

DEPARTMENT OF SPACE

DEMAND NO. 90

Department of Space

A. The Budget allocations, net of recoveries, are given below:

(In crores of Rupees)

Major Head	Actual 2010-2011			Budget 2011-2012			Revised 2011-2012			Budget 2012-2013			
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	
Revenue	1678.67	878.81	2557.48	2751.47	926.00	3677.47	2002.49	1000.00	3002.49	2476.43	1100.00	3576.43	
Capital	1924.75	...	1924.75	2948.53	...	2948.53	1429.51	...	1429.51	3138.57	...	3138.57	
Total	3603.42	878.81	4482.23	5700.00	926.00	6626.00	3432.00	1000.00	4432.00	5615.00	1100.00	6715.00	
1. Secretariat - Economic Services	3451	...	7.41	7.41	...	9.20	9.20	...	8.61	8.61	...	9.12	9.12
Space Research													
Space Technology													
Launch Vehicle Technology													
2. GSLV MK-III Development	3402	82.56	...	82.56	87.14	...	87.14	83.70	...	83.70	64.82	...	64.82
	5402	42.39	...	42.39	38.50	...	38.50	26.37	...	26.37	7.27	...	7.27
<i>Total</i>		124.95	...	124.95	125.64	...	125.64	110.07	...	110.07	72.09	...	72.09
3. Cryogenic Upper Stage Project (CUSP)	3402	0.09	...	0.09	0.10	...	0.10	0.10	...	0.10	0.10	...	0.10
4. Polar Satellite Launch Vehicle - Continuation (PSLV-C) Project	3402	234.25	...	234.25	244.50	...	244.50	254.50	...	254.50	347.91	...	347.91
	5402	7.75	...	7.75	5.50	...	5.50	10.50	...	10.50	32.09	...	32.09
<i>Total</i>		242.00	...	242.00	250.00	...	250.00	265.00	...	265.00	380.00	...	380.00
5. Vikram Sarabhai Space Centre (VSSC)	3402	204.81	228.81	433.62	231.07	223.00	454.07	247.02	223.58	470.60	239.48	240.98	480.46
	5402	126.34	...	126.34	231.96	...	231.96	152.45	...	152.45	303.90	...	303.90
<i>Total</i>		331.15	228.81	559.96	463.03	223.00	686.03	399.47	223.58	623.05	543.38	240.98	784.36
6. Indian Space Research Organisation - Inertial Systems Unit (IISU)	3402	12.78	...	12.78	19.33	...	19.33	17.89	...	17.89	22.90	...	22.90
	5402	13.25	...	13.25	20.41	...	20.41	18.99	...	18.99	39.77	...	39.77
<i>Total</i>		26.03	...	26.03	39.74	...	39.74	36.88	...	36.88	62.67	...	62.67
7. Liquid Propulsion Systems Centre	3402	154.63	67.82	222.45	150.58	83.00	233.58	140.95	85.46	226.41	172.55	96.69	269.24
	5402	36.12	...	36.12	80.75	...	80.75	72.78	...	72.78	167.11	...	167.11
<i>Total</i>		190.75	67.82	258.57	231.33	83.00	314.33	213.73	85.46	299.19	339.66	96.69	436.35
8. GSLV Operational Project (Including MK-III Operational)	3402	207.66	...	207.66	279.46	...	279.46	192.98	...	192.98	244.06	...	244.06
	5402	11.83	...	11.83	13.00	...	13.00	7.02	...	7.02	14.90	...	14.90
<i>Total</i>		219.49	...	219.49	292.46	...	292.46	200.00	...	200.00	258.96	...	258.96

(In crores of Rupees)

	Major Head	Actual 2010-2011			Budget 2011-2012			Revised 2011-2012			Budget 2012-2013		
		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
9. Space Capsule Recovery Experiment (SRE)	3402	4.80	...	4.80	4.40	...	4.40	2.20	...	2.20	2.20	...	2.20
10. Manned Mission Initiatives/Human Space Flight Programme	3402	12.90	...	12.90	65.64	...	65.64	10.27	...	10.27	29.74	...	29.74
	5402	6.37	...	6.37	33.17	...	33.17	2.90	...	2.90	30.72	...	30.72
	<i>Total</i>	<i>19.27</i>	<i>...</i>	<i>19.27</i>	<i>98.81</i>	<i>...</i>	<i>98.81</i>	<i>13.17</i>	<i>...</i>	<i>13.17</i>	<i>60.46</i>	<i>...</i>	<i>60.46</i>
11. Indian Institute of Space Science & Technology	3402	10.00	...	10.00	100.00	...	100.00	10.00	...	10.00	100.00	...	100.00
12. Semi Cryogenic Engine Development	3402	9.30	...	9.30	89.41	...	89.41	21.40	...	21.40	43.41	...	43.41
	5402	1.15	...	1.15	60.59	...	60.59	28.60	...	28.60	106.59	...	106.59
	<i>Total</i>	<i>10.45</i>	<i>...</i>	<i>10.45</i>	<i>150.00</i>	<i>...</i>	<i>150.00</i>	<i>50.00</i>	<i>...</i>	<i>50.00</i>	<i>150.00</i>	<i>...</i>	<i>150.00</i>
Total-Launch Vehicle Technology		1178.98	296.63	1475.61	1755.51	306.00	2061.51	1300.62	309.04	1609.66	1969.52	337.67	2307.19
Satellite Technology													
13. Oceansat-2 and 3	3402	0.43	...	0.43	2.75	...	2.75	...	...	...	2.52	...	2.52
	5402	6.94	...	6.94	47.25	...	47.25	1.00	...	1.00	47.48	...	47.48
	<i>Total</i>	<i>7.37</i>	<i>...</i>	<i>7.37</i>	<i>50.00</i>	<i>...</i>	<i>50.00</i>	<i>1.00</i>	<i>...</i>	<i>1.00</i>	<i>50.00</i>	<i>...</i>	<i>50.00</i>
14. Resourcesat-2 and 3	3402	2.23	...	2.23	3.45	...	3.45	1.83	...	1.83	1.40	...	1.40
	5402	12.50	...	12.50	29.21	...	29.21	12.17	...	12.17	9.10	...	9.10
	<i>Total</i>	<i>14.73</i>	<i>...</i>	<i>14.73</i>	<i>32.66</i>	<i>...</i>	<i>32.66</i>	<i>14.00</i>	<i>...</i>	<i>14.00</i>	<i>10.50</i>	<i>...</i>	<i>10.50</i>
15. ISRO Satellite Centre (ISAC)	3402	85.19	104.01	189.20	85.57	87.69	173.26	109.48	96.85	206.33	125.51	119.61	245.12
	5402	126.15	...	126.15	147.43	...	147.43	115.22	...	115.22	225.94	...	225.94
	<i>Total</i>	<i>211.34</i>	<i>104.01</i>	<i>315.35</i>	<i>233.00</i>	<i>87.69</i>	<i>320.69</i>	<i>224.70</i>	<i>96.85</i>	<i>321.55</i>	<i>351.45</i>	<i>119.61</i>	<i>471.06</i>
16. Laboratory for Electro-Optics System (LEOS)	3402	24.98	...	24.98	24.57	...	24.57	24.87	...	24.87	26.65	...	26.65
	5402	6.40	...	6.40	18.28	...	18.28	7.23	...	7.23	28.13	...	28.13
	<i>Total</i>	<i>31.38</i>	<i>...</i>	<i>31.38</i>	<i>42.85</i>	<i>...</i>	<i>42.85</i>	<i>32.10</i>	<i>...</i>	<i>32.10</i>	<i>54.78</i>	<i>...</i>	<i>54.78</i>
17. Radar Imaging Satellite-1 (RISAT-1)	3402	0.71	...	0.71	0.16	...	0.16	0.16	...	0.16	0.12	...	0.12
	5402	0.87	...	0.87	0.79	...	0.79	0.79	...	0.79	0.13	...	0.13
	<i>Total</i>	<i>1.58</i>	<i>...</i>	<i>1.58</i>	<i>0.95</i>	<i>...</i>	<i>0.95</i>	<i>0.95</i>	<i>...</i>	<i>0.95</i>	<i>0.25</i>	<i>...</i>	<i>0.25</i>
18. G.SAT-4/G.SAT-4R/G.SAT-11 EM	3402	...	...	...	1.00	...	1.00	...	...	...	...	...	...
	5402	...	...	...	49.00	...	49.00	...	...	...	...	...	...
	<i>Total</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>50.00</i>	<i>...</i>	<i>50.00</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>
19. Navigational Satellite System (NSS)	3402	21.10	...	21.10	32.07	...	32.07	27.39	...	27.39	31.60	...	31.60
	5402	125.99	...	125.99	186.23	...	186.23	117.11	...	117.11	138.40	...	138.40
	<i>Total</i>	<i>147.09</i>	<i>...</i>	<i>147.09</i>	<i>218.30</i>	<i>...</i>	<i>218.30</i>	<i>144.50</i>	<i>...</i>	<i>144.50</i>	<i>170.00</i>	<i>...</i>	<i>170.00</i>
20. Semi-Conductor Laboratory (SCL)	3402	26.42	31.58	58.00	45.72	34.28	80.00	41.92	34.66	76.58	36.58	38.89	75.47

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		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
21. Advanced Communication Satellite (G - SAT 11 including Launch Services)	3402	5.89	...	5.89	7.55	...	7.55	7.22	...	7.22	6.75	...	6.75
	5402	18.41	...	18.41	402.45	...	402.45	45.28	...	45.28	243.25	...	243.25
	<i>Total</i>	<i>24.30</i>	<i>...</i>	<i>24.30</i>	<i>410.00</i>	<i>...</i>	<i>410.00</i>	<i>52.50</i>	<i>...</i>	<i>52.50</i>	<i>250.00</i>	<i>...</i>	<i>250.00</i>
22. Earth Observation - New Missions, (Cartosat-3, TES Hyperspectral, DMSAR-1, ENVISAT, SCATSAT, RISAT-3, Future EO Missions and GISAT)	3402	...	...	...	18.75	...	18.75	0.90	...	0.90	2.52	...	2.52
	5402	...	...	...	181.25	...	181.25	11.10	...	11.10	47.48	...	47.48
	<i>Total</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>200.00</i>	<i>...</i>	<i>200.00</i>	<i>12.00</i>	<i>...</i>	<i>12.00</i>	<i>50.00</i>	<i>...</i>	<i>50.00</i>
23. SARAL	3402	1.26	...	1.26	1.63	...	1.63	1.37	...	1.37	1.60	...	1.60
	5402	10.84	...	10.84	20.87	...	20.87	19.18	...	19.18	13.40	...	13.40
	<i>Total</i>	<i>12.10</i>	<i>...</i>	<i>12.10</i>	<i>22.50</i>	<i>...</i>	<i>22.50</i>	<i>20.55</i>	<i>...</i>	<i>20.55</i>	<i>15.00</i>	<i>...</i>	<i>15.00</i>
24. Geo-Imaging Satellite (GI-SAT)	3402	...	...	...	...	...	...	...	...	...	2.55	...	2.55
	5402	...	...	...	...	...	...	...	...	...	47.45	...	47.45
	<i>Total</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>50.00</i>	<i>...</i>	<i>50.00</i>
Total-Satellite Technology		476.31	135.59	611.90	1305.98	121.97	1427.95	544.22	131.51	675.73	1038.56	158.50	1197.06
Launch Support, Tracking Network & Range Facility													
25. Satish Dhawan Space Centre - SHAR (SDSC-SHAR)	3402	121.99	105.88	227.87	148.50	97.52	246.02	107.71	125.88	233.59	58.06	151.84	209.90
	5402	125.53	...	125.53	188.75	...	188.75	92.79	...	92.79	227.94	...	227.94
	<i>Total</i>	<i>247.52</i>	<i>105.88</i>	<i>353.40</i>	<i>337.25</i>	<i>97.52</i>	<i>434.77</i>	<i>200.50</i>	<i>125.88</i>	<i>326.38</i>	<i>286.00</i>	<i>151.84</i>	<i>437.84</i>
26. ISRO Telemetry, Tracking & Command Network (ISTRAC)	3402	28.60	41.90	70.50	28.00	47.79	75.79	27.50	78.58	106.08	29.30	61.50	90.80
	5402	26.14	...	26.14	17.57	...	17.57	26.77	...	26.77	35.22	...	35.22
	<i>Total</i>	<i>54.74</i>	<i>41.90</i>	<i>96.64</i>	<i>45.57</i>	<i>47.79</i>	<i>93.36</i>	<i>54.27</i>	<i>78.58</i>	<i>132.85</i>	<i>64.52</i>	<i>61.50</i>	<i>126.02</i>
Total-Launch Support, Tracking Network & Range Facility		302.26	147.78	450.04	382.82	145.31	528.13	254.77	204.46	459.23	350.52	213.34	563.86
Total-Space Technology		1957.55	580.00	2537.55	3444.31	573.28	4017.59	2099.61	645.01	2744.62	3358.60	709.51	4068.11
Space Applications													
27. Space Applications Centre (SAC)	3402	89.04	116.98	206.02	101.07	128.76	229.83	104.65	123.75	228.40	109.98	132.56	242.54
	5402	66.76	...	66.76	190.92	...	190.92	79.20	...	79.20	64.01	...	64.01
	<i>Total</i>	<i>155.80</i>	<i>116.98</i>	<i>272.78</i>	<i>291.99</i>	<i>128.76</i>	<i>420.75</i>	<i>183.85</i>	<i>123.75</i>	<i>307.60</i>	<i>173.99</i>	<i>132.56</i>	<i>306.55</i>
28. Development and Education Communication Unit(DECU)	3402	12.56	8.55	21.11	72.54	10.80	83.34	11.39	9.14	20.53	40.20	10.11	50.31
	5402	1.31	...	1.31	1.02	...	1.02	1.02	...	1.02	0.81	...	0.81
	<i>Total</i>	<i>13.87</i>	<i>8.55</i>	<i>22.42</i>	<i>73.56</i>	<i>10.80</i>	<i>84.36</i>	<i>12.41</i>	<i>9.14</i>	<i>21.55</i>	<i>41.01</i>	<i>10.11</i>	<i>51.12</i>
29. National Natural Resources Management System(NNRMS)	3402	29.41	...	29.41	74.82	...	74.82	36.14	...	36.14	53.74	...	53.74

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		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
30. Earth Observation Application Mission(EOAM)	3402	1.74	...	1.74	2.53	...	2.53	1.79	...	1.79	2.80	...	2.80
31. National Remote Sensing Centre (NRSC)	3402	59.47	67.50	126.97	62.92	78.25	141.17	63.85	81.58	145.43	69.03	82.22	151.25
	5402	68.84	...	68.84	82.63	...	82.63	54.84	...	54.84	122.27	...	122.27
	<i>Total</i>	<i>128.31</i>	<i>67.50</i>	<i>195.81</i>	<i>145.55</i>	<i>78.25</i>	<i>223.80</i>	<i>118.69</i>	<i>81.58</i>	<i>200.27</i>	<i>191.30</i>	<i>82.22</i>	<i>273.52</i>
32. Indian Institute of Remote Sensing	3402	...	...	...	...	...	...	...	...	...	19.30	10.00	29.30
	5402	...	...	...	...	...	...	...	...	...	3.18	...	3.18
	<i>Total</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>22.48</i>	<i>10.00</i>	<i>32.48</i>
33. Disaster Management Support (DMS)	3402	17.26	...	17.26	28.40	...	28.40	13.98	...	13.98	21.48	...	21.48
	5402	3.92	...	3.92	6.17	...	6.17	4.89	...	4.89	8.90	...	8.90
	<i>Total</i>	<i>21.18</i>	<i>...</i>	<i>21.18</i>	<i>34.57</i>	<i>...</i>	<i>34.57</i>	<i>18.87</i>	<i>...</i>	<i>18.87</i>	<i>30.38</i>	<i>...</i>	<i>30.38</i>
34. North Eastern Space Applications Centre (NE-SAC)	3402	...	1.75	1.75	6.07	1.93	8.00	6.07	1.93	8.00	5.90	2.10	8.00
Total-Space Applications		350.31	194.78	545.09	629.09	219.74	848.83	377.82	216.40	594.22	521.60	236.99	758.59
Space Sciences													
35. Physical Research Laboratory (PRL)	3402	33.97	13.16	47.13	48.31	32.39	80.70	39.65	35.88	75.53	71.97	39.93	111.90
36. National Atmospheric Research Laboratory (NARL)	3402	8.43	0.67	9.10	16.44	2.90	19.34	12.58	3.25	15.83	13.70	3.50	17.20
37. National Institute of Climate change and Environmental Studies	3402	...	...	...	0.10	...	0.10	0.10	...	0.10	1.00	...	1.00
38. RESPOND	3402	14.10	...	14.10	15.00	...	15.00	16.10	...	16.10	21.80	...	21.80
39. Sensor Payload Development / Planetary Science Programme	3402	3.03	...	3.03	30.00	...	30.00	1.95	...	1.95	20.00	...	20.00
40. Megha-tropiques Project	3402	1.94	...	1.94	1.13	...	1.13	1.55	...	1.55	0.31	...	0.31
	5402	6.84	...	6.84	0.87	...	0.87	3.80	...	3.80	0.09	...	0.09
	<i>Total</i>	<i>8.78</i>	<i>...</i>	<i>8.78</i>	<i>2.00</i>	<i>...</i>	<i>2.00</i>	<i>5.35</i>	<i>...</i>	<i>5.35</i>	<i>0.40</i>	<i>...</i>	<i>0.40</i>
41. ADITYA	3402	...	...	...	1.22	...	1.22	0.70	...	0.70	0.75	...	0.75
	5402	6.09	...	6.09	38.78	...	38.78	17.80	...	17.80	19.25	...	19.25
	<i>Total</i>	<i>6.09</i>	<i>...</i>	<i>6.09</i>	<i>40.00</i>	<i>...</i>	<i>40.00</i>	<i>18.50</i>	<i>...</i>	<i>18.50</i>	<i>20.00</i>	<i>...</i>	<i>20.00</i>
42. Astrosat 1 & 2	3402	0.59	...	0.59	0.83	...	0.83	0.77	...	0.77	0.80	...	0.80
	5402	6.63	...	6.63	9.17	...	9.17	6.23	...	6.23	5.20	...	5.20
	<i>Total</i>	<i>7.22</i>	<i>...</i>	<i>7.22</i>	<i>10.00</i>	<i>...</i>	<i>10.00</i>	<i>7.00</i>	<i>...</i>	<i>7.00</i>	<i>6.00</i>	<i>...</i>	<i>6.00</i>
43. Indian Lunar Mission - Chandrayan - 1 & 2	3402	3.19	...	3.19	7.70	...	7.70	5.01	...	5.01	5.83	...	5.83
	5402	22.73	...	22.73	72.30	...	72.30	64.99	...	64.99	76.67	...	76.67
	<i>Total</i>	<i>25.92</i>	<i>...</i>	<i>25.92</i>	<i>80.00</i>	<i>...</i>	<i>80.00</i>	<i>70.00</i>	<i>...</i>	<i>70.00</i>	<i>82.50</i>	<i>...</i>	<i>82.50</i>
44. Mars Orbiter Mission	3402	4.10	...	4.10
	5402	10.00	...	10.00	120.90	...	120.90
	<i>Total</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>10.00</i>	<i>...</i>	<i>10.00</i>	<i>125.00</i>	<i>...</i>	<i>125.00</i>

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		Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
45. ISRO Geosphere Biosphere Programme (ISRO GBP)	3402	17.15	...	17.15	24.74	...	24.74	21.10	...	21.10	27.69	...	27.69
46. Atmospheric Science Programmes	3402	16.94	...	16.94	25.20	...	25.20	15.87	...	15.87	18.70	...	18.70
47. Small Satellites for Atmospheric Studies and Astronomy	3402	1.74	...	1.74	4.00	...	4.00	4.55	...	4.55	1.10	...	1.10
	5402	...	...	...	1.00	...	1.00	1.00	...	1.00	1.36	...	1.36
	<i>Total</i>	<i>1.74</i>	<i>...</i>	<i>1.74</i>	<i>5.00</i>	<i>...</i>	<i>5.00</i>	<i>5.55</i>	<i>...</i>	<i>5.55</i>	<i>2.46</i>	<i>...</i>	<i>2.46</i>
48. Other Schemes	3402	6.50	2.00	8.50	17.04	2.00	19.04	8.80	2.00	10.80	14.10	3.00	17.10
Total-Space Sciences		149.87	15.83	165.70	313.83	37.29	351.12	232.55	41.13	273.68	425.32	46.43	471.75
Direction & Administration/Other Programmes													
49. Special Indigenisation/Advance Ordering	3402	11.57	...	11.57	218.76	...	218.76	15.39	...	15.39	10.74	...	10.74
	5402	460.00	...	460.00	20.00	...	20.00	1.50	...	1.50	94.25	...	94.25
	<i>Total</i>	<i>471.57</i>	<i>...</i>	<i>471.57</i>	<i>238.76</i>	<i>...</i>	<i>238.76</i>	<i>16.89</i>	<i>...</i>	<i>16.89</i>	<i>104.99</i>	<i>...</i>	<i>104.99</i>
50. Others	3402	1.89	54.40	56.29	2.95	58.86	61.81	2.80	59.35	62.15	2.80	66.38	69.18
	5402	22.65	...	22.65	12.76	...	12.76	12.62	...	12.62	12.39	...	12.39
	<i>Total</i>	<i>24.54</i>	<i>54.40</i>	<i>78.94</i>	<i>15.71</i>	<i>58.86</i>	<i>74.57</i>	<i>15.42</i>	<i>59.35</i>	<i>74.77</i>	<i>15.19</i>	<i>66.38</i>	<i>81.57</i>
Total-Direction & Administration/Other Programmes		496.11	54.40	550.51	254.47	58.86	313.33	32.31	59.35	91.66	120.18	66.38	186.56
INSAT Operational													
51. Master Control Facility (MCF)	3252	7.02	26.39	33.41	8.00	27.63	35.63	7.84	29.50	37.34	8.02	31.57	39.59
	5252	6.95	...	6.95	9.80	...	9.80	6.27	...	6.27	30.93	...	30.93
	<i>Total</i>	<i>13.97</i>	<i>26.39</i>	<i>40.36</i>	<i>17.80</i>	<i>27.63</i>	<i>45.43</i>	<i>14.11</i>	<i>29.50</i>	<i>43.61</i>	<i>38.95</i>	<i>31.57</i>	<i>70.52</i>
52. INSAT-3 Satellites (Including Launch Services)	3252	0.09	...	0.09	82.81	...	82.81	88.14	...	88.14	39.00	...	39.00
	5252	16.77	...	16.77	44.59	...	44.59	111.96	...	111.96	261.75	...	261.75
	<i>Total</i>	<i>16.86</i>	<i>...</i>	<i>16.86</i>	<i>127.40</i>	<i>...</i>	<i>127.40</i>	<i>200.10</i>	<i>...</i>	<i>200.10</i>	<i>300.75</i>	<i>...</i>	<i>300.75</i>
53. INSAT-4 Satellites (Including Launch Services and Leasing of Transponders)	3252	88.46	...	88.46	227.54	...	227.54	130.36	...	130.36	246.56	...	246.56
	5252	530.29	...	530.29	685.56	...	685.56	164.24	...	164.24	395.34	...	395.34
	<i>Total</i>	<i>618.75</i>	<i>...</i>	<i>618.75</i>	<i>913.10</i>	<i>...</i>	<i>913.10</i>	<i>294.60</i>	<i>...</i>	<i>294.60</i>	<i>641.90</i>	<i>...</i>	<i>641.90</i>
54. GSAT-7 Launch Services	3252	...	...	...	...	...	...	60.00	...	60.00	52.70	...	52.70
	5252	...	...	...	...	...	...	120.90	...	120.90	155.00	...	155.00
	<i>Total</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>...</i>	<i>180.90</i>	<i>...</i>	<i>180.90</i>	<i>207.70</i>	<i>...</i>	<i>207.70</i>
Total-INSAT Operational		649.58	26.39	675.97	1058.30	27.63	1085.93	689.71	29.50	719.21	1189.30	31.57	1220.87
Total-Space Research		3603.42	871.40	4474.82	5700.00	916.80	6616.80	3432.00	991.39	4423.39	5615.00	1090.88	6705.88
Grand Total		3603.42	878.81	4482.23	5700.00	926.00	6626.00	3432.00	1000.00	4432.00	5615.00	1100.00	6715.00

during 12th plan, will be a follow-on satellite for Oceansat-2 to provide continuity of data on Ocean & Coastal resources.

14. **Resourcesat-2 & 3:** Taking into account the increased use of space imageries for different applications and continued Earth Observation services required from the IRS satellites, Resourcesat-2 has been conceived as a continuity mission with enhanced capabilities which will be mainly for crop applications, vegetation dynamics and natural resources census applications. The spacecraft is configured with 11.5 K bus which carries three optical Remote Sensing Payloads, LISS-3, LISS-4 and AWIFS & additional AO payload known as AIS from COMDEV, Canada. Resourcesat-2 was launched on April 20, 2011 on-board PSLV-C16. Resourcesat-3 satellite which is planned as a follow-on mission to Resourcesat-2 will provide continuity of data and services.

15. **ISRO Satellite Centre (ISAC):** ISAC is the lead Center for the design, fabrication, testing and management of satellite systems for scientific, technological and application missions.

16. **Laboratory for Electro-Optics Systems (LEOS):** LEOS is responsible for research & development and production of electro-optics sensors.

17. **Radar Imaging Satellite-1 (RISAT-1):** Radar Imaging Satellite (RISAT-1) is intended to provide all-weather, day and night imaging capability providing vital inputs for various agricultural and disaster management applications. RISAT-1 weighing 1850 kg is planned to be launched on-board PSLV during March 2012.

18. **GSAT-4/GSAT-4R/GSAT-11 EM:** The objective of the GSAT-4 was to conduct various experiments in the communications area and early introduction of geo-based navigation system. The satellite was launched on April 15, 2010 on board GSLV D3 which was unsuccessful. GSAT-4R & GSAT-11 EM are the two experimental Satellites being planned as payloads for future GSLV flights.

19. **Navigation Satellite System (NSS):** The Indian Regional Navigation Satellite System (IRNSS), is planned to be a constellation of 7 satellites 3 in GEO and 4 in GSO orbit. This satellite is expected to provide position accuracies similar to Global Positioning System (GPS) in a region centered around India with a coverage extending upto 1500 km from India. The IRNSS spacecraft bus is being realised around 1 K bus specifically configured for PSLV Launch with a lift off mass of 1370 kg. The first IRNSS satellite (IRNSS 1) is targeted for launch during 2012 2013.

20. **Semi-conductor Laboratory:** SCL is engaged in the Design, Development and Manufacture of Very Large Scale Integrated (VLSIs) devices and Board Level Products to meet the stringent quality requirement of strategic sectors. SCL is to undertake radiation hardened devices and about more than 60 types of ASICs have been identified for development by SCL for Space Programme.

21. **Advanced Communication Satellite (GSAT-11 - including Launch Services):** The main objective is to develop a 4 tonne class communication satellite incorporating advanced technologies of relevance for future. The configuration of the satellite is under finalisation.

22. **Earth Observation New Missions (TES Hyperspectral, DMSAR 1, Cartosat-3, ENVISAT, SCATSAT, RISAT 3, Future EO Missions & GISAT):** Indian Earth Observation program is directed towards providing continuity of EO data for resource management applications and enhancing the imaging capability. Towards this, it is planned to undertake development of Technology Experiment

Satellite in Hyper Spectral Imaging (TES-Hyperspectral), Radar Imaging Satellite for Disaster Management (DMSAR-1) & advanced cartography satellite (Cartosat-3) & GISAT.

23. **SARAL:** The objective of the Satellite with Argos and AltiKa (SARAL) mission are to design and develop satellite bus in the weight range of 400 Kg & to establish required ground infrastructure for receiving and processing of the data within India for ocean related applications. Two payloads namely AltiKa and ARGOS are planned in this mission. SARAL is a co-operative mission between DOS/ISRO and CNES, France with payloads from CNES and the spacecraft bus from DOS/ISRO.

24. **GISAT:** Geo Imaging satellite (GISAT) is conceived as a multi-spectral, multi-resolution advanced remote sensing satellite capable of imaging from geo-stationary orbit.

25. **Satish Dhawan Space Centre-SHAR (SDSC SHAR)::** SDSC SHAR provides the launch infrastructure as well as solid propellant processing.

26. **ISRO Telemetry, Tracking and Command Network (ISTRAC)::** ISTRAC provides spacecraft TTC and Mission Control services to major launch vehicle and spacecraft missions.

27. **Space Applications Centre (SAC)::** SAC is the lead Center for the development of communication, meteorological and remote sensing payloads besides R&D in space applications.

28. **Development and Educational Communication Unit (DECU)::** DECU is involved in the conceptualisation, definition, planning, implementation and socio-economic evaluation of developmental space applications.

29. **National Natural Resources Management System (NNRMS)::** The National Natural Resources Management System (NNRMS) has the objective of ensuring optimal management/utilization of natural resources by integrating information derived from remote sensing data with conventional techniques.

30. **Earth Observation Applications Mission (EOAM)::** The main goal of the Earth Observation Application Mission (EOAM) are to (i) evolve newer application/R&D programmes based on technology trends leading to operational applications programmes; (ii) guiding total remote sensing applications programmes towards implementation of remote-sensing based solutions and (iii) steering commercial activities of remote sensing involving development of value-added services.

31. **National Remote Sensing Centre (NRSC)::** NRSC is responsible for acquisition, processing, distribution and archiving of data from remote sensing satellites and is continuously exploring the practical uses of remote sensing technology for multilevel (global to local applications).

32. **Indian Institute of Remote Sensing (IIRS)::** Indian Institute of Remote Sensing (IIRS), located at Dehradun, is a premier training and educational institute set up for developing trained professional in the field of Remote Sensing, Geoinformatics and GPS Technology for Natural Resources, Environmental and Disaster Management.

33. **Disaster Management Support (DMS)::** The main objective of Disaster Management Support Programme is to provide Space inputs & services on a timely & reliable basis for the Disaster Management System in the country.

34. **North Eastern-Space Applications Centres (NE-SAC)::** NE-SAC set up as an autonomous society jointly with North Eastern Council, is supporting the North Eastern region by providing information on natural resources utilization and monitoring, infrastructure developmental planning and interactive training using space technology inputs of remote sensing and satellite communication

35. **Physical Research Laboratory (PRL)::** PRL, an autonomous institution funded by the Department of Space through grant-in-aid, is one of the premier research institutions in the country carrying out basic research in several areas of experimental & theoretical physics and earth sciences.

36. **National Atmospheric Research Laboratory (NARL)::** NARL, a registered Society, is responsible for carrying out advanced research in atmospheric and space sciences and related disciplines.

37. **National Institute of Climate Change & Environment Studies (NICES)::** It is envisaged to set up an Institute to carry out focused research in Climate Change & Environment.

38. **RESPOND::** The (RESPOND) Programme of ISRO supports sponsored research activity in Space Science, Space Applications and Space Technology in various national academic/research institutions and Space Technology Cells in premier technological institutes of the country.

39. **Sensor Payload Development/Planetary Science Programme::** It includes funding requirement for advance action for activities related to scientific payload developments for space science and planetary exploration studies in different institutions and universities.

40. **Megha-tropiques Project::** Megha-tropiques is an ISRO CNES (France) joint mission and is intended for studying tropical atmosphere and climate related to aspects such as monsoons, cyclones, etc., using a satellite platform. The satellite was launched on October 12, 2011 on-board PSLV-C18.

41. **ADITYA::** The ADITYA-1 Project will be the first Indian Space based solar coronagraph, which will be available for solar coronal observation to all the Indian researchers in the field of Solar Astronomy. The major scientific objective of the ADITYA-1 is to achieve a fundamental understanding of the physical processes that heat the solar corona (base to the extended), accelerate the solar wind and produce Coronal Mass Ejections (CMEs). Work on ADITYA-1 has been initiated.

42. **Astrosat 1 & 2::** The objective of the Astrosat project is to build and launch an astronomical observatory satellite for expanding the scientific knowledge about the evolution of stellar objects and gather valuable scientific data on high energy Astronomy and Astrophysics research. The satellite is planned to be launched on-board PSLV during 2013-2014.

43. **Indian Lunar Chandrayaan-1 & 2::** The main objective of Indian Lunar Chandrayaan-1 is for expanding the scientific knowledge about the moon, upgrading the technological capability and providing the challenging opportunity for planetary research for a large number of growing young people of the country benefiting the human society at large. The Chandrayaan-1 was successfully launched on October 22, 2008 on-board PSLV-C11. The follow-on mission Chandrayaan-2 has been planned to be launched during 2014-15.

44. **Mars Orbiter Mission::** Mars Orbiter Mission envisages launching an Orbiter around Mars using Polar Satellite Launch Vehicle (PSLV-XL) during the November 2013 launch opportunity. MARS orbiter will be placed in an orbit of 500 x 80,000 km around MARS and will have a provision for carrying nearly 25 kg of scientific payloads on-board.

45. **ISRO Geosphere-Biosphere Programme (ISRO-GBP)::** ISRO-GBP encompasses the study of land and ocean interaction, past climate, changes in atmospheric composition, aerosols, carbon cycle, bio-mass estimation, bio-diversity and other related areas of scientific investigation.

46. **Atmospheric Science Programmes::** Atmospheric Science Programmes are intended to develop advanced observation tools & techniques of atmospheric modeling, leading to operational end user products in different domains of atmospheric science.

47. **Small Satellite for Atmospheric Studies & Astronomy::** The project envisages development of small satellites for study of Earth near space environment, magnetometer studies, study of aerosol and gases, tropical weather and climate studies.

48. **Other Schemes::** These includes Microgravity Research, Space Science promotion, Multi-institutional research programmes, Space Station experiment, setting up of Digital workflow systems, support for conferences, symposia, etc.

49. **Special Indigenisation/Advance Ordering::** Indigenisation envisages ISRO to have interface with the Indian Industry to develop various electronic components, materials, chemicals, etc., for the space programme. The scope of the scheme also includes procurement of certain long lead and critical items for futuristic missions and upgradation of VLSI fabrication facilities at SCL.

50. **Others::** Under this, provision has been included for ISRO Headquarters, International Co-operation and Central Management.

51. **Master Control Facility::** MCF is responsible for initial orbit raising, payload testing and in-orbit operation of all geo-stationary satellites.

52. **INSAT-3 Satellites (including Launch Services)::** The objective of INSAT-3 Spacecraft Project are to (i) build five INSAT-3 satellites (INSAT-3A to INSAT-3E) keeping the flexibility for mid-course corrections to accommodate emerging requirements, carry out mission planning, launch campaign and initial phase operations and (ii) establish required programme elements for carrying out the same. INSAT-3D satellite which is scheduled to be launched during 2012-13 has been configured as an advanced meteorological Satellite with new payloads such as Imager and Sounder.

54. **INSAT-4/GSAT Satellites (including Launch Services and Leasing of Transponders)::** The fourth generation INSAT-4/GSAT Satellite series has been planned to meet the capacity and service requirements projected by various users and development needs of the country. INSAT-4A, 4B, 4CR, GSAT-12, GSAT-4G satellites in the INSAT-4 series have been launched & operationalised. Work on INSAT - 4E, GSAT-9 and GSAT-10 are in progress.

54. **GSAT-7 Launch Services::** GSAT-7 is a user funded communication satellite. GSAT-7 was initially planned for launch on-board GSLV. Due to the schedule criticality of GSAT-7

satellite, now approval for the launch of GSAT-7 satellite through procured launch services is being sought.