



Sl No	Title of the R&D project	Total cost of project	Govt. Funding	Fund Released (in Rs. Lakh)															Total Fund released			
				2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19			2019-20				2020-21		
														Total	Capital	Revenue	Total	Capital		Revenue	Total	Capital
<b>F Projects Approved In-Principle in the 4 PAMC Meeting held on 8 Dec 2014 and thereafter by PAMC by circulation</b>																						
12	Economic production of iron through direct reduction of Mill Scale by low grade coal of Rajasthan by MNIT Jaipur	540.00	166.00								141.00	25.00									166.00	
13	Develop Procedure for Joining Next Generation High Temperature Material to be used for Supercritical/ Ultra Supercritical Power Plant by Friction Stir Welding by Jadavpur University in association with MECON	567.26	558.26								481.10										481.10	
<b>Total (F)</b>		<b>1,107.26</b>	<b>724.26</b>							<b>0.00</b>	<b>622.10</b>	<b>25.00</b>	<b>0.00</b>								<b>647.10</b>	
<b>G Projects Approved In-Principle in the 5 PAMC Meeting held on 12th January 2016</b>																						
14	Development of Cost Effective Refractory Lining Materials for Induction Melting Furnace suitable for production of Quality Steel by CGCRI & NISST	165.00	165.00								132.00		33.00								165.00	
15	Development of Dry Slag Granulation Technology and Energy Recovery System for Blast Furnace Slag for Producing Clinker Compatible Product by IIT Madras & JSW	168.74	84.37								39.02	15.92		29.43	7.43	22.00					84.37	
16	Development of infrared camera based torpedo ladle car condition monitoring system by MECON	308.00	154.00									134.50		19.50	0.00	19.50					154.00	
<b>Total (G)</b>		<b>641.74</b>	<b>403.37</b>							<b>0.00</b>	<b>171.02</b>	<b>150.42</b>	<b>33.00</b>	<b>48.93</b>	<b>7.43</b>	<b>41.50</b>					<b>403.37</b>	
<b>H Projects Approved in the 6 PAMC Meeting held on 17th October 2016</b>																						
17	Development of nickel free nitrogen austenitic stainless steel for biomedical applications by IIT BHU	284.45	284.45								228.00			28.06	0.00	28.06	28.39	0.00	28.39	0.00	284.45	
18	Indigenous Development of Model based Breakout Prediction System (BOPS) for Continuous Casters by RDCIS	582.00	260.00								111.77	133.23									245.00	
19	Development of Fluidised Bed Reduction Roasting Process for slimes & low grade iron ores by utilizing thermal grade coal for their magnetic susceptibility properties and maximizing the iron recovery by IIT Madras & JSW Steel	245.52	122.76								56.82			21.06	8.00	13.06	44.88	25.00	19.88	0.00	122.76	
20	Production of low Carbon & low Phosphorus Ferromanganese by metallothermic treatment of high Manganese Slag using Silicomanganese by NML Jamshedpur.	150.00	150.00								116.00			34.00	0.00	34.00					150.00	
21	Production of highly metallised Directly Reduced Iron from mill scale & lean grade coal in Tunnel Kiln by NML Jamshedpur.	203.00	151.00								151.00										151.00	
22	Reduction Roasting and Microwave Heating of some difficult to treat Ores for the production of Pellet Feed Concentrate by IMMT Bhubaneswar	124.80	124.80								78.00			30.00	10.00	20.00	16.80	0.00	16.80	0.00	124.80	
23	Modeling & Optimization of High Concentration Iron Ore fines /concentrate slurry Pipelines for Indian Iron Ore Processing Industries by IMMT Bhubaneswar & NMDC Ltd.	425.00	212.50								113.70			64.50	43.50	21.00	34.30	0.00	34.30	0.00	212.50	
<b>Total (H)</b>		<b>2,014.77</b>	<b>1,305.51</b>							<b>0.00</b>	<b>0.00</b>	<b>855.29</b>	<b>133.23</b>	<b>177.62</b>	<b>61.50</b>	<b>116.12</b>	<b>124.37</b>	<b>25.00</b>	<b>99.37</b>	<b>0.00</b>	<b>0.00</b>	<b>1,290.51</b>
<b>I Projects Approved in the 7 PAMC Meeting held on 6th February 2017</b>																						
24	Development of a cost effective green technology for Pre Reduction of Chromite Ore in Tunnel Kiln and Production of High Carbon Ferro Chrome in SAF by NISST, NML & MECPL	614.00	306.50								161.00	70.02		70.02	75.48	0.00	75.48	0.00			306.50	
25	A Novel Approach of Making Green Belite Cement from Electric Arc Furnace Steel Making Slag by IIT Kharagpur	139.20	139.20								111.48	12.96		12.96	9.38		9.38	0.00			133.82	
26	Amorphous Electrical Steel (AES) for Energy Application submitted by NML Jamshedpur	3,634.00	3,634.00								847.47	135.49	135.49	198.12		198.12	0.00				1,181.08	
<b>Total (I)</b>		<b>4,387.20</b>	<b>4,079.70</b>								<b>1,119.95</b>	<b>218.48</b>	<b>135.49</b>	<b>82.98</b>	<b>282.98</b>	<b>0.00</b>	<b>282.98</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1,621.40</b>	
<b>J Projects Approved in the 8 PAMC Meeting held on 28th September 2018</b>																						

Sl No	Title of the R&D project	Total cost of project	Govt. Funding	Fund Released (in Rs. Lakh)																	Total Fund released				
				2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19			2019-20			2020-21						
				Total	Capital	Revenue	Total	Capital	Revenue	Total	Capital	Revenue	Total	Capital	Revenue										
27	Development of Design Guidelines and Specifications for utilization of steel slag in road construction by CRRI	626.36	286.50										286.50	286.50	0.00										286.50
28	Development of super alloy grade 625 & 825 for commercial market by MIDHANI	2,854.00	800.00										200.00	200.00	0.00	600.00	600.00	0.00	0.00						800.00
29	Optimisation of floatation process for Indian Coking Coal using advanced Pneufлот Floatation Cell by IMMT	91.54	91.54										74.74	40.00	34.74	16.80	0.00	16.80	0.00						91.54
30	Fundamental process engineering to minimize re-oxidation of steel during teeming via a ladle shroud leading to improved castability and cleanliness by IIT Kanpur	154.63	154.63										130.25	87.88	42.37	15.19	4.00	11.19	9.19			9.19			154.63
31	Conversion of emitted CO <sub>2</sub> to chemical fuels by IMMT	77.05	77.05										49.45	30.00	19.45	14.95		14.95	12.65			12.65			77.05
32	Development of newer Cementitious Materials using Chemically Activated LD Slag by CBRI	195.00	195.00										120.00	85.00	35.00										120.00
33	Integrated cost effective technology for attaining Zero liquid discharge in steel plants with emphasis on slag utilization by CIMFR	23.24	23.24										12.12	5.00	7.12	11.12	6.00	5.12	0.00						23.24
34	Synthesis of Kudremukh Iron Ore Mine Tailings based Geopolymer Aggregate using Fly Ash as Precursor in Construction Industry by KIOCL	19.96	11.20										11.20	11.20											11.20
35	Waste Management of Generated Sludge from Indian Steel and Steel Related Plants: A Sustainable Business Model by BITS Pilani	38.05	38.05										23.72	11.50	12.22	6.77		6.77	0.00						30.4900
36	Integrated nanotechnology for coke oven effluent treatment by DSP and Eesavyasa Technologies	425.82	199.82																						
<b>Total (J)</b>				<b>4,505.64</b>	<b>1,877.03</b>							<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1,119.95</b>	<b>907.98</b>	<b>757.08</b>	<b>150.90</b>	<b>664.83</b>	<b>610.00</b>	<b>54.83</b>	<b>21.84</b>	<b>0.00</b>	<b>21.84</b>	<b>1,594.65</b>
<b>K Projects Approved in the 9 PAMC Meeting held on 14th August 2019</b>																									
37	Development of a cost effective refractory lining materials for induction melting furnace suitable for production of quality steel: phase-II (Industrial Trials)" by NISST, CGCRI & NML	309.00	269.00																209.00		209.00	0.00			209.00
38	Indigenous development of Austempered Ductile Iron technology for use in automobile & agricultural industries in India by PEC Chandigarh	189.00	149.00																120.00	95.00	25.00	0.00			120.00
<b>Total (K)</b>				<b>498.00</b>	<b>418.00</b>														<b>329.00</b>	<b>95.00</b>	<b>234.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>329.00</b>
<b>L Projects Approved in the 10 PAMC Meeting held on 27th May 2020</b>																									
39	Simultaneous removal of CO <sub>2</sub> , SO <sub>x</sub> & NO <sub>x</sub> from flue gas and their catalytic conversion into fuels and value added fertilizers by IMMT Bhubaneswar	86.25	86.25																			19.0136		19.0136	19.01
40	Bench Scale Production and Cost Estimation of Silicon Carbide Powder Obtained by Plasma Processing of Rice Husk by IMMT Bhubaneswar	30.00	30.00																			13.10	2.00	11.10	13.10
<b>Total (L)</b>				<b>116.25</b>	<b>116.25</b>											<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>32.11</b>	<b>2.00</b>	<b>30.11</b>	<b>32.11</b>			<b>32.11</b>
<b>Grand Total (A+B+C+D+E+F+G+H+I+J+K+L)</b>				<b>27,102.65</b>	<b>#####</b>	<b>413.50</b>	<b>2,554.62</b>	<b>962.72</b>	<b>2,489.65</b>	<b>800.00</b>	<b>203.00</b>	<b>1,026.13</b>	<b>1,160.17</b>	<b>1,286.18</b>	<b>1,500.00</b>	<b>1,100.00</b>	<b>400.00</b>	<b>1,401.18</b>	<b>730.00</b>	<b>671.18</b>	<b>53.9536</b>	<b>2.00</b>	<b>51.95</b>	<b>13,851.10</b>	

##### 12,395.97

<b>M IMPRINT Projects Approved in the 7th PAMC Meeting held on 6th February 2017</b>																											
1	Indigeneous development of a ultra high strength steel with stainless property for space application by IIT Kharagpur (Project No 6456)	317.00	158.50																119.50	25.50				13.50	13.50	0.00	158.50
2	High strength, wear and corrosion resistant steel for high speed rail and elastic clip by IIT Kanpur (Project No 6777)	396.00	198.00																111.00	45.00				42.00	42.00	0.00	198.00
3	Model based optimization tool (EAF_OPT) for enhancing Energy Efficiency, Productivity and Yield of Electric Arc Furnaces by IIT Kanpur (Project No 8014)	391.92	195.96																109.32	43.32				43.32	43.32	0.00	195.96
<b>Total (K)</b>				<b>1,104.92</b>	<b>552.46</b>							<b>0.00</b>	<b>0.00</b>	<b>339.82</b>	<b>113.82</b>	<b>0.00</b>				<b>98.82</b>	<b>0.00</b>	<b>98.82</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>552.46</b>
<b>Grand Total (A+B+C+D+E+F+G+H+I+J+K+L+M)</b>				<b>28,207.57</b>	<b>#####</b>	<b>413.50</b>	<b>2,554.62</b>	<b>962.72</b>	<b>2,489.65</b>	<b>800.00</b>	<b>203.00</b>	<b>1,026.13</b>	<b>1,499.99</b>	<b>1,400.00</b>	<b>1,500.00</b>				<b>1,500.00</b>	<b>730.00</b>	<b>770.00</b>	<b>53.9536</b>	<b>2.00</b>	<b>51.95</b>	<b>14,403.56</b>		