

Contribution of Human Resource Development Group (CSIR) towards knowledge sharing in India: State-wise performance analysis

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Human Resource Development Group (HRDG) of Council of Scientific and Industrial Research (CSIR) provides financial support to organize seminars/symposia/conferences to promote interaction and knowledge sharing among researchers, academicians, students and policy makers. During 2003-04 to 2005-06, HRDG (CSIR) sponsored 1152 (78.4%) national and 317 (21.6%) international conferences. Maximum (31.3%) conferences have been supported in life sciences followed by engineering (22.3%), medical (10.7%), physical (10.6%), chemical (9.6%), earth (8.0%) and mathematical sciences (6.8%). Tamil Nadu, Uttar Pradesh, Delhi, West Bengal, Karnataka, Andhra Pradesh and Maharashtra were leading states in terms of number of conferences organized with 203, 172 164, 151, 134, 115, 115 numbers, respectively. There was increase (17.0%) in number of conferences supported by HRDG during 2003-04 to 2005-06.

Keywords: Conference, Human resource, Knowledge sharing, Scientific interaction, Seminar, Symposia

Introduction

Efforts are being made world over to attract, motivate and retain the knowledge workers¹. Human Resource Development Group (HRDG) of Council of Scientific and Industrial Research (CSIR) has instituted a number of schemes since independence, which have proved quite effective in developing and managing human resource, promoting excellence in science and replenishing knowledge workers in science. The dispersed state of knowledge creates a need for knowledge sharing, which may lead to common understanding of problems and creation of new ideas². Some of the communication channels used for knowledge sharing include face-to-face conversation/dialogue, written documents, electronic mail, electronic discussion forum and video conferencing³. Seminars^{4,5}, symposia, workshops and conferences are face-to-face communication channels, where knowledge is shared, created and people get an opportunity of better learning. These events provide opportunities to academicians, researchers, professionals and/or policy makers to come together for knowledge

sharing, creating new knowledge, better learning and for formulating strategies and policies.

Present study delineates overall contribution HRDG (CSIR) has made during 2003-04 to 2005-06 in aiding the knowledge sharing mechanism. A performance analysis of various Indian states/union territories has been carried out.

Analysis of Various Indian States with Respect to Knowledge Sharing

Shanti Swarup Bhatnagar (SSB) Prize-Travel/Symposium Grant Unit of HRDG (CSIR) has been maintaining databases of conferences, seminars, workshops and symposia supported by it. The data pertaining to various conferences supported during 2003-04 to 2005-06 was extracted and appended to a single database file, which was subsequently normalized by setting various queries to analyze the data for different parameters.

HRDG (CSIR) received 1876 applications from universities, R&D institutions, institutes of national importance, colleges and scientific societies for seeking financial support to organize seminars, symposia and conferences and partially supported 1469 conferences during 2003-04 to 2005-06. Maximum number (585) of

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Table 1—CSIR support for organization of conferences: Subject-wise applications received, number and percentage of applicants granted financial support by HRDG (CSIR) during 2003-04 to 2005-06

Subject	Conferences		
	Number of applications received	Number granted	percent (%) granted
Chemical sciences (CS)	151	141	93.4
Physical sciences (PS)	211	155	73.5
Mathematical sciences (MS)	131	100	76.3
Life sciences (LS)	585	460	78.6
Engineering Sciences (EnS)	431	327	75.9
Earth sciences (ErS)	148	117	79.1
Medical sciences (MeS)	198	157	79.3
Miscellaneous fields (Misc)	21	12	57.1
Total	1876	1469	78.3

applications was received in life sciences followed by engineering (431), physical (211), medical (198), chemical (151), earth (148) and mathematical sciences (131) (Table 1). Percent-wise, 31.3% conferences supported were in life sciences followed by engineering (22.3%), medical (10.7%), physical (10.5%), chemical (9.6%), earth (8.0%), and mathematical sciences (6.8%) (Table 2). Tamil Nadu with 203 conferences was leading state followed by Uttar Pradesh (172), Delhi (164), West Bengal (151), Karnataka (134), Andhra Pradesh and Maharashtra (115). Majority (71.8%) of total conferences supported (1469) were organized by the institutions from these states (Table 2).

Data for 2003-04 to 2005-06 shows that national (78.4%) conferences and international (21.6%) conferences supported by HRDG (CSIR) were in the ratio 4:1 (Table 3). In international conferences, West

Table 2—State- and subject-wise classification of conferences supported by HRDG (CSIR) during 2003-04 to 2005-06

State	Total	Subject-wise breakup of conferences							
		CS	PS	MS	LS	EnS	ErS	MeS	Misc
Tamil Nadu	203	16	14	14	78	50	17	13	1
Uttar Pradesh	172	13	13	20	67	26	10	20	3
Delhi	164	17	20	4	47	32	13	28	3
West Bengal	151	16	25	19	36	41	0	14	0
Karnataka	134	10	9	8	40	45	7	14	1
Andhra Pradesh	115	11	7	5	44	17	23	8	0
Maharashtra	115	15	20	4	38	12	6	19	1
Kerala	71	11	6	8	25	10	6	5	0
Uttaranchal	47	3	4	1	12	17	5	5	0
Orissa	42	2	1	1	4	22	10	2	0
Punjab	34	4	3	1	11	12	0	3	0
Rajasthan	34	4	8	3	8	8	1	1	1
Assam	32	6	6	3	7	7	1	2	0
Madhya Pradesh	25	2	0	4	9	6	1	3	0
Gujarat	24	5	4	1	3	5	1	5	0
Jharkhand	19	1	2	0	0	7	8	1	0
Chandigarh*	18	0	1	1	6	4	1	4	1
Jammu & Kashmir	13	0	2	0	5	1	1	4	0
Haryana	11	1	2	0	4	1	1	1	1
Bihar	8	0	1	1	5	0	1	0	0
Chattisgarh	8	0	1	1	3	0	0	3	0
Goa	8	1	2	0	3	0	2	0	0
Himachal Pradesh	7	0	0	0	4	3	0	0	0
Pondicherry*	6	0	2	1	0	1	0	2	0
Manipur	3	2	1	0	0	0	0	0	0
Meghalaya	2	0	1	0	1	0	0	0	0
Nagaland	2	0	0	0	0	0	2	0	0
Tripura	1	1	0	0	0	0	0	0	0
Total	1469	141	155	100	460	327	117	157	12
% of total	9.6	10.5	6.8	31.3	22.3	8.0	10.7	0.8	

*Union territory

Table 3—State-wise classification of national and international conferences supported by HRDG (CSIR) during the period 2003-04 to 2005-06.

State	Conferences organized		
	Total	National	International
West Bengal	151	97 (64.2)**	54(35.8)
Delhi	164	121(73.8)	43(26.2)
Karnataka	134	92(68.7)	42(31.3)
Tamil Nadu	203	167(82.3)	36(17.7)
Uttar Pradesh	172	142(82.6)	30(17.4)
Maharashtra	115	92(80.0)	23(20.0)
Kerala	71	51(71.8)	20(28.2)
Andhra Pradesh	115	97(84.3)	18(15.7)
Uttaranchal	47	38(80.9)	9(19.1)
Orissa	42	33(78.6)	9(21.4)
Rajasthan	34	29(85.3)	5(14.7)
Madhya Pradesh	25	20(80.0)	5(20.0)
Punjab	34	30(88.2)	4(11.8)
Assam	32	29(90.6)	3(9.4)
Jharkhand	19	16(84.2)	3(15.8)
Chandigarh*	18	15(83.3)	3(16.7)
Bihar	8	6(75.0)	2(25.0)
Gujarat	24	23(95.8)	1(4.2)
Jammu & Kashmir	13	12(92.3)	1(7.7)
Chattisgarh	8	7(87.5)	1(12.5)
Goa	8	7(87.5)	1(12.5)
Himachal Pradesh	7	6(85.7)	1(14.3)
Meghalaya	2	1(50.0)	1(50.0)
Haryana	11	11(100.0)	0(0.0)
Manipur	3	3(100.0)	0(0.0)
Nagaland	2	2(100.0)	0(0.0)
Tripura	1	1(100.0)	0(0.0)
Pondicherry*	6	4(66.7)	2(33.3)
Total	1469	1152(78.4)	317(21.6)

*Union territory; **number in parenthesis represent relative percent (%)

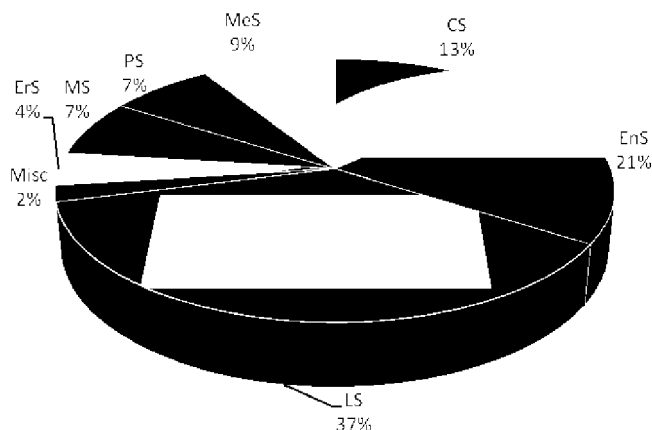


Fig. 1—Subject-wise distribution pattern of allocated funds for organizing conferences supported by HRDG (CSIR) during 2003-04 to 2005-06

Bengal with 54 (17.0%) conferences was on top followed by Delhi 43 (13.6%), Karnataka 42 (13.2%), Tamil Nadu 36 (11.4%), Uttar Pradesh 30 (9.5%), Maharashtra 23 (7.2%), Kerala 20 (6.3%) and Andhra Pradesh 18(5.7%). Altogether, 83.8% of the total international conferences (317) were organized by the institutions from these leading states. Out of 1152 national conferences supported, maximum (167, 14.5%) were organized by Tamil Nadu followed by Uttar Pradesh (142, 12.3%), Delhi (121, 10.5%), Andhra Pradesh and West Bengal (97, 8.4% each), Maharashtra and Karnataka (92, 8.0% each), and Kerala (51, 4.4%). Relative percent analysis of national and international conferences organized indicates that West Bengal, Delhi, Karnataka and Kerala, in general, organized more than 25% international conferences (Table 3). Year-wise breakup of number of conferences supported shows an increase (17.0%) in number of conferences supported by HRDG: 2003-04, 460; 2005-06, 470; and 2005-06, 538. Of total budget outlay (Rs 7.05 crore), amount spent on national conferences was 71.3% and remaining 28.7% on international conferences. Majority (57.6%) of the total budget outlay was shared by life sciences and engineering sciences, and remaining (42.4%) was shared by the other subjects (Fig. 1). Maximum number (82, 25.9%) of international conferences (Table 4) was supported in life sciences, followed by engineering (79, 24.9%), physical (38, 12.0%), medical (33, 10.4%), chemical and earth sciences (29, 9.2% each) and mathematical sciences (26, 8.2%). Maximum number (378, 32.8%) of national conferences (Table 5) was supported in life sciences followed by engineering (248, 21.5%), medical (124, 10.8%), physical (117, 10.2%),

Table 4—State- and subject-wise classification of international conferences supported by HRDG (CSIR) during 2003-04 to 2005-06

State	Total no. & percent (%) of international conferences	Subject							
		CS	PS	MS	LS	EnS	ErS	MeS	Misc
West Bengal	54(17.0)	5	9	8	9	18	0	5	0
Delhi	43(13.6)	6	5	2	12	9	4	5	0
Karnataka	42(13.2)	4	3	3	10	16	3	3	0
Tamil Nadu	36(11.4)	1	8	1	9	10	3	4	0
Uttar Pradesh	30(9.5)	1	2	5	8	4	3	7	0
Maharashtra	23(7.0)	4	4	2	7	3	1	2	0
Kerala	20(6.3)	4	3	1	8	1	1	2	0
Andhra Pradesh	18(5.7)	1	0	0	5	1	8	3	0
Orissa	9(2.8)	0	0	0	0	8	1	0	0
Uttaranchal	9(2.8)	0	1	0	1	6	0	1	0
Madhya Pradesh	5(1.6)	0	0	2	2	0	1	0	0
Rajasthan	5(1.6)	1	2	0	1	1	0	0	0
Punjab	4(1.3)	1	0	0	3	0	0	0	0
Assam	3(1.0)	0	0	0	1	0	1	1	0
Chandigarh*	3(1.0)	0	0	1	0	0	1	0	1
Jharkhand	3(1.0)	0	0	0	0	1	2	0	0
Bihar	2(0.6)	0	0	0	2	0	0	0	0
Pondicherry*	2(0.6)	0	0	1	0	1	0	0	0
Chattisgarh	1(0.3)	0	0	0	1	0	0	0	0
Goa	1(0.3)	0	1	0	0	0	0	0	0
Gujarat	1(0.3)	1	0	0	0	0	0	0	0
Himachal Pradesh	1(0.3)	0	0	0	1	0	0	0	0
Jammu & Kashmir	1(0.3)	0	0	0	1	0	0	0	0
Meghalaya	1(0.3)	0	0	0	1	0	0	0	0
Total	317(100.0)	29	38	26	82	79	29	33	1
% of total		9.2	12.0	8.2	25.9	24.9	9.1	10.4	0.3

*Union territory

chemical (112, 9.7%), earth (88, 7.6%) and mathematical sciences (74, 6.4%).

In chemical sciences, Tamil Nadu, Uttar Pradesh, Delhi, West Bengal and Maharashtra were leading states in terms of number of conferences organized. In physical sciences, Maharashtra and West Bengal were leading states, whereas Uttar Pradesh, Tamil Nadu and West Bengal lead in mathematical sciences. Tamil Nadu and Uttar Pradesh lead in life sciences, whereas Tamil Nadu

and Karnataka were leading in engineering sciences. Andhra Pradesh and Tamil Nadu emerged as leading states in earth sciences, whereas Delhi and Maharashtra were leading in medical sciences. Tamil Nadu, Uttar Pradesh, West Bengal and Maharashtra were leading states in general in national events organized (Table 6).

Maximum number of international conferences was organized by institutions located in West Bengal and Karnataka in engineering sciences. Delhi organized

Table 5—State- and subject-wise classification of national conferences supported by HRDG (CSIR) during 2003-04 to 2005-06

State	Total no. and percent (%) of national conferences	Subject							
		CS	PS	MS	LS	EnS	ErS	MeS	Misc
Tamil Nadu	167(14.5)	15	6	13	69	40	14	9	1
Uttar Pradesh	142(12.3)	12	11	15	59	22	7	13	3
Delhi	121(10.5)	11	15	2	35	23	9	23	3
Andhra Pradesh	97(8.4)	10	7	5	39	16	15	5	0
West Bengal	97(8.4)	11	16	11	27	23	0	9	0
Karnataka	92(8.0)	6	6	5	30	29	4	11	1
Maharashtra	92(8.0)	11	16	2	31	9	5	17	1
Kerala	51(4.4)	7	3	7	17	9	5	3	0
Uttaranchal	38(3.3)	3	3	1	11	11	5	4	0
Orissa	33(2.9)	2	1	1	4	14	9	2	0
Punjab	30(2.6)	3	3	1	8	12	0	3	0
Assam	29(2.5)	6	6	3	6	7	0	1	0
Rajasthan	29(2.5)	3	6	3	7	7	1	1	1
Gujarat	23(2.0)	4	4	1	3	5	1	5	0
Madhya Pradesh	20(1.7)	2	0	2	7	6	0	3	0
Jharkhand	16(1.4)	1	2	0	0	6	6	1	0
Chandigarh*	15(1.3)	0	1	0	6	4	0	4	0
Jammu & Kashmir	12(1.0)	0	2	0	4	1	1	4	0
Haryana	11(1.0)	1	2	0	4	1	1	1	1
Chattisgarh	7(0.6)	0	1	1	2	0	0	3	0
Goa	7(0.6)	1	1	0	3	0	2	0	0
Bihar	6(0.5)	0	1	1	3	0	1	0	0
Himachal Pradesh	6(0.5)	0	0	0	3	3	0	0	0
Pondicherry*	4(0.4)	0	2	0	0	0	0	2	0
Manipur	3(0.3)	2	1	0	0	0	0	0	0
Nagaland	2(0.2)	0	0	0	0	0	2	0	0
Meghalaya	1(0.1)	0	1	0	0	0	0	0	0
Tripura	1(0.1)	1	0	0	0	0	0	0	0
Total	1152(100.0)	112	117	74	378	248	88	124	11
% of total		9.7	10.2	6.4	32.8	21.5	7.6	10.8	1.0
*Union territory									

maximum number of international conferences in life sciences and chemical sciences. West Bengal and Tamil Nadu were leading states in physical sciences. West Bengal, Andhra Pradesh and Uttar Pradesh lead in organizing the international conferences in mathematical

sciences, earth sciences and medical sciences, respectively (Table 7).

Out of 28 states/union territories (Tables 6,7), which organized national level conferences supported by HRDG (CSIR), a maximum of 24 states/union territories

Table 6—Subject-wise frequency distribution of Indian states and union territories for organizing the national conferences, partially supported by HRDG (CSIR), during the period 2003-04 to 2005-06

Frequency	Subject-wise breakup (Number of States/Union Territories involved)							
	CS	PS	MS	LS	EnS	ErS	MeS	Misc
1 - 5	11	15	13	8	5	11	15	7
6 - 10	4	5	1	5	6	4	2	-
11 - 15	<u>5</u>	2	<u>3</u>	1	3	<u>2</u>	2	-
16 - 20	-	<u>2</u>	-	1	1	-	<u>1</u>	-
21 - 25	-	-	-	-	3	-	<u>1</u>	-
26 - 30	-	-	-	2	<u>1</u>	-	-	-
31 - 40	-	-	-	3	<u>1</u>	-	-	-
41 - 50	-	-	-	-	-	-	-	-
51 - 60	-	-	-	<u>1</u>	-	-	-	-
61 - 70	-	-	-	<u>1</u>	-	-	-	-
Total	20	24	17	22	20	17	21	7
Leading states	Tamil Nadu, Uttar Pradesh, Delhi, West Bengal, Maharashtra	Maharashtra, West Bengal	Uttar Pradesh, Tamil Nadu, West Bengal	Tamil Nadu, Uttar Pradesh	Tamil Nadu, Karnataka	Andhra Pradesh, Tamil Nadu	Delhi, Maharashtra	

Table 7—Subject-wise frequency distribution of Indian states and union territories for organizing the international conferences, partially supported by HRDG (CSIR), during the period 2003-04 to 2005-06

Frequency	Subject-wise breakup (Number of States/Union Territories involved)							
	CS	PS	MS	LS	EnS	ErS	MeS	Misc
1 - 5	10	8	9	11	7	11	9	1
6 - 10	<u>1</u>	<u>2</u>	<u>1</u>	6	4	<u>1</u>	<u>1</u>	-
11 - 15	-	-	-	<u>1</u>	-	-	-	-
16 - 20	-	-	-	-	<u>2</u>	-	-	-
Total	11	10	10	18	13	12	10	1
Leading states	Delhi	West Bengal, Tamil Nadu	West Bengal	Delhi	West Bengal, Karnataka	Andhra Pradesh	Uttar Pradesh	

were involved in organizing national conferences in physical sciences, followed by life sciences (22), medical sciences (21), chemical and engineering sciences (20 each), mathematical and earth sciences (17 each). A maximum of 18 states/union territories were involved in organizing international conferences in life sciences, followed by engineering sciences (13), earth sciences (12), chemical sciences (11), mathematical, medical and physical sciences (10 each).

From reports and proceedings of national and international conferences submitted to HRDG (CSIR) by organizers, it has been seen that HRDG (CSIR) by way of providing the need based financial assistance has played a vital role in bringing together more than two lakh (with an average of 150 persons per event) academicians, educationalists, researchers, professionals, research students from all over India and abroad to share their knowledge and experiences.

Sharing knowledge is essentially a synergistic process; one gets more out than one puts in⁶. It is believed that as much as 50% of what was known 5 years ago is probably obsolete today⁶. Thus seminars and conferences play an important role in promoting interaction of scientists, academicians, professionals, students and policy makers for knowledge sharing and to make them aware about latest developments.

Conclusions

Tamil Nadu, Uttar Pradesh, West Bengal and Maharashtra were the leading states in general to contribute towards knowledge sharing in terms of national conferences organized, whereas West Bengal and Delhi were leading states in terms of international conferences organized. Maximum conferences were

organized in life sciences followed by engineering sciences and the least were organized in mathematical sciences.

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