



Annex -1 *Year wise acquisition of scenes by Indian remote sensing satellites*

(Reference: Paragraph 3.2)

No	IRS (year of launch)	Data product generation capability	No. of scenes acquired								
			2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Total	Maximum	Average per year
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1.	1 C (1995)	Not available	16471	15637	32749	48141	17184	500	130682	48141	21780
2.	1D (1997)	Not available	20241	16372	15704	32833	30735	17159	133044	32833	22174
3.	P 3 (1996)	7200	2270	15	0	0	0	0	2285	2270	2270
4.	P 4 Oceansat-1 (1999)	2880	1573	1690	1564	1758	962	950	8497	1758	1416
5.	P 6 Resourcesat-1 (2003)	108000	0	117045	103858	155787	162016	146918	685624	280908 ⁵⁵	155119
6.	P 5 Cartosat-1 (2005)	72000	0	0	48329	111026	106021	109099	374475	111026	97520
7.	P 7 Cartosat-2 (2007)	7200	0	0	0	0	8690	24908	33598	52140 ⁵⁶	28716

⁵⁵ Spacecraft was launched in October 2003 and acquired 117045 scenes for five months in 2003-04 from November 2003 to March 2004. Therefore, scenes acquired per annum would be 280908.

⁵⁶ Spacecraft was launched in January 2007 and acquired 8690 scenes for two months in 2003-04 from November 2003 to March 2004. Therefore, scenes acquired per annum would be 52140.



Annex -2 *Idling of acquired Scenes* (Reference: Paragraph 3.6)

(Amount: ₹ in Lakh)

Year	IRS		MODIS		NOAA	
	Scenes Sold (Revenue realised)	Idling of scenes (Percentage)	Scenes Sold (Revenue realised)	Idling of scenes (Percentage)	Scenes Sold (Revenue realised)	Idling of scenes (Percentage)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2002-03	12414 (1255)	28141 (69)	65 (3)	1045 (94)	1510 (66)	3219 (68)
2003-04	13695 (1634)	137064 (91)	367 (21)	4043 (92)	817 (30)	4220 (84)
2004-05	15654 (2156)	186550 (92)	216 (12)	8826 (98)	775 (29)	7147 (90)
2005-06	16395 (2515)	333150 (95)	331 (17)	8458 (96)	383 (14)	8446 (96)
2006-07	24764 (3426)	300844 (92)	253 (12)	5960 (96)	443 (12)	12279 (97)
2007-08	34431 (3800)	265103 (89)	79 (2)	7919 (99)	467 (11)	15205 (97)
2008-09	38898 (4152)	43103 (53)	354 (N.A)	7288 (95)	293 (N.A)	6835 (96)
Total	156251 (18938)	1293955 (89)	1655 (67)	43539 (96)	4688 (162)	57351 (92)



Annex -3 Turn-around time during 2002-09 (Reference: Paragraph 3.7)

Turn - around time	2002	2003	2004	2005	2006	2007	2008	2009	Average
	Number of cases (<i>per cent</i>)								
Less than one day	2416 (15.9)	2599 (17.2)	2896 (15.7)	2477 (11.2)	2193 (10.6)	1718 (5.6)	693 (5)	7584 (9.7)	2822.00 11.36
One to seven days	8611 (55.9)	8895 (59)	11324 (61.3)	11932 (54.1)	9038 (43.8)	9968 (33.1)	4389 (31.5)	20775 (26.5)	10616.50 45.65
One week to two week	2486 (16.5)	2098 (13.9)	2786 (15.1)	4732 (21.5)	3734 (18.1)	7529 (24.6)	5490 (39.4)	24109 (30.7)	6620.50 22.48
Two week to one month	1185 (7.9)	1201 (8)	1104 (6)	255 (10.2)	2621 (12.7)	5239 (17.2)	2131 (15.3)	25253 (32.2)	4873.63 13.69
More than one month	449 (3.8)	291 (1.9)	345 (1.9)	2673 (3)	3075 (14.8)	5932 (19.5)	1211 (8.8)	715 (0.9)	1836.38 6.83
Total	15147 (100)	15084 (100)	18455 (100)	22069 (100)	20661 (100)	30386 (100)	13914 (100)	78436 (100)	26769.00 (100)



Annex -4 Time escalation in User Projects

(Reference: Paragraph 5.3 and 6.4.1)

Aerial Projects

Project code/ (Cost in lakh of ₹)	Project title [time escalation]	Remarks
1208 (66.19)	Large Scale Mapping of 11 towns of Andhra Pradesh Urban Services for Poor (APUSP) [34 Months]	The project commenced in May 2004 and was to be completed within nine months. The project was completed in December 2007, after a delay of 35 months. NRSC replied in September 2008 that the delay was due to non-receipt of payment from Andhra Pradesh Government and unfavourable weather conditions for carrying out ground control survey of a few towns. Reply is not acceptable, since the NRSC itself had relaxed the general terms of payment of collecting 90 <i>per cent</i> advance to three milestone installments of 30 <i>per cent</i> which resulted in non-receipt of payment and delay in completion of the project.
1120 (63)	Topographical survey for Godavari – Krishna Link Project [40 Months]	The project commenced in October 2001 for completion by October 2003. The project was actually completed in February 2007, after a delay of 40 months. NRSC and DOS replied in September 2008 and July 2009 that delay was due to delay in acquiring technology from United States of America, installation and commissioning and initial teething problems in LIDAR technology.
1059 (130.32)	Topographical survey for Godavari – Krishna Link Project [54 Months]	The project commenced in February 2001 for completion by August 2002. The project was actually completed in February 2007, after a delay of 54 months. The delay was due to the inordinate delay in procurement of Aerial Large Terrain Mapping system by NRSC for more than two years. As NRSC agreed to complete the survey in March 2003, it should have expedited the procurement process to complete the project in terms of the agreed schedule.
1155 (1549.4)	ALTM mapping for Garland command and Catchment area for WRDO. [48 Months]	The project commenced in September 2003 and the scheduled duration was up to August 2004. The project however, was pending since the user failed to furnish necessary inputs required for their progress. The user also did not extend the duration of the project. Hence it was kept in dormant state for the last four years. NRSC replied (September 2008) that WRDO could not finalise the yield, which was an important parameter for the design of the entire project. Due to this, area of the flying could not be decided.
1223 (65.77)	Aerial mapping for National Thermal Power Corporation (NTPC) over Loharinag [25 Months]	The project commenced in September 2004 was to be completed by November 2005. Aerial photographs were delivered by February 2007, but maps were delivered after obtaining clearance from Ministry of Defence in December 2007. NRSC in September 2008 and DOS in July 2009 replied that aerial photography was delayed due to other urgent tasks and unfavourable weather conditions. Subsequently, ground control survey was also got delayed due to natural hazards like landslides.



Project code/ (Cost in lakh of ₹)	Project title [time escalation]	Remarks
1222 (138.99)	Aerial mapping of Chhattisgarh [20 Months]	The project commenced in November 2004. The project was to be completed in November 2005. NRSC in September 2008 and DOS in July 2009 replied that ground control survey was aborted due naxal problem in the area. Finally, it was decided to proceed without ground control survey and the project was delayed in the process.
1185 (121)	Aerial photography and Mapping over Kolkata Municipal Corporation [33 Months]	An MOU was entered in December 2003 for ₹ 1.10 crore and scheduled duration of the project was one year. The cost of the project was also revised from ₹ 1.10 crore to ₹ 1.21 crore in February 2005. The MOU entered in December 2003 was not, however, amended to include the revision in the price. The work was finally completed in August 2007. There was inordinate delay in completion of the work. NRSC in September 2008 and DOS in July 2009 replied that during the course of project the user changed the specifications and ortho photos were requested additionally.
1183 (110.06)	Aerial photography of 16 places in Karnataka for KRSAC, Bangalore [48 Months]	The scheduled duration was up to May 2004. There was modification in the project and the user issued the modification order in May 2004. The project was, however, completed in all respects only in May 2008, when the data for towns were handed over. NRSC in September 2008 and DOS in July 2009 replied that project was delayed due unfavourable weather conditions and prolonged time taken for final classification of the data from Survey of India.
1153 (38)	Aerial triangulation & photo-grammetric mapping of Chennai [8 months]	Updation of photogrammetrically acquired data of Chennai was carried out by NRSC only in June 2004, whereas the scheduled date of completion of the project was in October 2003. NRSC in September 2008 and DOS in July 2009 replied that the project was delayed due to technical snag in the aircraft.
694 (843)	Aerial photography of 28 towns in India Phase II 13 towns [8 months]	Scheduled date of completion was December 2002. Aerial photography of 13 towns was completed only in August 2003. NRSC in September 2008 and DOS in July 2009 replied that execution of aerial photography and ground control survey over all the places were season dependent for conducive weather conditions.
1070 (1439)	Aerial photography of 28 towns in India Phase III 15 towns [26 months]	Scheduled date of completion of aerial photography was December 2002. The task was, however, completed for the remaining 15 towns of Phase III only in February 2005 i.e., after a delay of 26 months. NRSC in September 2008 and DOS in July 2009 replied that execution of aerial photography and ground control survey over all the places were season dependent for conducive weather conditions.



Project code/ (Cost in lakh of ₹)	Project title [time escalation]	Remarks
1240 (20)	Preparation of Base Maps for additional Shimla planning area [13 months]	In terms of the agreement the schedule for completion of the task was 11 months, i.e., before April 2006. NRSC submitted deliverables only in May 2007. NRSC in September 2008 and DOS in July 2009 replied that field data collection took additional time due to terrain undulations and inclement weather conditions generally prevailing in Shimla and its surrounding areas.

Satellite Projects

Project code/ (Cost in lakh of ₹)	Project title [time escalation]	Remarks
1061 (63.32)	Integrated land & water resources conservation using RS&GIS in Mandsoar, Ministry of Rural Development [35 months]	The project was sanctioned in March 2001 for completion by April 2002. The project was actually completed in March 2005, after a delay of three years. DOS replied in July 2009 that in an internal review it was decided to use hydro geo morphological maps and other base layers under preparation for this study area in order to optimise the efforts and resources. Thus deviation from the original scope of the work resulted in delay in completion of the project.
1217 (17.61)	Inventory and change detection study of surface water resources [20 Months]	The project was approved in November 2004 for eight months. Objective I was revised since cloud free data in the selected year were not available in khariff season. Objective II was dropped, Objective III and revised Objective I were completed by March 2007 whereas Objective IV was completed in December 2004 itself. NRSC replied in September 2008 that project was delayed due to delay in obtaining field data; other associated information and considerable time take to provide feedback and suggestions before preparation of report in March 2007.
1127 (498)	National Wasteland Mission (2003) [12 Months]	The 2003 mission was scheduled for completion by March 2004. The project was, however, delayed by one year, as the workload was high and the analysis was being carried out in digital environment in terms of administration boundaries. Escalation in project cost was not worked out due to this increased scope of work and workload. NRSC replied in September 2008 that the delay was on account of adopting the state of art technique, additional time taken by the centres to adjust to the new methods, changing priorities of the states, centres, hazards etc.
1264 (346.25)	National Wasteland Mission (2005) [8 Months]	The project was scheduled for completion in November 2007, was still ongoing (July 2008). Without indicating the present status of the project, NRSC replied in September 2008 that initially one season data was to be used. In order to improve the delineation, it was decided to use three season data.



Project code/ (Cost in lakh of ₹)	Project title [time escalation]	Remarks
1204 (14.20)	Ecological impact agreement of Khelgaon NTPC [20 Months]	In terms of letter of acceptance of August 2003, the work was to be completed in two years by July 2005. The final report, however, was submitted in March 2007. NRSC replied in September 2008 that project included NTPC component (Ambient air quality data). Because of some technical difficulties, NTPC provided data only in November 2006.
1063 (46.08)	Delineation of Season-wise cropped irrigated area [9 months]	The Government of India, Ministry of Water Resources entrusted Water & Power Consultancy Services (WAPCOS) to carry out a study on impact of irrigation system performance in closing gap in utilisation in two CAD canal commands. WAPCOS, in turn, engaged NRSC to undertake delineation of season-wise crop area and irrigated area in two commands. The total cost of the project was ₹ 46.08 lakh and the duration of the project was one year up to April 2002. NRSC, however, submitted the final report in January 2003. NRSC replied in September 2008 that the draft report was furnished in June 2002, but user department took considerable time to provide feedback and suggestions and the final report was submitted in January 2003.
1118 (346.27)	Integrated resource information system for desert area [11 months]	According to the sanction, the project was to be completed in July 2004. The project was, however, completed in June 2005. DOS replied in July 2009 that the delay was due to the delay in completing the soil theme data base in case of Gujarat. DOS also stated the project was extended by MoRD up to March 2005.
1252 (61.82)	Prioritisation of watershed using remote sensing and GIS techniques [12 months]	According to the sanction, the scheduled duration was up to November 2006. DOS replied in July 2009 that the final report was submitted in November 2007.
1201 (195.69)	Mapping in geo-database creation using high resolution satellite data for HUDA [36 months]	In terms of project proposal of March 2005 submitted to Hyderabad Urban Development Authority (HUDA) under Green Hyderabad Environmental Programme, the scheduled date of completion of the project was April 2006. DOS replied in July 2009 that HUDA had expressed their inability to supply the input required for the remaining component of the work worth ₹ 10 lakh and it was jointly decided to close the project in April 2009 and return the funds to HUDA.



Annex -5 Undercosting of User Projects

(Reference: Paragraph 6.4.5)

(Amount: ₹ in lakh)

Project Code	Chargeable amount	Charged amount	Under costing	Remarks
1255	697.50	675.90	21.60	NRSC entered into an agreement in December 2005 with Commissioner of Survey Settlement and Land Records, Government of Andhra Pradesh for aerial photography of Nizamabad district along with Kinematic Geo Positioning System data. We observed that as against the cost of ₹ 37,200 per kilometer decided in September 2005 towards aerial photography of urban areas on 1:40000 scale and generation ortho photos, NRSC actually charged ₹ 30,000 per kilometer only for 300 kilometers. This resulted in under charging of ₹ 21.60 lakh (300 x ₹ 7200). NRSC replied in August 2009 that Senior Project Coordination Committee (SPCC) reduced the overheads chargeable from 25 to 10 <i>per cent</i> . SPCC has powers to discount upto five <i>per cent</i> of the cost of the project. Wherever, any discount is awarded clear reasons should be recorded by the committee. Reasons were, however, not recorded by the committee.
1118	387.78	346.28	41.50	Ministry of Rural Development entrusted a project titled 'Integrated Resource Information System for desert areas' for the creation of natural resource database using satellite remote sensing technique to NRSC, in June 2002. The element of overheads included in the cost estimate was ₹ 26.62 lakh, against the leviable overheads of ₹ 68.12 lakh, resulting in under costing of ₹ 41.50 lakh. NRSC replied in November 2008 that overheads had been charged at the reduced rates as the users of the project were Government Departments/Organisations. DOS also replied in July 2009 that when user funded project has a higher financial outlay and funded by Government organisation, a conscious approach has been practiced by NRSC to charge reduced rate of overhead on case-to-case basis. NRSC costing policy, however, did not provide for such reduction to Government Departments.
1105	69.55	47.64	21.91	Approved rates of ferry charges including abortive charges (provision to meet contingencies in the event of aborting aerial tasks) applicable, outstation allowances, idle day charges and parking charges were not charged.



Project Code	Chargeable amount	Charged amount	Under costing	Remarks
				NRSC in November 2008 and DOS in July 2009 replied that this was not a user project. The approved rates prevalent prior to before 2004 were charged. Reply is not acceptable, as the project code 1105 indicated that this was a user project and the approved abortive charges were not charged in any of these aerial tasks.
1136	172.89	138.00	34.89	Approved rates of ferry charges (including abortive charges applicable), outstation allowances, idle day charges and parking charges were not charged. NRSC replied in November 2008 that this was not a user project and that the rates charged were based on hourly-approved rates. Reply is not acceptable since the prices fixed by NRSC were not based on the costing policy. Besides, the project code 1136 indicated that was a user project. The approved abortive charges were not charged in any of these aerial tasks. DOS replied in July 2009 that abortive charges were not charged for aerial sorties. However, the approved rates of NRSC did not exclude aerial sorties from charging abortive charges.
1250	75.35	71.98	3.37	Against administrative overheads of ₹ 5.87 lakh being 25 <i>per cent</i> of total project cost of ₹ 23.48 lakh (excluding the cost of data products and training charges), NRSC charged only ₹ 2.5 lakh. NRSC replied in November 2008 that overheads were charged at 25 <i>per cent</i> of actual charges incurred by NRSC. Reply is not acceptable since under costing had been worked out after excluding data product charges and training charges of RSI, Canada and administrative overheads have been worked out on administrative cost. DOS replied in July 2009 that overheads were not charged on the cost of DOS/ NRSC training. However, the costing policy of NRSC did not exclude its training charges from administrative overheads.
1264	377.17	346.25	30.92	Overheads were charged only at 10 <i>per cent</i> of ₹ 206.10 lakh instead of 25 <i>per cent</i> at the request of MoRD. NRSC reiterated the position in its reply of November 2008. DOS replied in July 2009 that since the project outlay was very high, the overhead was charged at 10 <i>per cent</i> . However, the costing of policy of NRSC did not permit to charge reduced overheads.



Project Code	Chargeable amount	Charged amount	Under costing	Remarks
1127	562.00	498.00	64.00	Overheads were charged only at 10 <i>per cent</i> instead of 25 <i>per cent</i> at the request of MoRD. NRSC reiterated the position in its reply of November 2008. DOS replied in July 2009 that since the project outlay was very high the overhead was charged at 10 <i>per cent</i> . However, the costing of policy of NRSC did not permit to charge reduced overheads.
1052	38.10	33.20	4.90	Overheads at 25 <i>per cent</i> excluding satellite data were not charged. NRSC in November 2008 and DOS in July 2009 replied that since the project involved mutual interest of NRSC and Central Research Institute for Dryland Agriculture, overheads were not charged. Reply is not acceptable since the project was taken up as a user project where overheads were required to be charged.
1017	70.65	70.00	0.65	Against chargeable administrative overheads of ₹ 7.89 lakh, NRSC charged only ₹ 7.24 lakh. DOS replied in July 2009 that overhead of 15 <i>per cent</i> were charged as approved by the competent authority. However, the costing policy of NRSC did not permit to charge reduced overheads.
1184	58.40	51.50	6.90	Against chargeable administrative overheads of ₹ 11.50 lakh, NRSC charged only ₹ 4.60 lakh. DOS replied in July 2009 keeping the technical importance of the project in mind, the overheads were reduced. However, the costing policy of NRSC did not permit to charge reduced overheads.
1040	70.00	56.00	14.00	Administrative overheads charged were waived since the order was a bulk order when there was no provision to waive overheads. DOS replied in July 2009 that overheads were not charged towards 4X enlargements. The costing policy of NRSC, however, did not permit to exempt enlarging from charging overheads.
1061	70.93	63.62	7.31	Administrative overheads charged were only 10 <i>per cent</i> instead of 25 <i>per cent</i> . DOS replied in July 2009 that since the project outlay was very high, the overhead was charged at 10 <i>per cent</i> . However, the costing of policy of NRSC did not permit to charge reduced overheads.
Total	2650.32	2398.37	251.95	



Annex -6 Enrolment at IIRS, Dehradun during 2003-09 (Reference Paragraph 7.2)

Year	Courses	M. Tech	M.Sc	PG Diploma	Certificate	CSSTE	Special	Short Term	Total
2003-04	Number of Courses	1	2	8	8	1	0	9	29
	Participants Planned	10	20	56	33	20	26	110	275
	Participants enrolled	13	18	23	25	21	26	123	249
	Percentage not enrolled	30	- 10	- 59	- 24	5	0	12	10
2004 -05	Number of Courses	1	2	8	8	1	0	9	29
	Participants Planned	10	20	56	33	20	75	110	324
	Participants enrolled	11	16	28	22	20	75	128	300
	Percentage not enrolled	10	- 20	- 50	- 33	0	0	16	- 7
2005-06	Number of Courses	1	2	8	8	1	0	10	30
	Participants Planned	10	20	56	33	20	128	130	397
	Participants enrolled	4	14	25	11	19	128	112	313
	Percentage not enrolled	- 60	- 30	- 55	- 67	- 5	0	- 14	- 21
2006-07	Number of Courses	1	2	9	8	1	0	13	34
	Participants Planned	10	20	56	33	20	193	136	468
	Participants enrolled	11	14	45	15	22	193	111	411
	Percentage not enrolled	10	- 30	- 20	- 55	10	0	- 18	- 12
2007-08	Number of Courses	1	2	9	8	1	0	12	33
	Participants Planned	10	20	56	33	20	281	126	546
	Participants enrolled	7	17	47	15	18	281	98	483
	Percentage not enrolled	- 30	- 15	- 16	- 55	- 10	0	- 22	- 12
2008-09	Number of Courses	1	2	8	8	1	0	9	29
	Participants Planned	10	20	56	33	20	60	130	329
	Participants enrolled	10	13	37	8	15	320	119	522
	Percentage not enrolled	0	-35	-34	-76	-25	433	-9	59
Average	Percentage not enrolled	-7	-23	-39	-52	-4	34	-7	-3



Annex - 7 Estimates and Actuals of major financial activities of NRSC for 2003-08

(Reference: Paragraph 8.4)

(Amount: ₹ in crore)

Year	Details	Grants-in-aid	Income	Total Receipts	Centre ⁵⁷ Expenditure	Variable ⁵⁸ Expenditure	Total Expenditure
2003-04	Estimate	9.00	58.75	67.75	49.67	21.20	70.87
	Actual	9.00	58.47	67.47	45.64	14.03	59.67
	Variation	0.00	0.28	0.28	4.03	7.17	11.20
	(Per cent)		(-) 0.5	(-) 0.50	(-) 8	(-) 33	(-) 16
2004-05	Estimate	9.00 ⁵⁹	62.73	71.23	50.45	18.65	69.10
	Actual	9.00	77.57	86.57	48.33	19.22	67.55
	Variation	0.00	11.34	15.34	2.12	0.57	1.55
	(Per cent)		17	21.54	(-) 4	(-) 3	(-) 2
2005-06	Estimate	14.00	81.40	95.40	59.54	20.22	79.76
	Actual	14.00	70.11	84.11	56.03	11.73	67.76
	Variation	0.00	11.29	11.29	3.51	8.49	12.00
	(Per cent)		(-) 14	(-) 12	(-) 6	(-) 42	(-) 15
2006-07	Estimate	20.00	78.89	98.89	76.73	15.50	92.23
	Actual	20.00	84.92	104.92	53.51	24.46	77.97
	Variation	0.00	6.03	6.03	23.22	8.96	14.26
	(Per cent)		8	6	(-) 30	58	(-) 16
2007-08	Estimate	30.00 ⁶⁰	109.90	139.90	80.73	32.59	113.32
	Actual	30.00	111.15	141.15	96.96	26.22	123.18
	Variation	0.00	1.75	1.25	16.23	6.37	9.86
	(Per cent)		1.5	0.9	20	20	9
2008-09	Estimate	N.A*	100.96	100.96	108.73	25.44	134.17
	Actual	N.A*	70.83	70.83	104.86	21.83	126.69
	Variation	N.A*	30.13	30.13	3.87	3.61	7.48
	(Per cent)		(-) 29.84	(-) 29.84	(-) 3.56	(-) 14.19	(-) 5.58

* Not Applicable since NRSC converted into one of the units of DOS from 1 September 2008.

⁵⁷ Expenditure against the budget approved by DOS for NRSC incurred on DOS funded programmes/ projects, administrative expenses, salaries etc.

⁵⁸ Expenditure on application projects for various users being executed by NRSC.

⁵⁹ Exclude ₹ 5 crore received from DOS towards its pension fund.

⁶⁰ Include ₹ 19.46 crore refunded by NRSC to DOS based on the audit observation in Paragraph No.5.8.3 of Report No.9 of 2006 (Union Government).