

## INDICE

<b>Foreword</b>	v
<b>Abstract</b>	vi
<b>Acknowledgements</b>	vii
<b>Abbreviations, acronyms and data note</b>	vii
<b>Executive summary</b>	ix
<b>1. Introduction</b>	
Coal demand and the Asian environment	1
The world banks role	2
Use of the planners guide	3
<b>2. Coal quality and coal cleaning technologies</b>	5
Coal quality	7
Costs	9
Coal cleaning methods	13
Alternative locations for cleaning	
References	15
<b>3. Contribution technologies</b>	17
Pulverized coal combustion	19
Atmospheric circulating fluidized bed combustion	28
Pressurized fluidized bed combustion	35
Integrated gasification combined cycle	38
References	40
<b>4. So<sub>2</sub> emission control technologies</b>	41
Sorbent injection processes	46
Spray dry scrubbers	52
Wet scrubbers/wet flue gas desulfuration	56
Combined SO <sub>2</sub> /NO <sub>x</sub> control	62
References	63
<b>5. NO<sub>x</sub> emission control technologies</b>	65
Low NO <sub>x</sub> combustion technologies	66
Selective non-catalytic reduction	72
Selective catalytic reduction	75
References	79
<b>6. Particulate emission control technologies</b>	81
Electrostatic precipitator technology	82
Fabric filter (baghouse)	86
References	90
<b>7. By-products and waste handling</b>	91
Utilization	92
Disposal	95
Cooling water	102
Wastewater	103
References	106
<b>8. Low-cost refurbishment including O&amp;M improvements</b>	109
Instrumentation and control systems	110
Boiler systems	113
Cooling water systems	114
Auxiliary systems	115

Operation and maintenance	106
<b>9. Technology selection model</b>	
Fast track model	117
Step 1. Project definition	119
Step 2. Technology screening	122
STEP 3. Possible alternatives	124
Step 4. Cost calculation and recommendation	125
<b>10. Case studies using fast track model</b>	
Greenfield plant	131
Boiler retrofit	138
<b>11. Environmental guidelines and requirements</b>	
Proposed world bank requirements	147
Chinese requirements	149
Indian requirements	151
Summary of environmental requirements	153
References	154
	155