,198 15,698,667 9,556,412 1. for agriculture and livestock 2,600 3,128 1,729 3,148 2. for railway 687 52 167 10 3. for other transportation and communications 485,630 457,273 596,799 896,275 automobiles 2,028 1,103 automobiles with special equipment 204 airplane and its parts 5,460 4,627 16,430 15,454 truck - 1 68 truck - 2 12 25 chassis for automobiles 80 6 141 boat and its parts 134 14 262 484 assemble materials for automobiles 16 42,911 82,943 motors and its parts for automobiles 37,758 116,828 maintenance parts for automobiles and trucks 341,468 257,345 404,654 639,759 non automatic trailer for vehicles 1,687 2,116 3,341 821 others 97,858 149,581 92,437 120,267 4. special machinery for various industries 1,318,754 1,509,022 1,769,234 2,110,556 5. professional and scientific equipment 129,498 178,715 268,224 282,765 7,328,573 6. electric & electronic apparatus 5,976,672 9,293,651 12,304,294 apparatus of X-ray and its parts 4,093 27 31 1,131 electric soldering machine 1.512 997 6,602 862 apparatus for radio and record player 221,338 290,394 288,377 379,253 150,566 257,327 apparatus of telegraph 89,617 210,890 various apparatus and parts 61,423 65,085 55,742 74,272 generators, transformer, and electric motors 259,741 336,016 454,340 651,641 electric oven 52 92 71 .3 1,193,771 2,569,706 electric lamp valve and parts 1,100,710 1,701,828 manual tool and its parts 1,269 7,700 1,149 11,758 3,920,708 2,439,411 2.705,585 3,027,477 parts for electric installation 87,078 231,575 500,967 573,554 transmitter of radio and TV 1,101,056 1,459,908 1,775,581 maintenance parts for radio and TV 846,842 4,957 shade for lighting 3,413 4,692 4,843 1,247,178 1,569,866 2,084,757 others 864,359 79,633 114,998 103,035 7. photography, optics and watch 57,320 M. Other industries 249,492 143,578 162,267 249,631 V. Others 287,110 524,753 827,108 1,327,631 VI. Non Classified Products 12

Source: Banco de Mexico, "Indicadores del Sector Externo"

Foreign Trade (6/6) Import (Excluding Maquiladora)

(Unit : Thousand US\$)

Import (FOB) 48,192,631 48,923,579 58,879,734 46,297,12 I Agriculture and Forestry 2,379,536 2,285,226 2,961,075 2,457,98 II Livestock and Fishing 447,847 301,807 370,444 154,22 III Mining 505,086 374,857 420,736 574,92 IV Manufacturing 44,631,417 45,710,595 54,843,014 42,728,70 A. Food, beverages and tobacco 3,278,464 3,313,326 3,952,598 2,586,72 B. Textile and footwear 1,967,512 2,127,284 2,349,946 1,341,00 C. Wood products 412,038 412,742 522,219 188,33						ousand US\$)
I Livestock and Fishing			1992	1993	1994	1995
III Mining	Imp	oort (FOB)	48,192,631	48,923,579	58,879,734	46,297,129
III Mining	I	Agriculture and Forestry	2,379,536	2,285,226	2,961,075	2,457,98
Namufacturing	II	Livestock and Fishing	447,847	301,807	370,444	154,21
A. Food, beverages and tobacco B. Textile and footwear 1,967,512 2,127,284 2,349,946 1,341,2038 1412,742 522,219 188,3 D. Printing 1,580,261 1,764,719 2,290,988 2,386,7 F. Petroleum products 1,144,201 1,332,701 1,267,332 1,226,9 F. Petroleum products 1,349,302 1,286,373 1,226,9 F. Petroleum products 1,390,365 1,521,614 1,764,719 2,290,988 1,238,07 1,226,9 F. Petroleum products 1,390,365 1,521,614 1,764,719 1,226,9 F. Petroleum products 1,390,365 1,521,614 1,764,719 1,226,9 F. Petroleum products 1,390,365 1,521,614 1,764,713 1,226,9 F. Petroleum products 1,390,365 1,521,614 1,764,713 1,226,9 F. Petroleum products 1,390,365 1,521,614 1,764,713 1,764,	Ш	Mining	505,086	374,857	420,736	574,95
B. Textile and footwear	IV		44,631,417	45,710,595	54,843,014	42,728,78
C. Wood products		A. Food, beverages and tobacco	3,278,464		3,952,598	2,586,71
D. Printing						1,341,05
E. Petroleum products F. Petrochemicals G. Chemicals J. Plastic and rubber products J. Non-metal products J. Non-metal products J. Non-metal products J. In on and steel L. Machinery and metal products J. For railway J. For trainsportation and communications automobiles with special equipment airplane and its parts J. Truck - 1 J. Truck - 1 J. Truck - 2 J. Lone and its parts J. Special machinery and its parts pot automobiles J. Special machinery for various industries J. Special machinery for radio and record player apparatus of telegraph J. Special machinery and parts parts for radio and TV J. Special machinery for radio and TV J. Special machinery for radio and TV J. Special machinery and watch J. Lone of the form of the special cand rucks parts for radio and TV J. Special machinery for special equipment J. Special machinery for J. Special		<u> </u>	412,038		- 1	188,32
F. Petrochemicals		•		1,764,719		2,039,24
G. Chemicals H. Plastic and rubber products 1, Non-metal products 1, Non-metal products 53,5934 605,977 723,912 724,9336 762,00 7		<u> </u>				
H. Plastic and rubber products 1,390,365 1,521,614 1,963,125 1,748,3 I. Non-metal products 535,934 605,977 723,912 520,9 J. Iron and steel 2,468,883 2,202,389 26,634,28 2,237,4 K. Minerometalurgia 807,269 715,347 843,209 762,0 L. Machinery and metal products 169,879 188,283 287,445 141,9 2. for agriculture and livestock 169,879 188,283 287,445 141,9 3. for other transportation and communications automobiles with special equipment 122,661 403,472 1,249,526 446,4 automobiles with special equipment 122,661 86,571 148,923 23,344 ariplane and its parts 590,178 420,025 582,202 133,8 truck - 1 55,445 22,830 23,664 10,3 truck - 2 3,166 4,778 10,710 4,6 chassis for automobiles 24,781 9,376 6,493,147 boat and its parts for automobiles 39,878 32,837 52,509 23,3 assemble materials for automobiles 40,878 20,769 29,355 maintenance parts for automobiles 40,883 20,769 29,355 others 49,93,218 1,119,776 1,575,919 3,280,2 others 49,93,218 1,197,266 31,252,194 34,194 delectric & electronic apparatus 4,993,218 1,197,264 1,055,3 apparatus of X-ray and its parts 4,983,218 4,983,218 1,197,266 2,211 34,5 apparatus of readio and record player 110,904 116,134 133,095 110,224,214 apparatus of redic and record player 110,904 116,134 133,095 110,224,214 apparatus of redictic installation 1,083,334 1,330,408 1,319,870 1,91,14 apparatus of redictic installation 1,083,334 1,330,408 1,319,870 1,91,14 apparatus of redictic installation 1,083,334 1,330,408 1,519,870 1,91,14 apparatus of redictir installation 1,083,334 1,330,408 1,519,870 1,91,14 apparatus of redictir installation 1,083,334 1,330,408 1,519,870 1,93,104 apparatus of redictir installation 1,084,334 1,330,408 1,519,870 1,93,104 apparatus of redictir installation 1,084		l l			-	
I. Non-metal products			i i			
J. Iron and steel		± :				
K. Minerometalurgia 807,269 715,347 843,209 762,0 1. Machinery and metal products 25,759,986 26,116,367 31,433,61 24,033,1 1. for agriculture and livestock 169,879 188,283 287,445 141,9 2. for railway 106,017 89,905 187,364 147,1 3. for other transportation and communications automobiles 302,661 9,467,600 11,523,314 8,799,6 automobiles with special equipment airplane and its parts 590,178 420,025 582,202 135,8 automobiles with special equipment airplane and its parts 590,178 420,025 582,202 135,8 truck - 1 554,45 27,830 23,664 4,778 10,710 4,6 chassis for automobiles 31,66 4,778 10,710 4,6 chassis for automobiles and trucks 39,878 32,837 52,503 12,7 assemble materials for automobiles and trucks 6,007,083 6,493,314 6,731,177 3,649,4 motors and its parts for automobiles and trucks 10,785,71 99,393,11,1						
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5. professional and scientific equipment 1,085,099 1,072,878 1,217,296 1,065,3 6. electric & electronic apparatus 4,993,218 5,182,486 6,016,633 4,138,7 apparatus of X-ray and its parts 45,852 77,766 72,251 34,5 electric soldering machine 58,079 58,113 81,583 69,6 apparatus for radio and record player 110,904 116,134 153,095 110,2 apparatus of telegraph 766,609 693,718 713,698 332,6 various apparatus and parts 162,841 164,120 182,519 86,6 generators, transformer, and electric motors 277,009 270,766 317,257 260,5 electric oven 75,574 19,419 27,199 9,6 electric lamp valve and parts 211,849 224,924 379,105 398,5 manual tool and its parts 24,210 25,572 31,873 15,6 parts for electric installation 1,085,334 1,330,408 1,519,870 1,391,1 transmitter of radio and TV 228,825 251,436 197,264 105,5 <		others	708,871	551,544	584,727	300,1
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apparatus for radio and record player 110,904 116,134 153,095 110,22 apparatus of telegraph 766,609 693,718 713,698 332,6 various apparatus and parts 162,841 164,120 182,519 86,6 generators, transformer, and electric motors 277,009 270,766 317,257 260,9 electric oven 75,574 19,419 27,199 9,6 electric lamp valve and parts 211,849 224,924 379,105 398,5 manual tool and its parts 24,210 25,572 31,873 15,6 parts for electric installation 1,085,334 1,330,408 1,519,870 1,391,1 transmitter of radio and TV 1,004,197 885,549 854,332 373,6 maintenance parts for radio and TV 228,825 251,436 197,264 105,5 shade for lighting 8,860 7,975 10,821 13,5 others 933,073 1,056,583 1,475,769 938,4 M. Other industries 500,045 587,642 836,508 412,2 V. Others 228,739 251,093 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
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M. Other industries 500,045 587,642 836,508 412,2 V. Others 228,739 251,093 284,428 381,1			: 1		1 1	
			1		1	
	v.	Others	228,739	251,093	284,428	381.1
	VI				·	,

Source : Banco de Mexico, "Indicadores del Sector Externo"

A1 - 6

Electrical/Electronic Assemblers and Their Products -Excl. Maquiladora- (1/4)

				Ĥ	Home Electrical Appliance	Elect	rical,	Appl	iance		¥	-oib(Audio-Visual	<u> </u>	Tele	Telecom		A E	quip	OA Equipment
Assemblers	Loca- tion	Employee	Ownership (%)	Cooker	Washing Machine	Blender	Iron	Tan T	Vacuum Cleaner	Airconditioner Others	CIV	ATV	Radio	oibuA	Тејерћопе	Cordless Telephone	Facsimile	Consputer	Printer Calculator	Copy Machine
Electrical Assemblers																				
Black & Decker	DF					0	0			0										
Braun de Mexico	MEX									0										
Calentadores Magamex	DF																			
Comercializadora Ontario	MEX					0	0	0												
Crolls Mexicana	PUE								_											
Daewoo Electronics Home Appliance	QRO			0	0															
Electronica Clarion	DF								<u> </u>				0	0	,					
Ensambladora de Refrigedores	MEX			0				- 											·	
Fabricantes de Aparatus Domesticos	GTO																			_
Hoover Mexicana	DF			0	0	0			0	0										
Ideal Standard	MEX																			
IMASA	DF			0						_										

Electrical/Electronic Assemblers and Their Products -Excl. Maquiladora- (2/4)

											-			Γ			ŀ	Ì			Г
					Hom	e Eje	Home Electrical Appliance	l Apj	plian	ခွ	₹.	Audio-Visual	-Vist	ıa]	Te	Telecom		OA Equipment	Equi	pme	= 1
Assemblers	Loca-tion	Employee	Ownership (%)	Cooker	Refrigerator	Washing Machine Blender	nonl	Fan	Vacuum Сlеапет	Airconditioner	O. C.L.A.	ATV	oibsA	oibuA	Lelephone	Cordless Telephone	Pacsimile	Computer	Printer	Calculator	Сору Масћіпе
Impco	NIN																				T
Industrias Confad	DF			0	0		-				0						•				
Industrias Filter Queen	DF								0												
Industrias Man de Mexico	DF					0		0													
IPM de Mexico	DF									0											
Koblenz Electrica	MEX				0				0		0										
Maquinaria Igsa	DF									0		-									Т
Motores Mc Millan	MEX							0				-									
Organizacion MABE	DF	·		0	0				· · · · · · · ·												
Philips Mexicana	DF			0	0	0	0	0	0		0										
Rodolfo Zarate Vargas	DF				-					0											
Sistemas de Aspiracion Central	DF								0												
Sunbeam Mexicana	MEX						0				0										

Control of the Contro

Electrical/Electronic Assemblers and Their Products -Excl. Maquiladora- (3/4)

				Ĕ	Home Electrical Appliance	ctrics	I Ap	plian	န	<u> </u>	Audi	Audio-Visual	la]	Tele	Telecom		OA Equipment	adinl	nent
Assemblers	Loca- tion	Employee	Ownership (%)	Cooker	Washing Machine	Blender	nsA	Vacuum Cleaner	Airconditioner	Others	ALK CLA	oibsЯ	oibuA	Telephone	Cordless Telephone	Facsimile Tatumon	Computer Printer	Calculator	Copy Machine
Taurus Mexicana	TLA																		
Tefal Mexicana	£Ω								 										
Vistar	MEX			0	0	0		0		0									
Vitromatic Comercial	DF																		
Vitromex	COA															_			
Electronic Assemblers																			
Alcatel Indetel Industria de Telecomunicacion	JAL													0					
AT & T Productos de Consumo de Mexico	JAĽ													0					
ATI de Mexico	DF																0		
Autec - Mexico	DF										-		0		- [-	
Bertelsmann de Mexico	DF						-						0						
Computec de Mexico (AECER)	DF												Ì			0			
Electronica Precision	MEX												0						

Electrical/Electronic Assemblers and Their Products -Excl. Maquiladora- (4/4)

							İ			}					ļ	-			
				Ĭ	Home Electrical Appliance	Sectr	ica} ∤	\ppli	nce		Audio-Visual	o-Vis	na]	ĭ	Telecom	E	OA Equipment	quip	men,
Assemblers	Loca- tion	Employee	Ownership (%)	Cooker	Washing Machine	Blender	lron	Fan Cleaner	Vacuum Cleaner Airconditioner	Stanto	CTV CTV	Radio	oibuA	Telephone	Cordless Telephone	Facsimile	Computer	Tetiniter Tetinitel	Calculator Copy Machine
Electronica Zonda	DF										-	-	0				0		
Hewlett Packard de Mexico	JAL																0	0	
IBM de Mexico	JAL																0		
Lanix Technology	SON																0		
Logica Digital	DF																	0	0
Motorola de Mexico	DF														0				
NEC de Mexico	DF													0					
Olympia de Mexico	DF																	0	
Panasonic de Mexico	DF					-					0		0		·				
Tecnologias NEC de Mexico	JAL														0				
Teleindustria Bricsson	MEX													0				•	
Xerox Mexicana	AGU																		0
Source: Estimated by JICA Team based on Directories of CANAME, ANFAD and CANIECE.	Directorie	s of CANAME,	ANFAD and C	ANIEC	យ់														

Same

Electrical/Electronic Assemblers and Their Products - Maquiladora -

				Home Electrical Appliance	trical	Appl	iance	<u> </u>	oipn	Audio-Visual		Telecom	uio	O	OA Equipment	pme	Γŧ
Assemblers	Loca- tion	Employee	Foreign Capital (%)	Cooker Refrigerator Washing Machine	Blender	norl	Fan Cleaner	Vacuum Cleaner	YTR	Kadio	oibuA	Telephone Cordless Telephone	Facsimile	Computer	Printer	Calculator	Сору Масћіпе
Daewoo Electronics de Mexico	NOS	784	100					0									
Goldstar Mexico	BC(M)	710	100					0									ł
Hitachi Consumer Products de Mexico	BC(T)	1,142	100					0									Ī
JVC Industrial de Mexico	BC(T)	909	0.01					0									
Kyushu Matsushita Elect. de Baja California	вс(т)	108	100									0					
Matsushita Ind. de Baja California	вс(т)	1,869	100					0									
Partes de TV de Reynosa	TAM	8,922	1					0									
Philips	СНІ		96					0									
Samsung Mexicana	BC(T)	280	100					0					-				
SIA Electronica de Baja California	BC(T)	1,003	100	0			0	0									
Toshiba Electromex	СНІ	963	100					0									
Video Tec de Mexico	BC(T)	4,652	100					0									
Zenco de Chihuahua*	CHI							0									
Note : * Not included in SECOFI database																	

Note :* Not included in SECUFI database
BC(T) Baja California - Tijuana
BC(M) Baja California - Mexicali
Source : Estimated by JICA Team

Centro de Investigación en Materiales	Avanzados, S.C. (CIMAV)
Address: Leon Tolstoi 166, C.P.31109, Chihuahua	
Tel : (14)81-0054 Fax: (14)81-0182	
Status : Public (SEP-CONACYT)	Establishment: 1994 Staff: 58
Facilities available for services to supporting industries (SIs)	: Attached
Main Roles	
Research and development of materials and education of resear	rchers
Main activities available for SIs	
To offer R&D service for	
analysis of materials analysis of materials	
2) research and finding solutions for deterioration of materials3) development of new meterials	•
To offer testing and inspection services using facilities installed	d in the center
To conduct a seminar or dispatch a specialist	
Recent achievement	
Recent achievement	
N.A.	
- N	
Limitations and advantages in services for SIs	
Limitations	
Limitations	
Limitations	
Limitations	
<u>Advantages</u>	
Advantages 1) Well equipped with advanced calibration equipment	8, M.A. 8
<u>Advantages</u> 1) Well equipped with advanced calibration equipment	8, M.A. 8
Advantages 1) Well equipped with advanced calibration equipment 2) The center is staffed with high educated personnel: Ph.D.	8, M.A. 8
Advantages 1) Well equipped with advanced calibration equipment	8, M.A. 8
Advantages 1) Well equipped with advanced calibration equipment 2) The center is staffed with high educated personnel: Ph.D.	8, M.A. 8 3) Extension services
Advantages 1) Well equipped with advanced calibration equipment 2) The center is staffed with high educated personnel: Ph.D. Available services for SIs	
Advantages 1) Well equipped with advanced calibration equipment 2) The center is staffed with high educated personnel: Ph.D. Available services for SIs 1) ☑ Seminar/workshop 2) ☐ Vocational training	3) Extension services

Scientific Equipment of the Research Center for Advanced Materials (CIMAV)

Transmission electron microscope

Scanning electron microscope

10 and 50 tons servo-hydraulic mechanical testing machines

5 tons electromechanical testing machine

Powder x-ray diffractometer

X-ray fluorescence spectrometer

Infra-red spectrometer

Sequential plasma spectrometer

Optical microscopes

Thermal analysis equipment

Equipment for metallographic samples preparation

Corrosion test equipment for stress assisted and high temperature corrosion and Electrochemical Characteriz surface area determination system

Gas chromatography

Water and emissions monitoring and characterization equipment

Dark room facilities

Work station

Vibration magnetometer

Mossbauer spectrometer

Hardness, micro-hardness, impact and erosion machines

Equipment for the preparation of electron microscopy samples

Impedance analyzer

Powder micro atomizer, attrition type mill, 30 tons hydraulic press, etc

Environmental and UV-salinity chambers

Scientific Equipment that would be of interest for the Research Center for Advanced Materials (CIMAV)

Field emission, ultra high resolution transmission electron microscope

Particle size optical analyzer

Liquid nitrogen production plant

High power (150KW) no-break

Rheometer

Hot isostatic press

High temperature torsion machine

Laboratory rolling mill.

Induction furnace

Confocal microscope

Wave length dispersion spectrometer

High temperature vacuum electrical furnace

Atomic absorption spectrometer

Work station type computers

Equipment for optical characterization

UV-Vis. Spectrometer

Ser	Nο
	130

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Centro	d	e Investigación y Asistencia Técnica del I	Estado de Que	rétaro,	A.C. (CIATEQ)
Address	:	Calzada del Retablo 150, 76150 Querétaro, QRO.			
Tel	:	16-34-29 Fax : 16-99-63			
Status	:	Public (SEP-CONACYT)	Establishment:	1978	Staff: 130
Facilities	av	ailable for services to supporting industries (SIs):	Attached		

Main Roles	
To contribute modernization of metal-mechanic	s and metallurgical industries
Main activities available for SIs	
To design and manufacture automated proc	
2) To conduct experimental research works ar	
 To conduct research works on melting, cas 	
To conduct technical training course (Pneu Mechanical failure analysis course)	natic course, Hydraulic course, Turbo-machinery course,
5) To offer calibration services in the field of	emperature, mass, volume, dimension (Aguascalientes branch
labo.) 6) To offer metallurgical testing and inspection	services (I she under construction)
Recent achievement	***************************************
The state of the s	4.12
Number of performed projects in 1995: 150	
Limitations and advantages in services for SIs	
Limitations Availabilities of facilities and services for SME	12i4- J
Availabilities of facilities and services for SME	s are limited.
Advantages	
Carrinter & V.	•
Available services for SIs	
1) 🗹 Seminar/workshop 2) 🔲 Vocatio	al training 3)
4) Technical consultation 5) R&D se	vices 6) 🗹 Inspection/Testing
l '	l standardization 9)
10 ☑ Technical information supply 11) ☐ Credit/I	,
20 22 Avoninear information supply 11.7 22 Cledity	74H

Material technology department	
Cupola (4 tons/Hr)	1 set
Induction furnace (180kg)	3 sets
Induction furnace for holding (500kg)	1 set
Surface treatment furnace (fludized-bed type)	1 set
Salt bath (Electric heating)	1 set
Molding equipment using lost foam pattern	1 set
Centrifugal casting machine	2 sets
Mechanical construction department	
Horizontal lathe	3 sets
Vertical lathe	1 set
Milling machine	2 sets
Radial drilling machine	3 sets
Turning center	1 set
Vertical machining center	1 set
Cylindrical grinding machine	1 set
Surface grinding machine	1 set
Broaching machine	1 set
Metrology laboratory	
3D CMM	1 set
Profile projector	1 set
Granite surface plate	1 set
Rockwell hardness tester	1 set
Brinell hardness tester	1 set
Gauge blocks	1 set

Fax: 20-63-65 : 20-63-64 Tel : Public (SEP-CONACYT) Establishment: 1984 **Staff: 205** Facilities available for services to supporting industries (SIs): Attached Main Roles To give technical assistance to the micro, small and medium scaled enterprises Main activities available for SIs 1) To develop products, machinery and equipment, automation and control systems 2) To design and make mold & die 3) To offer metallurgical testing and inspection services 4) To conduct research and development work of advanced material 5) To offer calibration service in the field of dimension, mass, volume and temperature 6) To conduct technical training course Recent achievement Number of calibration services in 1995: 1,340 Limitations and advantages in services for SIs Limitations Obsolete machinery and equipment in machine shop, testing and metrology laboratories Advantages Maintaining close relation to the local SIs Available services for SIs 3) Extension services 1) Seminar/workshop 2) Uvocational training 4) I Technical consultation 5) R&D services 6) Inspection/Testing 7) 🗹 Calibration 8) Industrial standardization 9) Industrial standardization 9) 10 ☑ Technical information supply 11) ☐ Credit/Loan

Centro de Ingeniería y Desarrollo Industrial (CIDESI)

Address: Playa Pie de la Cuesta 702, Fracc. Habitacional San Pablo, Querétaro, QRO. 76130

1)	Non-destructive testing laboratory		
	Magnetic flaw detection facilities	1	set
	Eddy current flaw detection facilities	1	set
	Penetration inspection facilities	1	set
	Ultrasonic flaw detection facilities	2	sets
	X-ray inspection facilities	1	set
2)	Metallography laboratory		
	Optical microscope	3	sets
	Specimen preparation facilities	1	set
3)	Chemical analysis laboratory		
	Atomic absorption flame emission spectrophotometers	2	sets
	UV-VIS spectrophotometers	1	set
4)	Mechanical properties testing laboratory		
	Universal testing machine	1	set
	Charpy-impact tester	1	set
	Vickers hardness tester		set
	Rockwell hardness tester	1	set
	Brinell hardness tester	1	set
	Universal hardness tester		set
	Fatigue testing machine		sets
	Twist testing machine	1	set
5)	Machine shop		
	Electric discharging machine	1	set
	Surface grinding machine		sets
	Cylindrical grinding machine		set
	Milling machine		sets
	Lathe	_	sets
	Drilling machine	3	sets
6)	Metrology laboratory		
	3D CMM		set
	Measuring machine (Length)		set
	Roundness measuring machine		set
	Profile projector		set
	Gauge blocks sever		
	Gear measuring machine	•	set
	Indication comparator for calibration		set
	Electric comparator for gauge blocks calibration	1	set

Address: Apartado Postal 379, Blvd. Enrique Reyna No.140,	Saltillo, COAH. 25100
Tel : (84)15-28-27 Fax: (84)15-48-04	
Status : Public (SEP-CONACYT)	Establishment: 1976 Staff: 146
Facilities available for services to supporting industries (SIs)	: Attached
M-1- Pala	
Main Roles	
To support and promote plastics industries	
Main activities available for SIs	·
1) To transfer the results of R&D works to the industries	
To offer laboratory services such as chemical analysis and	materials testing
3) To hold seminars for the industries	
4) To develop prototype of plastics processing facilities	
5) To provide technological information service (library and c6) To offer consulting service	omputer internet service)
o) to other consuming service	
Recent achievement	
Research on ultra-violet absorbable agents	
2) Development of stretch film forming technology	
	·
Limitations and advantages in services for SIs	
Limitations	
Availabilities of facilities and services for SMEs are limited.	
Advantages	
Well equipped with high grade and advanced facilities	
Available services for SIs	
1) 🗹 Seminar/workshop 2) 🗆 Vocational training	3) 🗆 Extension services
4) 🗹 Technical consultation 5) 🗹 R&D services	6) Inspection/Testing
7) □ Calibration 8) ☑ Industrial standardization	9) Consultation for investment/management
10 ☑ Technical information supply 11) ☐ Credit/Loan	.,
ao 100 (100 (100 (100 (100 (100 (100 (100	

Centro de Investigación en Química Aplicada (CIQA)

Polymer analysis apparatus

Size exclusion chromatography
X-ray diffraction
Nuclear magnetic resonance
Infrared spectroscope
Ultraviolet spectroscope
Scanning & transmission electron microscope

Compound tester

Melt-index tester Plast-graph

Molding product tester

Universal testing machine Impact tester (Izod type) Cone fall down impact tester Friction tester Heat distortion temperature tester Ultraviolet irradiation apparatus etc.

Compounding machine

Henschel mixer Extruder for pellet

Molding machine

Injection machine	2 sets
Extruder	3 sets
Blow molding machine	1 set

Tel : (84)11-32-00 F	Fax : (84)15-21-51	
Status : Public (Part of S)	EP-CONACYT System)	Establishment: 1992 Staff: 388
Facilities available for service	es to supporting industries (SIs	: Attached
Main Roles		
 To develop and apply m 	odern and reliable technologies	
 To support industrial ope 	erations and maintenance	
Main activities available for S	Is ·	
1) New products developm		
Prototype development		
Environmental engineer		
,	ler national and international stan	
•	on (procedures and quality system	•
=	ation of quality assurance systems	3
7) Metrology services		
of which 333 were small siz	_	
Limitations and advantages in	i services for SIs	
Limitations Most of the convices offered	are deviaged for basic industries	such as all names steel and coment
Most of the services offered	are designed for basic industries	such as oil, power, steel and cement.
Advantages .		
Well equipped with high gra	ade and advanced facilities	
Available services for SIs		
1) Seminar/workshop	2)	3) Z Extension services
4) Technical consultation	5) R&D services	6) ☑ Inspection/Testing
	8) Industrial standardization	•
1 ′	,	. 2) Consumation for investment/management
10 I Technical information sup	pry 11) 🗀 Credit/Loan	

Corporación Mexicana de Investigación en Materiales, S.A. de C.V. (COMIMSA)

Address: Blvd. Oceania 190, Fracc. Saltillo 400, Apdo. Postal 491, C.P.25290, Saltillo, COAH.

X-ray fluorescent analyzer	1 set
Optical emission quantometer	1 set
X-ray spectrometer	1 set
C.S. analyzer	3 sets
10 ton universal testing machine	1 set
Brinell hardness tester	1 set
Rockwell hardness tester	1 set
60 ton universal testing machine	1 set
Micro Vickers hardness tester	1 set
Impact testing machine (Charpy & Izod)	1 set
Atomic absorption flame emission spectrophotometer	1 set
Emission spectrometer	1 set
Optical microscope	1 set
Scanning electron microscope	1 set

Address : Av. San Fernando	No. 37, C.P.14050, D.F.	
Tel : 624-2800 F	ax: 624-2822	
Status : Public (SEP-CON	IACYT)	Establishment: 1975 Staff: 85
Facilities available for service	s to supporting industries (N	.A.
Main Roles		
Ito mission is to contribute t	the improvement of productive	rity, principally, of the small- and medium-sized
companies.	one amprovement of productive	ity, principally, of the shall and meetan onee
Main activities quallable for C		
Main activities available for Si Information Network Service	** ***	
 Enterprises Information Ser 	vices (ESI)	
- m : / 0		
 Training Service 		
 Consulting Service 		
- Consuming Contrice		

Recent achievement		
N A		
N.A.		
Limitations and advantages in	services for SIs	
<u>Limitations</u>		
<u>Advantages</u>	4 (10° (1	·
It supports the industry in the i	genuncation and definition of technology the new world of productivity and	nical problems and in the analysis of business opportunionpetitively and to technological innovation and
modernization for SMEs.	o mo non mona or proaconing, or	
Available services for SIs		
4) [7]	as Marine service	2) Rutansian assuitas
1) Seminar/workshop	2)	3) Extension services
4) Technical consultation	TR&D services	 Inspection/Testing

Fondo de Información y Documetación para la Industria (INFOTEC)

9)

8) Industrial standardization

☑ Consultation for investment/management

.

7) Calibration

10 ☑ Technical information supply 11) ☐ Credit/Loan

Address: Domicilio Conocido Torantzintla, Puebla		
Tel : 91(22)474306 Fax: 91(22)474314		
Status : Public (SEP-CONACYT)	Est	ablishment: 1972 Staff: 60
Facilities available for services to supporting industries (SIs):	Noi	ne ·
Main Roles		
To foster researcher, professor, experts and technician in the fiel		
To obtain the solution for scientific and technological problem in	these	e fields.
Main activities available for SIs		
N.A.		
Recent achievement		
Access aciss venicis		
N.A.		
Limitations and advantages in services for SIs		
Limitations		
The center mainly covers scientific field of astrophysics and opti	cs wi	nich are not directly related to SIs.
Advantages		
In the field of electronics, the center is able to conduct research of	n des	sign, manufacture and inspection of semi-
conductor.		
Available services for SIs		
1) 🛘 Seminar/workshop 2) 🗖 Vocational training	3)	☐ Extension services
4) Technical consultation 5) R&D services	6)	☐ Inspection/Testing
7) Calibration 8) Industrial standardization	9)	☐ Consultation for investment/management
10 Technical information supply 11) Credit/Loan		

Instituto Nacional de Astrofísica, Optica y Electrónica (INAOE)

Tel : (16)20-4881 Fax: (16)20-4880 Status : Public (SEP) Establishment: 1994 Staff: Facilities available for services to supporting industries (SIs): Attached Main Roles To strengthen competitiveness of SMEs and to cope with the liberalization of economy Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators 4) To offer machining, testing and inspection services using facilities installed in the center
Facilities available for services to supporting industries (SIs): Attached Main Roles To strengthen competitiveness of SMEs and to cope with the liberalization of economy Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators
Main Roles To strengthen competitiveness of SMEs and to cope with the liberalization of economy Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators
To strengthen competitiveness of SMEs and to cope with the liberalization of economy Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators
To strengthen competitiveness of SMEs and to cope with the liberalization of economy Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators
Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators
Main activities available for SIs 1) To train people dispatched from industries 2) To offer technical assistance 3) To assess skill level of operators
 To train people dispatched from industries To offer technical assistance To assess skill level of operators
 To train people dispatched from industries To offer technical assistance To assess skill level of operators
 To train people dispatched from industries To offer technical assistance To assess skill level of operators
 To train people dispatched from industries To offer technical assistance To assess skill level of operators
2) To offer technical assistance3) To assess skill level of operators
2) To offer technical assistance3) To assess skill level of operators
3) To assess skill level of operators
·
1) 15 01.01 1 01
Recent achievement
N.A.
Limitations and advantages in services for SIs
Limitations
Advantages
1) The center maintains close relations with local SIs.
Well equipped with high grade and advanced facilities
Available services for SIs
1) Seminar/workshop 2) Vocational training 3) Extension services
Ty La Johnson, Workshop 2) La Vocationas Raming 3) La Establish Services
4) Technical consultation 5) R&D services 6) Inspection/Testing
· · · · · · · · · · · · · · · · · · ·

Centro de Asistencia y Servicios Tecnológicos (CAST), CONALEP

Metrology equipment	
Laser micrometer	2 sets
Optical comparator	2 scts
Surface roughness tester	1 set
Profile projector	1 set
Hardness tester	2 sets
Roundness tester	1 set
CMM	2 sets
Machine tool	
Machining center	1 set
CNC lathe	1 set
CNC milling machine	1 set
Universal milling machine	3 sets
Conventional lathe	5 sets
CNC-manual lathe	1 set
EDM	1 set
Wire-cut EDM	1 sct
Rectifier	3 sets
Drilling machine	2 sets
Welding equipment	
TIG welding machine	4 scts
MIG welding machine	3 sets
Electrical soldering machine	1 set
Oxygen acetylene welding	5 sets
Plasma process cutting machine	1 set
MIG welding robot	1 set

Note) Educational facilities are not included.

-	nenes Cantu, No. 1000 Sun. Col. San Ju	ian Atlamica Cuautitlan Izca	lli, Edo. de México
Tel : (5)837-9565	Fax: (5)837-9565		
Status : Public (SEP)		Establishment: N.A.	Staff: 11
Facilities available for servi	ces to supporting industries (SIs):	Attached	
Main Roles			
To strengthen competitiven	ess of regional small & medium scale	d industries and to foster of	perators
Main activities available for S	Us (1992 G.HAS (1914) A	{}}***********************************	***************************************
	The second secon		
 To train people dispatch 	ned from industries		
2) To offer technical assist			
	ts ordered by regional industries		
 To offer machining, tes 	ting and inspection services using fac	ilities installed in the center	•
		br4bro(4abi(128bb4bbbb))	*******************************
Recent achievement			
2.T A		•	
N.A.			
Limitations and advantages i	n services for SIs	dbaadsbraceadaa redbaabealad reba-4400 loobbral aasaa	
Limitations			
			
Advantages			
1) The center maintains cl	ose relations with local Sis.		
2) Well equipped with hig	h grade and advanced facilities		
			
Available services for SIs			
	a) [7]		
1) Seminar/workshop	Vocational training	3) Extension services	•

Centro de Asistencia y Servicios Tecnológicos (CAST), CONALEP

✓ Inspection/Testing

R&D services

8) Industrial standardization

4) Z Technical consultation

10 Technical information supply 11) Credit/Loan

7) 🗖 Calibration

1 set
1 set
1 set
1 set
1 set
1 set
1 set
3 sets
1 set
1 set
1 set
1 set
3 sets
1 set
1 set

Note) Educational facilities are not included.

Centro de Asistencia y Serv	icios fecnológicos (CAST), CONALEP
Address: Av. Dr. Jorge Jimenes Cantu, No. 100	0 Sun. Col. San Juan Atlamica Cuautitlan Izcalli, Edo. de Mexico
Tel : (5)837-9565 Fax: (5)837-9565	
Status : Public (SEP)	Establishment: N.A. Staff: 11
Facilities available for services to supporting in	ndustries (SIs): Attached
Main Roles	
and the second s	
To strengthen competitiveness of regional smal	l & medium scaled industries and to foster operators
	·
Main activities available for SIs	
1) To train people dispatched from industries	
2) To offer technical assistance	
3) To manufacture products ordered by region	
4) To offer machining, testing and inspection	services using facilities installed in the center
Recent achievement	
university of the control of the con	•
N.A.	

AdvantagesThe center maintains close relations with local Sis.Well equipped with high grade and advanced facilities

Limitations and advantages in services for SIs

Available services for SIs

Limitations

1)	☑ Seminar/workshop	2)	☑ Vocational training	3)	Extension services
4)	☑ Technical consultation	5)	R&D services	6)	☑ Inspection/Testing
7)	☐ Calibration	8)	☐ Industrial standardization	9)	Consultation for investment/management
10	☐ Technical information supply	11)	☐ Credit/Loan		

Vertical machining center	2 sets
Milling machine	4 sets
Turning center (NC)	1 set
Wire cut EDM	1 set
EDM	2 sets
Lathe	3 sets
Radial drilling machine	1 set
Surface grinding machine	4 sets
Electrical furnace	2 sets
Heat treatment furnace	1 set
Die-cast machine	1 set
Roundness tester	1 set
Hight gauge	1 set
Hight master	1 set
Roughness tester	1 set
Profile projector	1 set
Optical microscope	1 set
Universal hardness machine	2 sets
Torque measurement	1 set
Granite surface plate	1 set
Surface roughness tester	1 set

Note) Educational facilities are not included.

		1
Address: Av. Homero No.350 Esq. N.Gogol Complejo Industr	ial Chihuahua	
Tel : 81-06-41 Fax: 81-06-41	-	
Status : Public (SEP)	Establishment:	Staff:
Facilities available for services to supporting industries (SIs):	Limited	
Main Roles		
1) Maintenance of laboratory equipment		
2) Design and fabrication of educational equipment		
3) Training of laboratory staff		
All services for eight "Institutos Tecnologicos" under SEP		
Main activities available for SIs		
Accept employees of SMEs to take the training cource organized	I for the staff of "Institut	os Tecnologicos"
1 1000pt uniprojeta de constante de la constan	. I of the out of the traction	os ruendiogrees
- Annual Control of the Control of t	***************************************	144411-155555441348545-51111-545-54445-4151-7445111
Recent achievement		
Started the Training of Technical staffs of private companies one	e year ago	
		:
Limitations and advantages in services for SIs		
Limitations		
The original objective of the center is only to support "Institutos	Tecnologicos".	
-	_	
Advantages.		
Most of the facilities and equipment could be favorably utilized	in the training course for	SIs.
1	in the training course for	SIs.
Most of the facilities and equipment could be favorably utilized	in the training course for	SIs.
Most of the facilities and equipment could be favorably utilized	in the training course for	SIs.
Most of the facilities and equipment could be favorably utilized	in the training course for	Sis.
Most of the facilities and equipment could be favorably utilized Space is available for additional students and facilities.		
Most of the facilities and equipment could be favorably utilized Space is available for additional students and facilities. 1) Seminar/workshop 2) Vocational training	 3) ☐ Extension service 	es
Most of the facilities and equipment could be favorably utilized Space is available for additional students and facilities. 1) Seminar/workshop 2) Vocational training 4) Technical consultation 5) R&D services	3)	es ng
Most of the facilities and equipment could be favorably utilized Space is available for additional students and facilities. 1) Seminar/workshop 2) Vocational training	3)	es

Centro de Investigación y Desarrollo Condumex				
Address : Carr. Constitución a S.L.P. Km. 9.6, Parque Industri	ial Jurica, C.P. 76120 Querétaro, QRO.			
Tel : (42)18-18-02 Fax: (42)18-07-17	•			
Status: Private company	Establishment: 1990 Staff: 79			
Facilities available for services to supporting industries (SIs):	No facilities for services to SIs			
 Research and development work to support Carso (Parent of To develop new products) 	ompany of Condumex) group companies			
 Research and development work to support Carso (Parent carso) To develop new products To develop production technology and processing facilities To conduct various tests and inspections for production of 				
 To develop new products To develop production technology and processing facilities 				

•
3)
6) Inspection/Testing
9) Consultation for investment/management

Transmisiones y Equipos Mecánicos, S.A. de C.V. (TREMEC) **Research and Development Laboratory** Address: Ave. 5 de Febrero No.2115 C.P.76120, Apartado Postal 308, C.P.76000 Querétaro, QRO. : (42)17-07-17 Fax: (42)17-03-45 : Private company Establishment: N.A. Staff: 12 Facilities available for services to supporting industries (SIs): No facilities for services to SIs

Tel

Main Roles	1. 1.			
To develop new products of	f tran	smission		
 To develop production tech 	nolo	gy and production lines		

Main activities available for SIs				
No activities available for SIs				
Recent achievement			******	
N.A.				
Limitations and advantages in se	orvice	oe for SIe		
Limitations Limitations	DI PAG	a jur ma		
<u>Advantages</u>				
Available services for SIs				
	2)	☐ Vocational training	3)	☐ Extension services
Seminar/workshop Technical consultation	5)	R&D services	6)	☐ Inspection/Testing
7) Calibration	8)	☐ Industrial standardization	9)	Consultation for investment/management
10 Technical information supply	v 11)	☐ Credit/Loan		

Address: Juan Ruiz Alarcon 350 Compl. Industrial, Chihuahua Tel: (14)81-1449 Fax: (14)81-1961 Status: Private Establishment: 1994 Staff: N.A.	
Status · Private Retablishment · 1004 Staff · N.A.	
Establishment. 1994 Stan: INA.	
Facilities available for services to supporting industries (Attached	
Main Dalan	
Main Roles	
To develop design, engineering, fabrication and maintenance technology of mold and die to support the reginal industry	
To supply molds and dies to regional automobile and electronic industries.	
Main activities available for SIs	
To design, manufacture and repair molds and dies	
To train mold-making engineers	
Recent achievement	
Under preparation, yet to start	
Limitations and advantage in a size of a City	
Limitations and advantages in services for SIs Limitations	
Advantages	
Available services for SIs	
1) 🗹 Seminar/workshop 2) 🗆 Vocational training 3) 🗀 Extension services	
4) Technical consultation 5) R&D services 6) Inspection/Testing	
7) Calibration 8) Industrial standardization 9) Consultation for investment/managem	nt
10 Technical information supply 11) Credit/Loan	

Lathe	2 sets
Drilling machine	4 sets
Milling machine	2 sets
EDM	2 sets
Wire-cut EDM	2 sets

Address: Querétaro 434, Col. República Ote, Saltillo, Coah. 25	280, AP16 CPI	
Tel : 15-62-00 Fax: 16-38-81		
Status : Private	Establishment: 1994	Staff: N.A.
Facilities available for services to supporting industries (SIs):	N.A.	
	· · · · · · · · · · · · · · · · · · ·	
Main Roles		
To contribute to raise competitiveness level of the industries by n	ncans of developing human res	ources
Main activities available for SIs		
1) Technology transfer		
2) To offer consultancy services with regard to legal matter		1
3) To provide library service		į
4) To hold seminars on production management technology and	TQC	
Recent achievement		
		i
• Current number of clients are over 100, most of them are men	mber of CAINTRA	
T. Santana J. J. Santana B. Car.		
Limitations and advantages in services for SIs Limitations		
<u>Limitatyns</u>		
<u>Advantages</u>		
 To keep close relation with the local SMEs 		
		}
Available services for SIs		
	3) Extension services	
1) 🗹 Seminar/workshop 2) 🔲 Vocational training	3)	
 ✓ Seminar/workshop ✓ Technical consultation ✓ Technical consultation ✓ R&D services 	6) Inspection/Testing	nent/management
1) 🗹 Seminar/workshop 2) 🔲 Vocational training	, _	ment/management

Centro para la Innovación y el Desarrollo Competitivo Empresarial, S.C. (CIDCE)

Unida	d de Transferencia de T	ecno	ología (UTT)		
Address : Av. San Antonio 256	Col. Ampliaión, Napoles, delg.	Beni	to Juárez, D.F.			
Tel : 563-3400 Fax:	611-2151					
Status : Private non-profit orga	anization	Est	ablishment :	1993	Staff: N.A.	
Facilities available for services to	supporting industries (SIs):	N.A	١.			
Main Roles					· · · · · · · · · · · · · · · · · · ·	
T 11.1 1 1		1 4	1 OVC			
To provide knowlege-base and en	vironmentally sound technolog	icai i	ools to SMES			
Main activities available for SIs			•••••••·······························		***************************************	.,,,,,,,,,
In-plant technical assistance a	nd training programs					
2) Setting up of QA systems	nd daming programs					
3) Consulting services especially	on environmental protection					
4) Trading services	r.					
5) Information service and pater	its etc.					
•						
	dan san tanan da			***************************************		,
Recent achievement						
Total number of services to the in	dustry upto Feb. 1996 is 1500.					
	•					
Limitations and advantages in serv	ices for SIs		***************************************	************	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Limitations						
<u>Advantages</u>						
Service charges are reasonable fo	r SMEs.					
			,,,		***************************************	
Available services for SIs						
1) 🗹 Seminar/workshop 2) Uvocational training	3)	☐ Extension :	services		
· · · · · · · · · · · · · · · · · · ·) R&D services		☐ Inspection/			
	,	6)				
7) Calibration 8	,	9)	Y Consultatio	on for inve	estment/manageme	nt
10 Technical information supply 1	1) LI Credit/Loan					

Processing Technology and Raw Materials for Autoparts (1/4)

A. ENGINE

	Components/Parts	Main Materials	Main Processing Method					
Engine Body	Cylinder Block	Grey cast iron	Sand mould casting					
į	Cylinder Head	Grey cast iron	Sand mould casting					
	Gasket	.]						
	Engine Mounting Braket	Ductile cast iron/Steel sheet	Sand mould casting/					
			Stamping & Welding					
	Engine Mount	Rubber & Steel sheet	Stamping					
	Oil Pan	Steel sheet/Aluminum alloy						
Piston and	Piston	Aluminum alloy	Gravity die casting					
Crankshaft	Piston Pin	Structural alloy steel	Cold forging					
	Piston Ring	Grey cast iron	Sand mould casting					
	Crankshaft	Medium carbon steel, Low alloy steel	Forging					
	Connecting Rod	Medium carbon steel	Forging					
	Main Bearing	Kelmet	Sintering					
	Connecting Rod Bearing	Kelmet	Sintering					
Camshaft	Engine Valve	Heat resistant alloy steel	Forging & Welding					
and Valve	Valve Spring	Piano wire	Ceiling & Heat treatment					
	Rocker Arm	Aluminum alloy/Alloy steel	Pressure die casting/					
		,	Precision casting/Forging					
	Valve Guide	Grey cast iron/Sinterd alloy	Sand mould casting/Sintering					
	Valve Sheet	Sinterd alloy	Sintering					
	Valve Spring Retainer	Carbon steel, Alloy steel	Cold forging					
	Camshaft	Grey cast iron/Carbon steel	Sand mould casting/Forging					
	Camshaft Sprocket	Sinterd alloy	Sintering					
	Timing Belt	Rubber						
Fuel System	Fuel Pump	Lowerbody parts: Aluminum die cast	Machining & Assembling					
. a.c. 25	Fuel Injection Assy	zoworody parts. 7 mannant die east	Machining & Assembling					
	injector		I Machining of Francisconing					
	pressure regulator							
	Carburetor		<u> </u>					
	Fuel Tank	Steel sheet	Stamping & Welding					
	Fuel Hose	Rubber	Blow moulding					
	Fuel Filter	Radout	Diow mounting					
Intake and	Intake Manifold	Aluminum alloy	Low pressure die casting/					
Exhaust	inako (viaj/ik/id	7 Hollisham anoy	Gravity die casting					
1.Anut.A	Exhaust Manifold	Grey cast iron	Sand mould casting					
	Air Cleaner	Case & Cover : steel sheet/Plastics	Machining & Assembling					
	Muffler	Steel sheet	Stamping & Welding					
Lubricating	Oil Pump	1 07001 011001	Machining & Assembling					
and	rotor/gear	Fe-C-Cu Sintered alloy	Sintering Sintering					
Cooling System		Aluminum alloy	Pressure die casting					
cooming cysion	shaft	Carbon steel	Machining & Heat treatment					
	Water Pump	Caroon steer	Machining & Assembling					
	body	Grey cast iron/Aluminum alloy	Sand mould casting/					
	, , ,	Groy cast non/mannan anoy	Pressure die casting					
	impeller	Grey cast iron/Steel sheet	Sand mould casting/Stamping					
	Radiator	Stoj cust domoteol silvet	Stamping & Soldering & Assembling					
	fin	Copper sheet	Ourithing & Ocideritik & Vizellinitilk					
	tank	Brass sheet						
	tube	Brass sheet						
	Radiator Fan	Resin	Injection mouldies					
		IVESIII	Injection moulding					
	Engine Oil Cooler	 	Stamping & Soldering & Assembling					
	Oil Filter		Assembling					

Source: JICA team's preparation.

Processing Technology and Raw Materials for Autoparts (2/4)

B. BODY

Components/Parts	Main Materials	Main Processing Method
Outer Panels		
doors		
front food		
trunk lid quarter		
cowl top		
Inner Panels	Almost all material of body	Almost all processing
same as above	is steel sheet.	method of body is stamping.
Roof		
Roof rail		
Fender Panel		
Pillers		
Front & Rear Frame		
Side Sill	_	
Dash Panel (Instrument Cluster)		
Strut House Panel		
Floor Pan		
Cross & Side Member		
Front End Upper Bar		
Door Hinge Reinforce		
Bumper Reinforce	·	
Backbone Reinforce		

C. TRIM

	Components/Parts	Main Materials	Main Processing Method
	Instrument Panel		
	foundation	ABS Resion	Injection moulding
	cushion	Polyurethane resin	Foaming
	cuticle	PVC Resin	
	Console Box		
	foundation	ABC Resin	Injection moulding
	cuticle	PVC Resin	
	Seat		
	seat frame	Steel sheet	Stamping
	cushion spring	Spring steel	Ceiling & Heat treatment
	back spring	Spring steel	Ceiling & Heat treatment
	cushion	Polyurethane resin	Foaming
	cuticle	Artificial leather, Fabric	
	Door Trim		
	foundation	Woodenfibre/Resin compound	Hot and cold compression moulding
		•	Injection moulding
	cuticle	PVC Resin	
	cushion	Polyurethane resin	Foaming
	Ceiling (Formed Ceiling)		
	foundation	Woodenfibre/Resin compound	Hot compression moulding/
	İ	1	Vacuum forming
	cuticle	PVC Resin	
	cushion	Polyurethane resin	Foaming
	Floor		9
	carpet	Fibre	
	antivibration material	Asphalt sheet	
	insulator	Polyurethane resin, Felt	· · · · · · · · · · · · · · · · · · ·

Processing Technology and Raw Materials for Autoparts (3/4)

D. EXTERIOR

Components/Parts	Main Materials	Main Processing Method
Bumper Fascia	Resin/Steel sheet	Injection moulding/Stamping
Grille	Resin	Injection moulding
Garnish	Resin	Injection moulding
side garnish		
rear pin garnish		
rear panel garnish		
Mogol	Stainless steel/Resin	Stamping
Rear Spoiler	Resin	Blow moulding/Injection moulding
Lamp		
bulb	Glass, Tungsten firament	
lense	Resin/Glass	Injection moulding
reflecter	Resin/Steel sheet	Injection moulding/Stamping
body	Resin	Injection moulding
Wheel Cover	Resin/Steel sheet	Injection moulding/Stamping
Window	Glass	
front window sealed		
side window		
rear window		
roof wondow		
mirror		Assembling

E. CHASSIS

	Components/Parts	Main Materials	Main Processing Method					
Suspension	Spring	Spring steel						
	sheet spring		Stamping & Heat treatment					
	coil spring		Ceiling & Heat treatment					
	Stabilizer	Spring steel & Structural steel	Bending, Stamping					
	Arms	Steel sheet/Medium carbon steel	Stamping/Forging					
	Shock Absorber	Steel tube	Machining & Assembling					
Steering Axle	Knuckle	Carbon steel/Ductile cast iron	Forging/Sand mould casting					
-	Axle							
	front axle	Medium carbon steel	Forging					
	rear axle	Medium carbon steel	Forging					
	Wheel Hub	Grey cast iron/Medium carbon steel	Sand mould casting/Forging					
Steering	Steering Wheel	Steel tube/Aluminum alloy	Machining & Assembling/					
		1	Pressure die casting					
	Steering Column	Steel tube	Machining & Assembling					
	Steering Shaft	Medium carbon steel	Machining & Assembling					
	Steering Gear	Carbon steel	Machining & Heat treatment					
	Gear Housing	Aluminum alloy	Pressure die casting					
Brake	Brake Master Cylinder	Aluminum alloy	Sand mould casting					
	Brake Booster		Machining & Assembling					
	Brake Hose	Rubber						
	Brake Tube	Steel tube						
	Brake Wheel							
	Disc for Disc Brake	Ductile cast iron	Sand mould casting					
[Caliper for Disc Brake	Ductile cast iron	Sand mould casting					
	Brake Drum	Grey cast iron	Sand mould casting					

Processing Technology and Raw Materials for Autoparts (4/4)

F. DRIVING SYSTEM

•	Components/Parts	Main Materials	Main Processing Method				
Transmission	Transmission		Machining & Assembling				
	transmission case	Grey cast iron/Aluminum alloy	Sand mould casting/				
			Pressure die casting				
	gear	Alloy steel	Machining & Heat treatment				
	shaft	Alloy steel	Machining & Heat treatment				
	Clutch		Machining & Assembling				
	clutch housing						
	clutch pedal	Carbon steel	Forging				
	clutch master cylinder		Machining & Assembling				
	clutch release cylinder		Machining & Assembling				
Driving	Uniform Joints		Machining & Assembling				
Mechanism	Propeller Shaft	Steel tube	Machining & Assembling				
	Differential Gear Mechanism		Machining & Assembling				
	Wheel	Steel sheet/Aluminum alloy	Stamping/Casting/Forging				
	Tyre	Rubber	Moulding				

G. ELECTRICAL PARTS

Components/Parts	Main Materials	Main Processing Method
Battery	Lead & Resin	Assembling
Starter		Machining & Assembling
housing	Aluminum alloy	Pressure die casting
direct current motor	Magnetic steel sheet & Copper wire	Stamping & Wire winding
magnet switch		Machining & Assembling
Alternator		Machining & Assembling
housing	Aluminum alloy	Pressure die casting
stator	Steel sheet & Copper wire	Stamping & wire winding
rotor	Carbon steel & Copper wire	Machining & Wire winding
pulley	Carbon steel	Forging
Wire Harness		Assembling
Spark Plug		Assembling
Horn		Assembling

Components and Parts used for Electrical and Electronic Equipment

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(Note) 1/ Details of elementary parts under electronic parts are given in Annex 5-3. (Source) JICA Team compiled.

A8 - 5

Details of Elementary Parts used for Electrical and Electronic Equipment (Details of Annex 8-2)

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No	Parts Item	Parts	Application	Color TV	Monitor Display	Video Tane Recorder	Video Movie	Siereo set	CD Player	Car Stereo	Microwave Oven	Refrigerator	Coffee Maker	Washing Machine	Air Conditioner	Portable Teiephone	Cordless Telephone	Facsimile	Plain Paper Copier	Personal Computer	Word Processor	Laser Beam Printer	Dot Printer
1 2 3		Capacitors Capacitors Capacitors	arge Aluminum Electrolytic Small Aluminum Electrolytic Chip Aluminum Electrolytic	0000	0	C	Ö	0		0	0	0	0	0	000	0	0	0	0	0		Ö	0
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13 14 15			Thick Film Chip Resistors Fixed Carbon Film Resistors Fixed Metal Oxide Film Resi	0	0	0 0 0	0	0	000	0	0 0 0	0 0	0 0 0	000	Ō	0	0	0	*****	0	000		C
16 17 18	Resi	eroteisea Resistore	Fixed Metal Film Resistors Hot-Molded Fixed Carbon C Fixed Wirewound Resistors	Ö	0	O	0	0	0	O	000	0	0	0	000	Ö	0	0		0			
19 20 21	Resistors		Fuse Type Metal Oxide Film Thick Film Resistor Metwork Thermistors	0	0	O	0	0	 	0	0	0	0		00			0	0		0	•••••	
22 23 24			Rotary Potentiometers Slide Potentiometers Trinnnet Potentiometers	4.,	 	0 0 0	0	0	0	0 0	0 0	0				0	0	0	0	0	0	0	
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28 29	S.		Peaking Inductors EMI Filters SAW Filters	0	0	0		0		0	0	0	0	0		000	0		0		0		
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40 41 42	-		LED Thermos Sensors	0	0	0	0	0	0	0	\vdash	\rightarrow	0		000	0	0	_	000	0		-+	<u>C</u>
2	Sensors		Photo Sensors	Ö	O	0	0	O	0	Ö					Ö		<u> </u>	Ö	Ö	0			

(Source) JICA Team compiled.

Processing Technologies used for Electronic Parts Manufacturing

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t Parts	15	st .	Cabine		0		0		0	0	0	0	
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	11		s1010M	0	0	0		0			0	0	
	10	sba9H oi	Magnet	0	0	0	0	0		0		0	
Parts	6		CKTs	0	0	0	0	0	0	0	0	0	0
Assembly Parts	8	SI	Зреакс	0	0	0	0				0	0	
Ass	7		Tuners	0	0	0	0				0	0	0
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arts	8	səəu	Inducta	0	0							0	0
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Ele	7-4	rs.	Resistor		0	0	<u></u>	0	0	0			
Parts Item	No	Parts	Common	Press	Injection	Lathe Cutting	Gilding	Polishing	Painting	Printing	Adhesion	Die and/or Mold	SMT ¹¹
		Š		r-1	2	ω	4	w	o	^	∞	9	10

(Note) 1/2 Surface mounting technology (SMT) is increasingly used to fix semiconductors and other surface mouting devices (SMDs) on printed circuit boards (PCBs). Mounting can be done manually, but surface mouning machines are required for highly integrated devices.

A8 - 7

Method of Estimated Cost Breakdown of Automobile

A cost breakdown of a 2,000 cc passenger car was estimated on the basis of the weight by materials used.

Table 1 Weight by Materials used ¹⁾ (2,000 cc passenger car)

	Materials	(kg)	(%)	Remarks
1)	Steel plate & sheet	578	45.0	Cold-rolled sheets, Hot-rolled sheets, Galvanized sheets
2)	Steel products	283	22.0	Bar, Steel pipe, Spring
3)	Cast iron	143	11.1	Pig iron, Scrap
4)	Non-ferrous metal	31	2.4	Cu, Pb, Zn
5)	Aluminum	65	5.1	Al ingot
6)	Plastic	97	7.5	PE, PP, ABS, PVC, PU
7)	Rubber	13	1.0	SBR
8)	Others	75	5.8	Paints, Fiber, Wood
•••••		1,285	100.0	

Source: Automotive Industry, Vol.26, August

Note 1): Except glass and tire

The "weight of materials" was converted to "costs by essential technologies" using the following formula:

Costs by	Material		Material		Processing
essential =	= weight	Χ	unit cost	Χ	cost
technology	(kg)		(yen/kg)		(times of unit cost)

Table 2 Conversion Table from Materials to Costs of Essential Technologies

	Materials	(1) Material weight (kg)	(2) Material unit cost 1) (Yen/kg)	(3) Processing costs ²⁾ (times)	Essential technology
1)	Steel plate & sheet	578	62	2.63	1) Stamping
2)	Steel products	283	33	2,39	2) Forging/Bending/Machining
3)	Cast iron	143	18	11.25	3) Ferrous Casting
4)	Non-ferrous metal	31	246	4.23	4) Non-ferrous Metal Processing
5)	Aluminum	65	186	4.23	5) Die-Casting (Al-alloy)
6)	Plastic	97	148	3.26	6) Plastic Processing
7)	Rubber	13	300	2.87	7) Rubber Processing
8)	Others	75	139	2.85	8) Others
		1,285			

Note: 1) Material costs in Japan, 1996

^{: 2)} Source : Cost Index of Small and Medium Industries 1996, Small and Medium Enterprise Agency of Japan

Table 3 Estimated Cost Breakdown by Essential Technologies (2,000 cc passenger car)

Essential technology	Costs ¹⁾ (1,000 yen)	(%)
1) Stamping	94.2	29.8
2) Forging/Bending/Machining	22.3	7.1
3) Ferrous Casting	28.9	9.2
4) Non-ferrous Metal Processing	32.3	10.2
5) Die-Casting (Al-alloy)	51.1	16.1
6) Plastic Processing	46.8	14.8
7) Rubber Processing	11.2	3.5
8) Others	29.7	9.4
	316.5	100.0

Note 1): (1) x (2) x (3) of Table 2

Estimated Cost Breakdown of Color TV and Refrigerator in Japan

A. Color TV (20 inches)

Various essential technologies are involved for manufacturing a part or component of CTV. In this analysis, it is assumed that each part or components is expediently categorized into an essential technology that is mainly used for, as shown in Table 1.

An estimated cost breakdown of CTV by each essential technology is shown in Table 2. The costs in Table 2 are just an example of a CTV being manufactured in Japan.

Table 1 Parts and Components of TV Categorized into an Essential Technology 1)

	Elements	Assembly	Cabinet
1) Stamping	Cases for electrolytic capacitors, Resistor caps, Ceramic capacitors	Transformers, Radiating fins, Switches, Chassis frames, Convergence yokes, PCB holders	Metal fittings and hinges for (cabinet reinforcement, Degaussing coils, Speakers, Power switches)
2) Plastic processing	Small size transistors, Molded resistors, Cement resistors	:	Speaker grills, Escutcheon, Deflection yoke wedges, Back covers, Cushion for packing, Control panels
3) Cutting	Wires, Sheets, Metal fittings, Frames	Radiating sheets, Insulation sheets	Packings, Tape
4) Gilding	Washers, Eyelets	Metal frames, Metal fittings, Springs	Antenna terminal, Emblems
5) Polishing	Ceramic boards	Yoke magnets, Magnet for convergence	Antenna, Brand name plates
6) Painting	Color cord resistors	Switch knobs, Buttons	Door panels
7) Printing	Electrolytic capacitor tubes, Outer-tube of electrolytic capacitors	Labels, Sheet panels	Packing cases
8) Adhesion	Adhesive tape	Rubber sheets	Таре
9) Casting	Metal fittings for radiating fins	Relays, Magnets	-
10) SMT	-	Fuze, Ferite, Peakings, Small size semiconductors, Leads, Carbon resistors, Anti-fire resistors	-

Note: 1) excludes panel and funnel for CRT.

Table 2 Estimated Cost Breakdown of CTV (20 inches) Manufactured in Japan 1)

		Estimated Co	st (unit : yen)		Composition
	Elements	Assembly 2)	Cabinet	Total	(%)
1) Stamping	500	2,000	1,000	3,500	24.5
2) Plastic processing	800	1,200	1,800	3,800	26.6
3) Cutting	200	100	100	400	2.8
4) Gilding	100	100	100	300	2.1
5) Polishing	80	20	100	200	1.4
6) Painting	50	50	200	300	2.1
7) Printing	60	40	100	200	1.4
8) Adhesion	20	40	40	100	0.7
9) Casting	50	50	-	100	0.7
10) Others 3)	100	250	50	400	2.8
11) SMT	-	4,000	-	4,000	28.0
12) Molds & dies 4)	-	-	1,000	1,000	7.0
***************************************	1,960	7,850	4,490	14,300	100.0

Note: 1) Refer to table 1 for parts & components categorized in each section.

*

²⁾ Excludes CRT and IC.

³⁾ Sildering, winding and etc.

⁴⁾ Molds, and dies amounting to Yen 50 million are fully amortized for production of 50,000 sets of TVs.

Trees.

B. Refrigerator (300 liters)

Parts and components used for a refrigerator are broken down in an essential technology which is mainly used for, as shown Table 3.

An estimated cost breakdown of a refrigerator by each essential technology is shown in Table 4. The costs in Table 4 are just an example of a refrigerator being manufactured in Japan.

Table 3 Parts and Components of Refrigerator Categorized into an Essential Technology

	Elements	Assembly	Cabinet
1) Stamping	Cases for capacitors, Metal fittings	Motors, Relays, Capacitors, Evaporator, Thermo holders, Drains, Leg spacers, Evaporator covers, Chillers	Doors, Back covers, Compressor covers, Back plate covers, Gaskets
2) Plastic processing	Rubber cushions (washers, spacers), Plastic cushions (washers, spacers)	Thermostats, Control boxes, Power code assy, Door stoppers, Hinges, door hinges, Gaskets, Compressor cover, Retainers	Inner doors, Outer panels, Trays, Racks, Boxes, Water evaporators
3) Cutting	Insulation sheets, Tubes	Harness, Leads, Roller pins, Filter nets, Sashes	Insulation materials, Sleeves
4) Gilding	Screws, Nuts, Washers	Bi-metal, Door switches, Thermostats, Metal fittings, Sash products	Metal trays & racks, Door knobs, Emblems
5) Polishing	Ceramic board	Spacers, Hinges	Levers, Exterior accessories, Brand name plates
6) Painting	Color display resistors	Compressor frames, Reinforcement frames, Legs fitting adjusters	Outer cabinets, Steel sheets, Frames, Emblems, Metal hinges & fittings
7) Printing	Electrolytic con-tubes, Filter tubes	Control knobs, Panel sheets	Packings, Labels
8) Adhesion	Таре	Insulation tape, Warning label	Rubber sealers, Sealing tape
9) Casting	Metal parts for radiation	Compressor	-
10) SMT	-	Electronic control print, Timer print, Carbon resistors, IC, Transistors, Capacitors, Chokes, Leads, Connectors	-

Table 4 Estimated Cost Breakdown of Refrigerator (300 liters)

Manufactured in Japan 1)

		Estimated Co	ost (unit : yen)		Composition
	Elements	Assembly	Cabinet	Total	(%)
1) Stamping	100	4,000	2,900	7,000	24.3
2) Plastic processing	100	2,000	6,900	9,000	31.2
3) Cutting	100	200	700	1,000	3.5
4) Gilding	-	100	400	500	1.7
5) Polishing	100	100	800	1,000	3.5
6) Painting	50	250	1,700	2,000	6.9
7) Printing	50	100	200	350	1.2
8) Adhesion	50	100	150	300	1.0
9) Casting	50	2,950	-	3,000	10.4
10) Others 2)	100	300	100	500	1.7
11) SMT		3,000	-	3,000	10.4
12) Molds & dies 3)	-	_	1,200	1,200	4.2
414134444444444444444444444444444444444	700	13,100	15,050	28,850	100.0

Note: 1) Refer to table 3 for parts & components categorized in each section.

2) Sildering, winding and etc.

3) Molds, and dies amounting to Yen 60 million are fully amortized for production of 50,000 sets of



Annex 9-1 Participants for PCM Workshops (1/11)

(1) The first workshop, February 7, 1996

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Lic. Jorge Gomez Mireles	Coordinador de Estudios Económicos - AMIA	272 11 44
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Annex 9-1 Participants for PCM Workshops (2/11)

The first workshop

	NOMBRE	CARGO / EMPRESA	FIRMA /TELEFONO
9	16 Lic. René Espinoza y Torres Estrada	Director General - CONCAMIN	566 78 22
17	17 Lic. Francisco Mendoza	Análisis de Información - CONCAMIN	703 25 91
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20	Ing. Carlos Ramos B.	Director de Estudios y Programas Sectoriales - Dirección General de 229 61 41 Promoción Industrial - SECOFI	229 61 41
23	21 Lic. Humberto Noguera Blanco	Subdirector de Estudios Sectoriales - Dirección General de Promoción 229 61 00 ext. 4843 Industrial - SECOFT	229 61 00 ext. 4843
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Annex 9-1 Participants for PCM Workshops (3/11)

Strange Control

The first workshop

MISSION MEMBERS

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2) Takenosuke KURODA	Senior Consultant	Industrial Development Study
3) Ton MORIGUCHI	Senior Consultant	Demand Survey of Parts and Components
4) Hideyo SHIMAZU *	Economist	Subcontracting System and PCM Moderator
5) Yoshinari YAMAMOTO	Economist	Investment and Export Promotion
6) Tadoru YAMAMOTO	Consulting Engineer	Factory Management / Production Management (Automotive parts and components)
7) Takeshi INOUE	Consulting Engineer	Technical Group Leader, Automotive parts and components (Metalworking)
8) Hiromi YOSHIKAWA	Consulting Engineer	Electrical / Electronic parts and components (Metalworking)

^{*} Moderator

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	Technical Secretary, Mexico Office
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Annex 9-1 Participants for PCM Workshops (4/11)

(2) The second workshop, June 13, 1996

	NOMBRE	CARGO/EMPRESA
r-4	Ing. Palemón González Barraza	Subdirector de Promoción de Inversión Extranjera y Alianzas Estratégicas NAFIN
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Annex 9-1 Participants for PCM Workshops (5/11)

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	22		Subdirector de Competitividad Sectorial - Dirección General de Promoción Industrial - SECOFI

^{*} Advisors from JICA-Mexico

Annex 9-1 Participants for PCM Workshops (6/11)

The second workshop

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	NOMBRE	CARGO/EMPRESA
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63	Hideyo Shimazu (Moderator)	Economist - JICA Study Team (PCM Moderator)
ĸ	3 Toru Moriguchi	Senior Consultant - JICA Study Team
4	4 Takeshi Inoue	Consulting Engineer - Technical Group Leader - JICA Study Team
ıv.	5 Hiromi Yoshikawa	Consulting Engineer - JICA Study Team
9	6 Shiro Suzuki	Consulting Engineer - JICA Study Team
7	7 Hiroshi Imaizumi	Consulting Engineer - JICA Study Team

Annex 9-1 Participants for PCM Workshops (7/11)

<u> </u>	(3) The third workshop, July 4, 1996	CARGO/EMTRESA
	Ing. Palemón González Barraza	Subdirector de Promoción de Inversión Extranjera y Alianzas Estratégicas NAFIN
7	Dr. Francisco Flores	Dirección Adjunta de Coordinación Regional - NAFIN
m	Lic. Fernando Estrada	Coordinador de Promoción Sectorial - NAFIN
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'n	Ing. Carlos Martinez Nava	Director de Certificación Oficial - Dirección General de Normas - SECOFI
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12	Lic. Beatriz Romo de Vivar	Secretaria Técnica de la Dirección Adjunta de Modernización Tecnológica - CONACYT
13	Ing. Julio Moreno	Coordinador de Proyectos - FUNTEC
4	Lic. Francisco Fernández	Investigador de la Unidad de Apoyo Estadístico y discursos a la Presidencia - CONCAMIN
15	Lic. Ma. Teresa Kasuga	Vicepresidente Nacional - CANACINTRA

Annex 9-1 Participants for PCM Workshops (8/11)

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	NOMIBRE	CARGO/EMPRESA
16	Fis. David Cervantes Romero	Subcontratación - CANACINTRA
17	Lic. Ricardo Carrasco	Gerente de Promoción del Sector Autopartes - BANCOMEXT
18	Ing. Reynaldo Castillo	Subgerente de Promoción del Sector Electrónico - BANCOMEXT
19	Lic. Guillermo Cochran	Director General - ANFAD
20	Ing. Yoshitaka Enomoto	Subdirector - JICA
21	Lic. Daniei González González	Secretario Técnico - JICA
22	Ing. Yoshio Koyama	Experto en Pequeña y Mediana Empresa - SECOFI
23	Ing. Carlos Ramos B.	Director de Estudios y Programas Sectoriales - Dirección General de Promoción Industrial - SECOFI
24	Lic. Humberto Noguera Blanco	Subdirector de Estudios Sectoriales - Dirección General de Promoción Industrial - SECOFI
25	Sr. Ulyses Balderas González	Subdirector de Programas Especiales - Dirección General de Promoción Industrial - SECOFI
26	Lic. Alfredo Lazcano X.	Subdirector de Competitividad Sectorial - Dirección General de Promoción Industrial - SECOFI
27	Dr. Ignacio Navarro Z.	Director Genera!- Dirección General de Promoción Industrial - SECOFI

^{*} Advisors from JICA-Mexico





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Annex 9-1 Participants for PCM Workshops (9/11)

The third workshop (Japanese Side)

	NOMBRE	CARGO/EMPRESA
<u> </u>	Takeshi Naruse	Deputy Director, Planning Division, Mining & Industrial Development Planning Department - JICA
L (` <u> </u>	2 Haruya Yabuki	Industrial Development Study Division, Mining & Industrial Development Study & Department - JICA
Г.,,	3 Shozo Inakazu	Principal Consultant - JICA Study Team (Team Leader)
	4 Hideyo Shimazu (Moderator)	Economist - JICA Study Team (PCM Moderator)
	5 Toru Moriguchi	Senior Consultant - JICA Study Team
L	6 Takeshi Inoue	Consulting Engineer - Technical Group Leader - JICA Study Team
<u> </u>	7 Hiromi Yoshikawa	Consulting Engineer - JICA Study Team
<u> </u>	8 Shiro Suzuki	Consulting Engineer - JICA Study Team
	9 Hiroshi Imaizumi	Consulting Engineer - JICA Study Team

Annex 9-1 Participants for PCM Workshops (10/11)

(4) The fourth workshop, September 9, 1996

	TVANIES : 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2	TC//ORGANIZATION
1_1_	ING. JESUS PALMA MORA	SECOFI
2	LIC. ANA PULIDO CASTRELLON	SECOFI
3	LIC. ABEL ARGUELLES	CANIECE
4	ING. RAUL ORTIZ	CAINTRA N.L.
5_	C.P. SANTIAGO GUZMAN MONFORTE	CNIME
6	ING. GUILLERMO ROQUENI	CONACYT
7	ING. JULIO MORENO	FUNTEC
8	LIC. CESAR DAVID LOPEZ AVILA	CONCAMIN
9	LIC. MARIA TERESA KASUGA	CANACINTRA
10	FIS. DAVID CERVANTES ROMERO	CANACINTRA
11	LIC. RICARDO CARRASCO	BANCOMEXT
12	ING. REYNALDO CASTILLO	BANCOMEXT
13	LIC. GUILLERMO COCHRAN	ANFAD
* 14	ING. YOSHITAKA ENOMOTO	ЛСА
15	LIC. DANIEL GONZALEZ GONZALEZ	ЛСА
16	ING YOSHIO KOYAMA	SECOFI
17	DR. IGNACIO NAVARRO ZERMENO	SECOFI
18	ING. CARLOS RAMOS B.	SECOFI
19	LIC. HUMBERTO NOGUERA BLANCO	SECOFI
20	SR. ULYSES BALDERAS GONZALEZ	SECOFI
21	LIC. ALFREDO LAZCANO XOXOTLA	SECOFI
22	LIC. OSCAR BEJAR DE LA BARRERA	INA
_23	LIC. FELIX ROJAS CRUZ	INA
24	LIC. AGUSTIN CASTREJON PACHECO	NAFIN
25	DR. ARTURO LARA RIEVERA	UAM
26	MTRO. JUAN MANUEL COLONA A.	UAM
27	SR. ANTONIO CERVERA	NAFIN
28	SR. ANTONIO RAMIREZ	CNIME
29	LIC. CLAUDIA RENATA CASTILLA R.	NAFIN

^{*} Advisors from JlCA-Mexico

The fourth workshop

(Japanese Side)

	NAME	ORGANIZATION
1	TAKESHI NARUSE	JICA-TOKYO
2	SHOZO INAKAZU	JICA STUDY TEAM, TEAM LEADER
3	HIROFUMI YAMAUCHI	JICA STUDY TEAM
4	TAKESHI INOUE	JICA STUDY TEAM
5	TADORU YAMAMOTO	JICA STUDY TEAM
6	HIROMI YOSHIKAWA	JICA STUDY TEAM
7	SHIRO SUZUKI	JICA STUDY TEAM
8	HIROSHI IMAIZUMI	JICA STUDY TEAM
9	AKIRA HATA	JICA STUDY TEAM
10	TORU MORIGUCHI	JICA STUDY TEAM
11	HIDEYO SHIMAZU	JICA STUDY TEAM
12	YOSHINARI YAMAMOTO	JICA STUDY TEAM

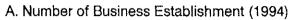
*

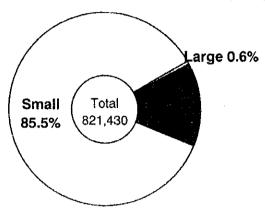
Definition of Small- and Medium-scale Enterprises in Japan (Manufacturing Sector)

or less than 100 million yen paid up capital : Less than 20 employees of SMEs : Less than 300 employees, Small and Medium-Scale Enterprises Small-Scale Enterprises

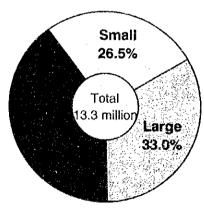
Note: Definition by Basic Law for Small- and Medium-Scale Enterprises

Share of SMEs in Manufacturing Sector in Japan

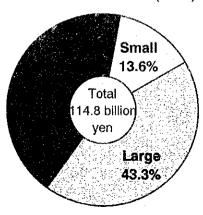




B. Number of Employees (1994)



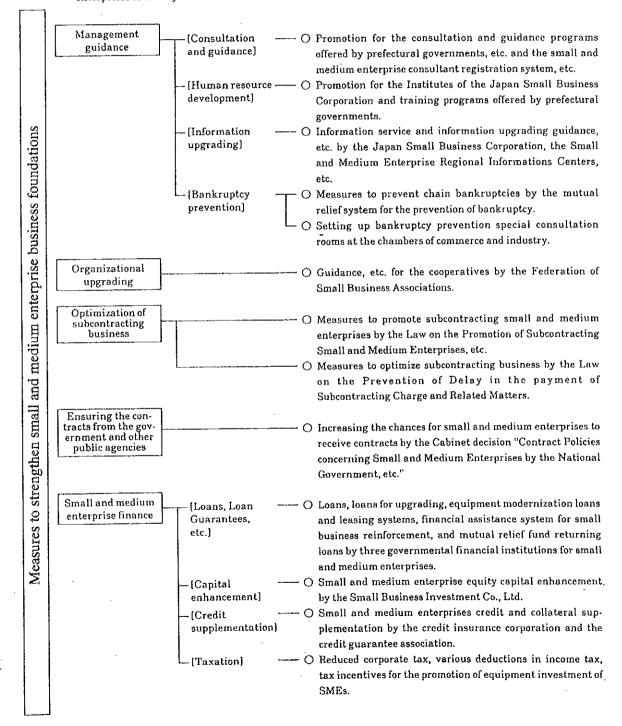
C. Value Added (1993)



Structural Chart of Small and Medium Enterprise Policies

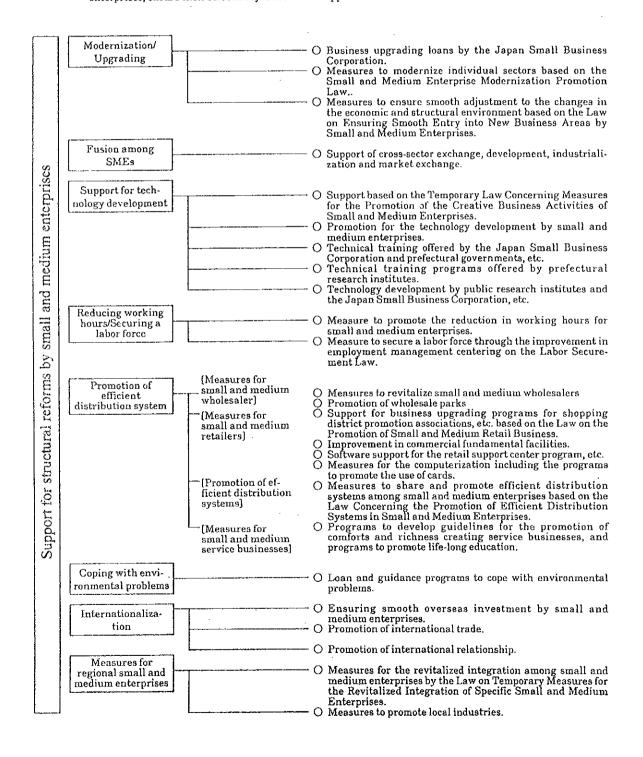
I. Strengthening small and medium enterprise business foundations

Intend to improve the environment in which small and medium enterprises can prosper through their own efforts taking part in the competitive market by correcting the disadvantages of small and medium enterprises caused by their economic and social limitations. —



II. Support for structural reforms by small and medium enterprises

- Considering the major changes in the economic and social environment surrounding small and medium enterprises, ensure their smooth adjustment and support their structural reforms. --



III. Measures for small-scale enterprises

- Small-scale enterprises that have small-scale business and fewer employees are particularly unstable in terms of management among small and medium enterprises. Special supporting measures are taken in addition to general measures for small and medium enterprises. -

Measures for small-scale enterprises

| Managerial improvement dissemination programs and fundamental facility programs offered by the chamber of commerce and industry.

| O Loans for Managerial Improvement of Small-Scale Enterprises (MARUKEI LOAN)

| O Equipment modernization loans and equipment leasing system.

| O Managerial improvement dissemination programs and fundamental facility programs offered by the chamber of commerce and industry.

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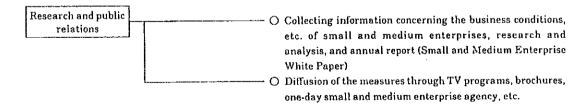
| O Loans for Managerial Improvement of Small-Scale Enterprises (MARUKEI LOAN)

| O Equipment modernization loans and equipment leasing system.

| O Mutual Relief System for Small-Scale Enterprises

IV. Research and public relations

- In order to take effective measures, research and analysis on the business conditions, etc. of small and medium enterprises are conducted intending to promote the understanding of the measures for small and medium enterprises.-



Source: Small and Medium Enterprise Agency, MITI

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Structure of Laws for SMEs of Japan (36 Laws)

/特定中小企業者の新分野進出等による経済の構造的変化への適応の円滑化に関する臨時措置法 /異分野中小企業者の知識の融合による新分野の関拓 の促進に関する臨時措置法 中小企業における労働力の確保のための雇用管理の 改善の促進に関する法律 /産炭地域における中小企業者についての中小企業 信用保険に関する特別措置等に関する法律 /特定地域中小企業対策臨時措置法 /特定中小企業集積の活性化に関する臨時措置法 激甚災害に対処するための特別の財政援助等に 関する法律 中小企業の創造的事業活動の促進に関する臨時 措置法 /官公需についての中小企業者の受注の確保に 関する法律 /下請代金支払遅延等防止法 /下請中小企業振興法 /中小企業の事業活動の機会の確保のための 大企業者の事業活動の調整に関する法律 一中小企業技術開発促進臨時措置法 /中小企業等協同組合法 /中小企業団体の組織に関する法律 /商店街振興組合法 /小売商業調整特別措置法 /中小小売商業振興法 /中小企業流通業務効率化促進法 /商工組合中央金庫法 /国民金融公庫法 /中小企業信用保険法 /中小企業金融公庫法 /信用保証協会法 /中小企業信用保険公庫法 /中小企業近代化促進法 /中小企業近代化資金等助成法 /中小企業事業団法 /中小企業退職金共済法 /中小企業指導法 /中小企業倒産防止共済法 /中小企業基本法 Small and Medium Enterprise Retirement Allowance Cooperative Law (1960) Small and Medium Enterprise Guidance Law (1963) Law on Mutual Relief System for the Prevention of Bankruptcies of small and Medium Enterprises (1977) Temporary Law, Concerning Measures for the Promotion of the Creative Business Activities of Small and Law on Special Measures for the Adjustment of Retail Business (1959) Law on the Promotion of Small and Medium Retail Business (1973) Law Concerning the Promotion of Efficient Distribution Systems in Small an Medium Enterprises (1992) Law on the Prevention of Delay in the Payment of Subcontracting Charges and Related Matters (1956) Law on the Promotion of Subcontracting Small and Medium Enterprises (1970) Law on Securing Business Opportunities for Small and Medium Enterprises by Adjusting the Business Activities of Large Enterprises (1977) Law on Ensuring the Receipt of Orders from the Government and Other Public Agencies by Small and Medium Enterprises (1966) Law Concerning Special Measures, etc. Related to Small and Medium Enterprise Credit Insurance for small and medium Entrepreneurs in Coal-Producing Regions (1963) Law on Temporary Measures for Small and Medium Sized Enterprises in Specified Areas (1986) Law on Temporary Measures for Concerning the Activation of Specific Small and Medium Enterprises Small and Medium Enterprise Modernization Promotion Law (1963) Law on Financial and Other Assistance for Small Business Modernization (1963) Small Business Corporation Law (1980) The Temporary Law Concerning Measures for Smooth Adaptation to Structural Changes in Economy by Advancement of Specific Small and Medium Enterprises to New field, etc. (1993) Law Concerning the Improvement of Employment Management Aimed at Securing a Labor Force for Small and Medium Enterprises (1991) Law on Extraordinary Measures for the Technology Development Promotion for Small and Medium Extraordinary Law Concerning the Promotion of the Development of New Business Areas through Fusion of the Knowledge of Small and Medium Enterprises in Different Industries (1988) Law on the Cooperative Association of Small and Medium Enterprises (1949) Law Concerning the Organization of Small and Medium Enterprises Organizations (1957) Shoko Chukin Bank Law (1936) - Bank for Commerce and Industrial Cooperatives (中小企業の構造改革支援) Law Concerning Special Fiscal Aid for Coping with Disasters (1962) Ensuring the contract from the government and other public agencies (Reducing working hours/Securing a labor force (時短・労働力確保) People's Finance Corporation Law (1949) Small and Medium Enterprise Credit Insurance Law (1950) Small Business Credit Insurance Corporation Law (1958) Strengthening SMEs Foundation (経営基盤の選化) Optimization of subcontracting business (下請取引適正化) Shopping District Promotion Association Law (1962) Support for technology development (技術開発等の支援) (環境問題への配慮) Small Business Investment Co. Limited Law (1963) Small Business Finance Corporation Law (1953) (Promotion of efficient distribution system (流通合理化) SMEs (地域中小企業対策) Credit Guarantee Association Law (1953) Support for Structural Reforms by SMEs Small and Medium Enterprise Basic Law (1963) Coping with environmental problems (SME finance (融資・保証・税制等) Medium Enterprises (1995) (Modernization/Upgrading (近代化 Fusion among SMEs(融合化 (回聚化) Enterprises (1985) Management guidance Internationalization (1992). • Measures Basic Law 11.

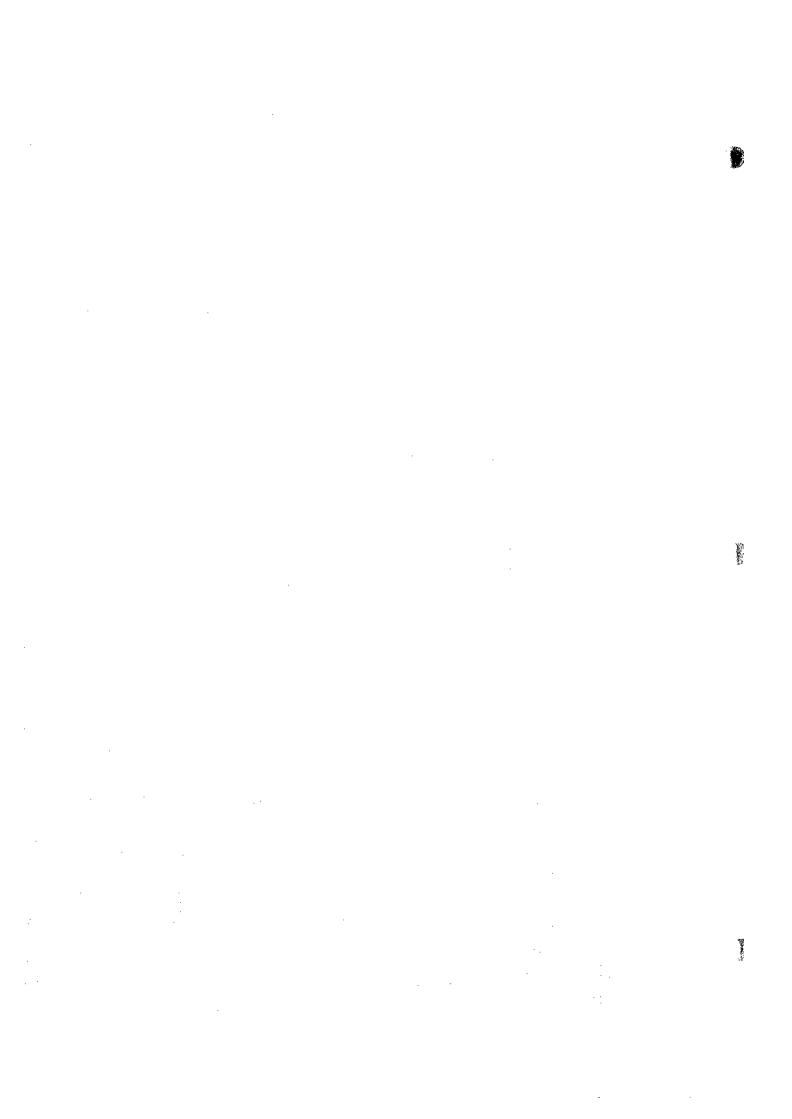
/商工会の組織等に関する法律 /小規模企業共済法 /商工会及び商工会議所による小規模事業者の支援 に関する法律

Law Concerning the Organization, etc. of Commerce and Industry Association (1960)
 Small Enterprise Mutual Relief Projects Law (1965)
 Law on Supporting Small Industries (1993)

(Measures for Small-Scale Enterprises (小規模企業対策)

Measures for Small-Scale Enterprises

(小規模企業対策)





Small and Medium Business Consultant

Definition

A person accredited by and registered with the Minister of International Trade and Industry as qualified to evaluate management of small enterprises as part of Small- and Medium-sized Enterprise Guidance Program offered by government. (the second and third paragraphs of Article 6 of Small- and Medium-sized Enterprise Guidance Act)

Areas of specialization

Small and Medium Business Consultant is accredited in three areas: manufacturing and mining industries, commerce, and communication.

Qualification for accreditation examination

Any person who has completed compulsory education (junior high school)

Accreditation Examination

(in Commerce)

Preliminary examination (minimum score: 60 on a 100-point scale)

- 1. Economy related to commerce
- 2. Basic business administration
- 3. Financial management
- 4. Store facility management
- 5. Purchase management
- 6. Sales management
- 7. Labor management
- 8. Product knowledge

Final examination (to prepare case reports; minimum score - 60 on a 100-point scale)

- 1. Small business promotion policy and programs
- 2. Case evaluation of small business (I)
- 3. Case evaluation of small business (II)
- 4. Case evaluation of small business (III)

Registration Requirements

*

- A person who has passed the examination conducted by an organization designated by the Minister of International Trade and Industry (Association of Small- and Medium Enterprise Consultant) and has actually evaluated management of small businesses 10 times or more as part of service performed by an organization entrusted with evaluation service within three years prior to the date of application, or who has been engaged in practice of evaluation of management of small businesses, as conducted by an organization entrusted with evaluation service or the Association of Small- and Medium Enterprise Consultant.
- A person who has completed the Small Business Management Consultant Education Program conducted at Small Business College of Small Business Promotion Corporation.
- The registration is valid for 3 years, and accreditation must be renewed for every three year.

Consulting Engineer

Definition

A person who has passed an accreditation examination conducted by Japan Association of Consulting Engineers that is designated by the Director General of Agency of Industrial Science Technology.

Areas of Specialization

The consulting engineer is accredited in any of the following 19 areas (each person may be accredited for more than two areas): (1) Machinery; (2) ships; (3) aeronautics; (4) electrical/electronics; (5) chemical; (6) textile; (7) metal; (8) resource; (9) construction; (10) waterworks; (11) sanitary; (12) agriculture; (13) forestry; (14) fishery; (15) information; (16) applied science; (17) biological engineering; (18) environment; and (19) business management.

Qualification for Accreditation Examination

The accreditation examination is divided into preliminary examination (written) on a required subject in a particular area of specialization and a selective subject, and final examination (oral) on persons who have passed preliminary examination.

Preliminary examination

- A person who has been engaged in planning, research, design, analysis, testing and/or evaluation, in a matter which requires practical and professional capabilities related to science and technology, for 7 years; or
- 2. A person who has worked as an assistant consulting engineer*) or an assistant to a consulting engineer for 4 years; and

Final examination

A person who is qualified to take final examination must pass preliminary examination.

Registration

A person who has passed the accreditation examination may register with the Japan Association of Consulting Engineers.

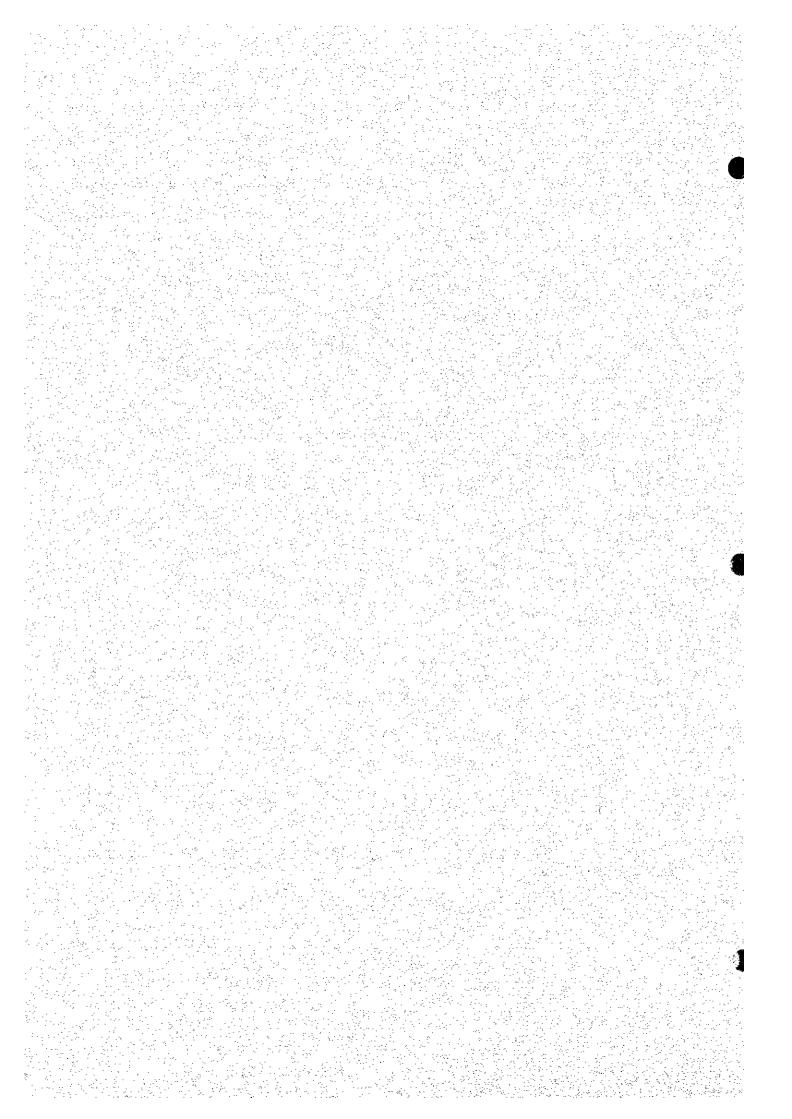
Remark

** The accreditation examination of assistant consulung engineer:

Any person is entitled to take preliminary examination, regardless of age, academic background, experience, and other aspects.

Appendix

I



Appendix 1 Industrial Concentration by State

In this Appendix, concentration of the automotive and the electrical/electronic industries by state was analyzed. Figures A1-1 and A1-2¹⁾ depict the states where the industries contribute higher GDP, which are combined to Figure A1-3. As seen in the figures, states with higher GDP in the two industries are the major metropolitan region centered around Mexico City, such as D.F., México, and Puebla, and northern states along the U.S. border such as Coahulia and Nuevo León. On the other hand, Figures A1-4 and A1-5 show the states with larger employment in the automotive and electronic industries. Similar to geographical distribution of GDP, these maps reveal industrial concentration in the metropolitan area and northern states along the U.S. boarder. GDP and employment data by state are shown in Tables A1-1 and A1-2.

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Electrical & Electronic industry in Figure A1-2 includes Group 53, 54, 55 in Division 8. Group 52 in Division 8 which is for industrial electrical equipment is not included in this figure.

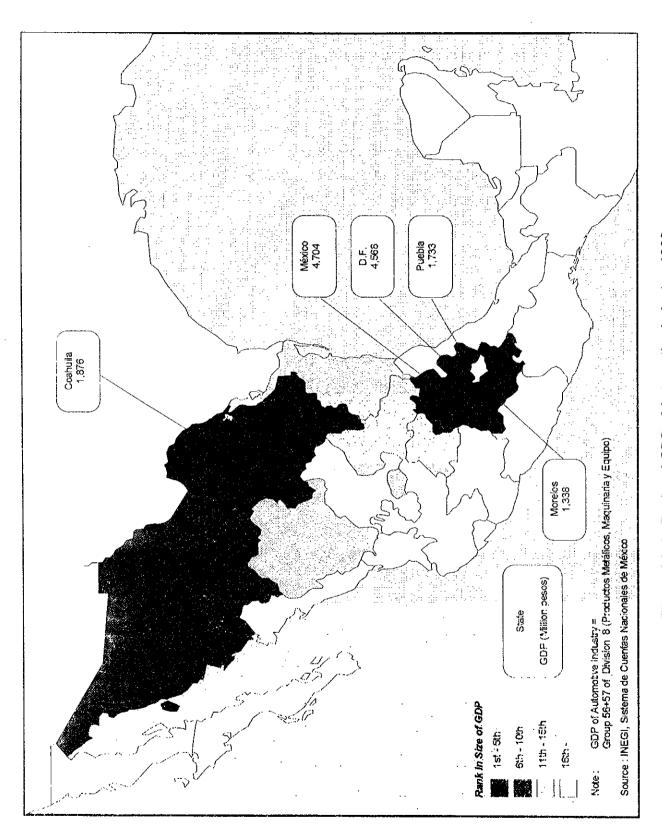


Figure A1 -1 Regional GDP of Automotive Industry, 1993

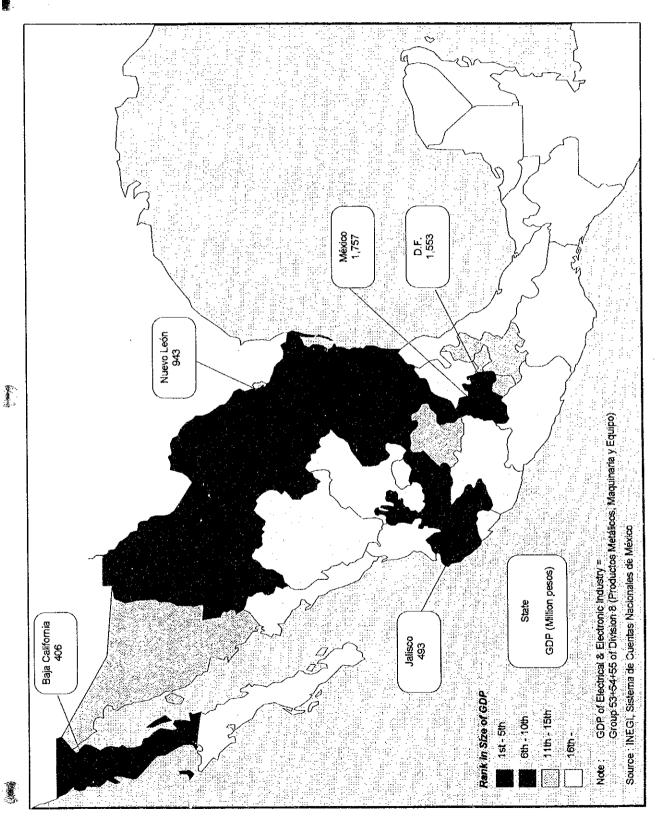


Figure A1-2 Regional GDP of Electrical & Electronic Industry, 1993

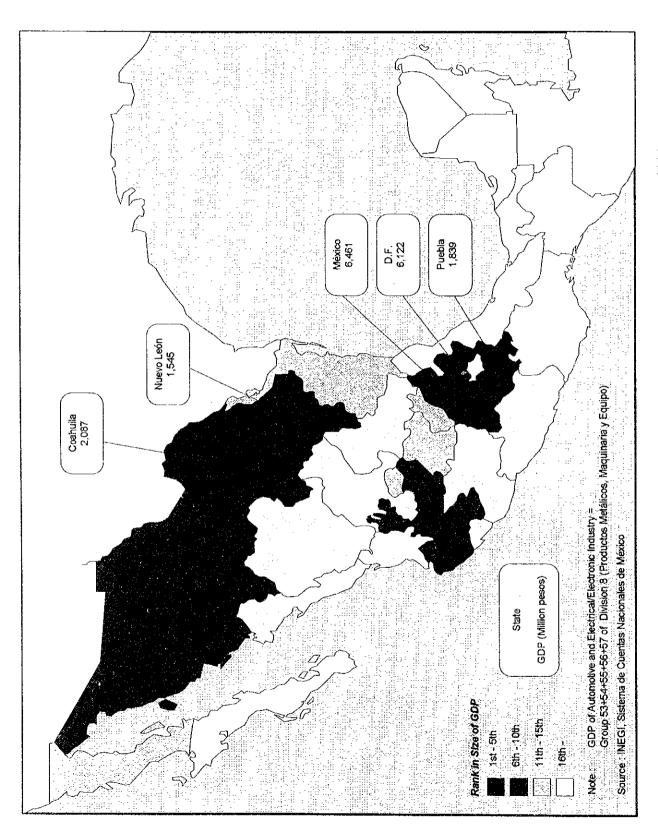


Figure A1-3 Regional GDP of Automotive and Electrical/Electronic Industry, 1993

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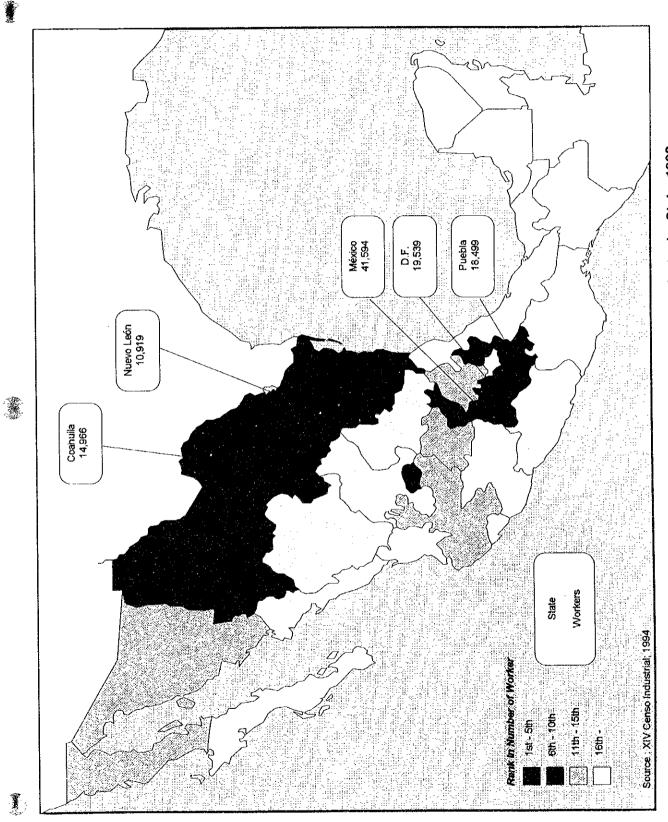


Figure A1-4 Distribution of Workers for Automotive Industry by State, 1993

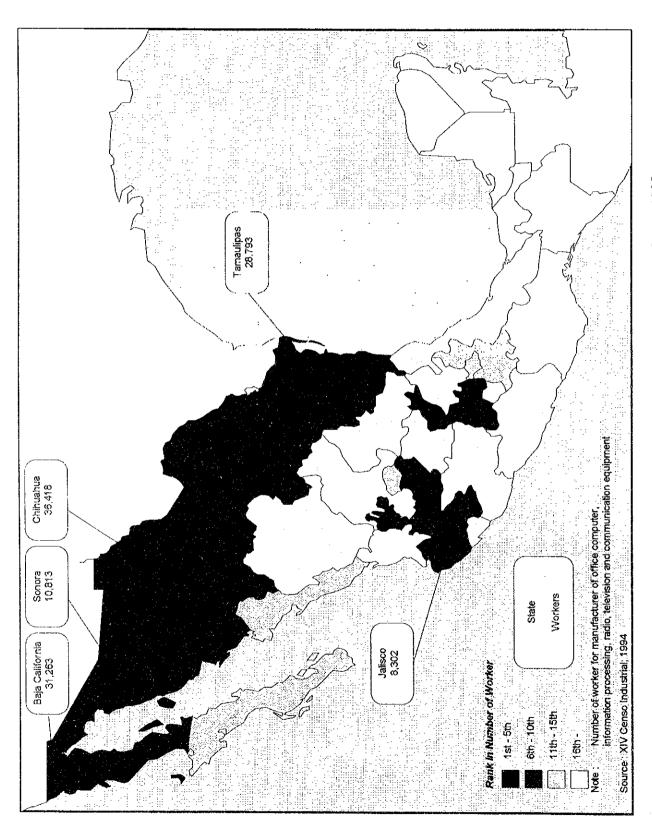


Figure A1-5 Distribution of Workers for Electronic Industry by State, 1993



Table A1-1 Sectional GDP by State (1)

									(Unit: T	(Unit: Thousand Pesos)
	1000	Grand	Grand	Grand	Grand	Grand	Grand	Grand	Grand	Grand
	10121	Division 1	Division 2	Division 3	Division 4	Division 5	Division 6	Division 7	Division 8	Division 9
		Agriculture	Mining	Manufacturing Industry	Construction	Electricity, Gas & Water	Commerce, Restaurants & Hotels (Transportation & Communications	Finance & Security	Services
Total	1,127,584,133	76,205,987	19,708,077	226,842,924	59,425,904	17,275,816	254,772,476	109,010,180	163,271,255	234,912,376
Agnascalientes	9.935.842	630,629	58,365	1,960,747	505,244	66,101	2,179,120	992,244	1,302,977	2,471,589
Raia California	27.661.436	1,171,348	161,158	4,030,627	1,389,290	1,062,958	6,648,634	2,967,035	4,690,431	6,246,916
Baja California Sur	5,250,894	472,122	299,636	300,191	259,696	124,549	1,331,926	504,420	920,007	1,111,362
Campeche	18,461,836	642,075	6,087,559	339,664	291,492	86,209	8,692,803	543,049	686,685	1,183,674
Coahuila	31,296,899	1,641,551	1,698,497	8,870,588	1,329,918	837,360	6,267,947	2,639,499	3,584,265	4,999,898
Colima	7,104,395	617,595	275,986	400,637	306,892	798,900	1,405,639	1,357,389	1,002,201	988,459
Chiapas	20,563,046	3,779,509	425,217	1,279,344	1,058,824	1,383,679	3,812,080	1,306,457	3,554,653	4,082,968
Chihuahua	33,072,552	3,506,096	576,440	5,425,066	1,917,576	451,416	6,928,598	3,252,114	5,113,932	6,851,988
Distrito Federal	271,271,933	378,704	736,980	58,517,064	16,472,328	1,696,192	57,937,983	29,398,595	45,392,506	77,873,831
Durango	13,570,609	2,365,772	189,310	2,372,263	674,599	257,376	2,809,287	934,246	1,876,627	2,293,346
Guanajuato	39,290,995	3,852,789	320,752	6,661,228	2,348,854	601,799	8,233,840	4,633,100	6,036,551	7,168,575
Guerrero	22,326,650	2,333,244	177,731	1,040,622	1,334,905	754,295	7,565,397	2,358,516	2,996,419	3,939,970
Hidalgo	17,891,045	1,616,868	233,597	4,450,070	994,457	860,830	3,205,568	1,182,853	2,200,381	3,291,498
Jalisco	74,206,802	6,459,244	661,972	15,504,716	3,393,560	462,615	19,022,545	6,587,205	10,711,054	14,165,071
Mexico	118,598,838	3,231,372	647,677	39,527,438	6,486,421	1,161,134	23,401,625	10,796,372	14,749,279	19,513,463
Michoacan	25,794,958	4,513,296	423,757	2,821,213	1,792,228	407,315	4,918,207	1,894,329	4,537,232	5,011,103
Morelos	18,143,275	2,117,249	116,579	4,116,397	1,027,343	73,199	3,866,020	1,457,839	1,788,924	3,795,979
Navarit	8,186,643	1,683,057	43,873	1,523,824	436,770	11,650	1,605,436	676,944	912,078	1,373,575
Nuevo Leon	72,916,189	1,046,515	554,175	21,259,766	2,749,330	755,786	15,318,536	6,539,775	11,690,586	15,537,708
Oaxaca	19,322,297	3,642,480	157,315	2,276,557	1,002,852	167,602	3,730,081	1,433,010	3,230,982	3,831,495
Puebla	36,304,528	3,251,506	382,660	7,717,615	1,843,678	378,455	7,558,074	3,085,562	5,737,530	7,308,942
Oueretaro	15,867,729	722,867	81,918	4,660,582	857,267	143,157	3,557,271	1,598,177	1,645,793	2,840,556
Quitana Roo	15,153,451	257,639	88,371	568,965	377,260	74,822	8,823,671	1,086,426	1,293,375	2,758,604
San Luis Potosi	19,956,259	2,549,168	435,843	4,480,212	1,017,436	408,815	3,753,075	1,591,771	2,886,328	3,301,459
Sinaloa	24,914,048	5,671,352	152,637	2,014,057	1,040,535	598,244	5,754,341	2,368,785	3,199,479	4,764,662
Sonora	29,744,180	4,016,163	901,762	4,780,505	1,232,728	769,131	6,989,787	2,992,000	3,779,948	5,267,239
Tabasco	16,637,207	1,247,373	2,170,955	1,230,306	658,613	490,253	5,393,150	1,062,339	1,820,730	2,836,998
Tamaulipas	28,840,064	2,809,026	235,947	3,983,486	1,666,932	797,705	6,057,627	4,952,566	3,550,469	5,341,796
Tlaxcala	6,274,110	540,182	29,539	1,718,032	432,517	43,065	1,035,278	606,242	909,790	1,015,614
Veracruz	55,655,682	5,812,071	840,713	10,788,551	3,142,021	1,246,671	12,112,441	5,887,285	7,337,964	9,170,553
Yucatan	14,255,737	1,292,778	143,845	1,777,661	910,582	229,725	3,160,463	1,691,633	2,406,853	2,986,986
Zacatecas	9,114,004	2,334,348	397,311	445,529	473,754	74,808	1,696,028	632,401	1,625,227	1,586,501

Table A1-1 Sectional GDP by State (2)

(Unit: Thousand Pesos)

	Division 8	Group 52	Group 53	Gruop 54	Gruop 55	Gruop 56	Gruop 57	aruop 58
	Metal Product, Machinery & Equipment	Electrical Machinery	Domestic Electric Equipment	Electronic Machinery and Equipment	Electrical Equipment	Automobile	Parts and Accessories for Automobile	Equipment and Materials for Transportation
Total	47,106,239	3,616,622	1,022,304	3,405,225	2,466,131	13,061,720	6,431,292	992,843
Aguaccalientes	1406 741	920	118	51,765	5,577	181,123	115,464	178
Paia California	885.697	50,472	62,858	283,723	59,675	179	37,776	72,872
Baja California Sur	13,974	, 46		2,480	137		1,559	1,662
Campeche	4,789	2		61	27			39
Coahuila	3,010,355	23,678	75,679	125,005	666'6	1,224,091	652,377	100
Colima	11,186				116		880	
Chiapas	18,639			292	65		1,573	
Chihuahua	1,712,062	201,873	25,431	190,719	61,114		965,634	21,887
Distrito Federal	11,763,094	924,780	219,161	787,986	546,339	3,595,704	972,732	164,124
Durango	400,654	87,734		47	407		227,941	
Guanajuato	765,868	66,854	57,394	13,860	32,287		234,112	309
Guerrero	12,430			138	152		341	
Hidalgo	1,304,977	11,502		24,754	4,929	643,580	74,570	360,658
Jalisco	2,272,248	279,324	1,286	421,398	70,515	1,484	109,449	46,134
Mexico	10,692,528	916,734	277,656	924,856	554,224	3,203,469	1,501,018	142,192
Michoacan	190,633	45,229		377	1,102		4,898	40
Morelos	1,515,926	10,735		84,590	10,182	1,335,061	3,028	
Nayarit	14,391	933			542		559	
Nuevo Leon	4,410,681	707,633	159,330	66,744	716,927	10,482	591,344	44,079
Oaxaca	21,164				210		6,510	124
Puebla	2,169,679	37,869	25,897	13,514	967'99	1,688,534	44,763	6,959
Queretaro	1,617,984	88,133	79,146	65,621	58,154	1,239	370,626	
Quitana Roo	13,189				329		28	42
San Luis Potosi	680,643	58,549	815	4,397	156,449		167,351	49,482
Sinaloa	111,573	6,211		446	268	10,516	2,280	13,311
Sonora	1,585,447	6,629		88,912	49,444	1,133,140	130,183	26,109
Tabasco	21,583	2,007			398		799	198
Tamaulipas	760,044	39,619	29,140	242,435	4,222	33,118	171,503	10,984
Tlaxcala	182,409	38,466	8,393	9,442	54,316		35,299	
Veracruz	359,605	2,328		9/9	840		6,005	27,428
Yucatan	71,749	8,300		166	510		634	3,932
Zacatecas	14.297			38	379			

Source: INEGI, Sistema de Cuentas Nacionales de México, 1993

A Supposed

Table A1-2 Data of Selective Industries by State (1)

		Unidades	Personal Ocupado	Produccion bruta
		Economicas	Total promedio	Total (Thousand Pesos)
Total Nacional	Rama 3823	72	16,718	3,765,170.4
	Rama 3832 Rama 3841	514 1,395	130,054 167,221	9,907,799,3 64,622,190.8
Aguascalientes	Rama 3823		195	22,004.9
Aguascalientes	Rama 3832	6	853	164,628.4
Aguascalientes	Rama 3841	34	7,447	2,003,670.1
Baja California	Rama 3823	19	3,313	116,109.8
Baja California	Rama 3832	121	27,950	981,439.9
Baja California	Rama 3841	28	4,317	706,285.7
Baja California Sur	Rama 3823		64	3,021.8
Baja California Sur	Rama 3832		182	17,417.6
Baja California Sur	Rama 3841		17	2,156.6
Campeche	Rama 3823			
Campeche	Rama 3832		1	43.2
Campeche	Rama 3841			
Coahuila	Rama 3823			
Coahuila	Rama 3832	18	4,503	157,452.1
Coahuila	Rama 3841	53	14,966	7,846,703.2
Colima	Rama 3823			
Colima	Rama 3832			
Colima	Rama 3841	7	37	1,355.6
Chiapas	Rama 3823			.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Chiapas	Rama 3832		2	62.4
Chiapas	Rama 3841	11	83	4,170.1
Chihuahua	Rama 3823	7	1,699	111,897.3
Chihuahua	Rama 3832	66	34,719	1,033,756.8
Chihuahua	Rama 3841	25	6,891	336,920.2
Distrito Federal	Rama 3823	7	1,357	146,776.1
Distrito Federal	Rama 3832	84	6,454	1,238,597,6
Distrito Federal	Rama 3841	273	19,539	7,453,636.6
Durango	Rama 3823		13	964.1
Durango	Rama 3832		15	823.6
Durango	Rama 3841	12	1,019	561,097.5
Guanajuato	Rama 3823		31	6,271.8
Guanajuato	Rama 3832		6	185,0
Guanajuato	Rama 3841	32	3,519	499,567.1
Guerrero	Rama 3823		2,2	,
Guerrero	Rama 3832		8	1,538.4
Guerrero	Rama 3841	9	33	1,262.6
Hidalgo	Rama 3823			
Hidalgo	Rama 3832	5	128	13,901.0
Hidalgo	Rama 3841	41	4,771	2,544,918.0
Jalisco	Rama 3823	13	2,414	2,809,694.9
Jalisco	Rama 3832	30	5,888	762,004.3
Jalisco	Rama 3841	127	4,051	1,399,602.1
Mexico	Rama 3823	3	1,243	186,878.7
Mexico	Rama 3832	42	6,079	2,449,722.3
Mexico	Rama 3841	231	41,594	19,070,158.5
Michoacan	Rama 3823		11,074	. , , , , , , , , , , , , , , , , , , ,
Michoacan	Rama 3832	4	98	7,994.5
Michoacan	Rama 3841	34	235	10,426.2
Morelos	Rama 3823		8	
Morelos	Rama 3832		165	
Morelos	Rama 3841	14	5,599	
MOLEIO3			5,577	4,000,702.2

Table A1-2 Data of Selective Industries by State (2)

	-	Unidades Economicas	Personal Ocupado Total promedio	Produccion bruta Total (Thousand Pesos)
Nayarit	Rama 3823			<u></u>
Nayarit	Rama 3832			
Nayarit	Rama 3841	8	37	2,261.9
Nuevo Leon	Rama 3823	7	1,991	47,469.1
Nuevo Leon	Rama 3832	34	3,551	213,932.4
Nuevo Leon	Rama 3841	143	10,919	1,533,587.9
Oaxaca	Rama 3823			
Oaxaca	Rama 3832			
Oaxaca	Rama 3841	14	767	49,767.7
Puebla	Rama 3823	3	462	54,257.0
Puebla	Rama 3832	11	289	22,036.6
Puebla	Rama 3841	108	18,499	8,625,598.8
Queretaro	Rama 3823		13	2,287.9
Queretaro	Rama 3832	11	2,540	797,149.9
Queretaro	Rama 3841	38	5,722	1,137,494.4
Quitana Roo	Roma 3823			
Quitana Roo	Rama 3832			
Quitana Roo	Rama 3841		2	43.8
San Luis Potosi	Rama 3823	7. 72.00.00.00.00.00.00.00.00.00.00.00.00.00	9	1,026.9
San Luis Potosi	Rama 3832		18	193.4
San Luis Potosi	Rama 3841	30	2,300	836,863.2
Sinaloa	Rama 3823		210	35,653.9
Sinaloa	Rama 3832	4	. 19	1,410.5
Sinaloa	Rama 3841	12	171	46,949.9
Sonora	Rama 3823	9	1,823	159,106.3
Sonora	Rama 3832	38	8,990	347,964.0
Sonora	Rama 3841	12	3,224	4,520,122.1
Tabasco	Rama 3823			
Tabasco	Rama 3832			
Tabasco	Rama 3841	8	47	2,057.1
Tamaulipas	Rama 3823	4	1,289	38,378.1
Tamaulipas	Rama 3832	36	•	1,648,553.7
Tamaulipas	Rama 3841	33		832,118.0
Tlaxcala	Rama 3823		570	14,914.5
Tlaxcala	Rama 3832	•	51	2,249.6
Tlaxcala	Rama 3841	11	844	220,846.0
Veracruz	Rama 3823			
Veracruz	Rama 3832		27	1,299.5
Verocruz	Rama 3841	47	·	19,701.7
Yucatan	Rama 3823		14	•
Yucatan	Rama 3832	4		
Yucatan	Rama 3841		30	2,096.0
Zacatecos	Rama 3823			
Zacatecas	Rama 3832		2	62.2
Zacatecas SOURCE: XIV CENSO	Rama 3841			

SOURCE: XIV CENSO INDUSTRIAL 1994

Note: Romo 3823 Manufacture or/and assembly of office and information processing machinery Romo 3832 Manufacture or/and assembly of Radio TV & Communication Media

Rama 3841 Automotive Industry

