

Table S1: Complete Commitment Indicators and Their Degrees Deduced From The Literature

Design Phase Commitment Indicators and Degrees for Waste Reduction				
	Extent of commitment			
Commitments' Indicators for Waste Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Availability of resources	Identify resource demand from project design	Specify designed resource capacity	Specify the resources gap	Close resources gap
The usage level of reuse and recycle construction and demolition materials	Identify the available reuse and recycled materials available in the market	Involve contractors and suppliers in materials design	Integrate the selected recycle and reuse materials in the project design	Conduct materials' life- cycle assessment
The usage level of BIM computer modeling in the project to reduce waste.	Identify the design elements	Collect necessary information	Integrate and analyze construction materials' elements in the design	Using BIM-based material analysis tools
Incorporate design flexibility factors	Identify the design elements	Define the effectiveness of the architectural spaces	Allow for adaptation of the space	Conduct risk analysis
Involve green expertise in terms of waste management	Identify professionals with expertise in green design	Pre-qualify applicants	Select the most suitable professionals with experiences in waste management	Integrate green experts' design ideas
Design Phase Commitment Indicators and Degrees for Energy Consumption Reduction				
	Extent of commitment			
Commitments' Indicators for Energy Consumption Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Incorporation level of renewable energy sources into the project.	Identify the renewable energy technologies available in the market	Select suitable renewable technologies	Integrate the selected renewable technologies with project design	Use dynamic simulation to check project systems synergy
Involve green expertise in terms of energy reduction	Identify professionals with expertise in green design practices	Pre-qualify applicants	Select the most suitable professionals with experiences in energy reduction	Integrate green experts' design ideas

The usage level of BIM computer modeling in the project to reduce energy consumption	Identify the design elements	Collect necessary information	Integrate and analyze renewable energy technologies in the design	Using BIM analysis tools to optimize energy design
The consideration level of operating and maintenance factors during the design	Identify equipment accessibility, standardization, modularization, ease of maintenance for the selected energy equipment and machines	Seek inputs from maintenance personnel	Integrate energy equipment maintenance and operation considerations in the design	Simulate annual loads and peak demands
Design For net-zero energy	Identify innovative technologies and renewable power generation available in the market	Deciding on the most fitting energy-efficient equipment and techniques	Achieving design energy efficiency through reducing the demand for energy	Conduct an asset assessment to identify energy-saving
Design Phase Commitment Indicators and Degrees for Carbon Emission Reduction				
	Extent of commitment			
Commitments' Indicators for Carbon Emission Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Involve green expertise in terms of carbon emission reduction	Identify professionals with expertise in green design practices	Pre-qualify applicants	Select the most suitable professionals with experiences in carbon emission reduction	Integrate green experts' design ideas into project design
The usage level of BIM computer modeling in the project to reduce carbon emissions	Identify the design elements	Collect necessary information	Integrate and analyze renewable energy technologies to identify carbon emission	Using BIM analysis tools to optimize design of mechanical systems and reduce emission
Incorporation level of renewable energy sources into the project to reduce carbon emissions	Identify the renewable energy technologies available in the market and their carbon emission level	Select suitable renewable technologies	Integrate the selected renewable technologies with project design	Use dynamic simulation to check project total carbon emission

Minimizing designs carbon footprint for the project (Net Zero Carbon)	Identify the total carbon footprint for the project design	Specify carbon reduction opportunities	Select alternative layouts, materials, and equipment to reduce carbon emission	Conduct life-cycle assessment based on the carbon footprint
The consideration level of operating and maintenance factors during the design to minimize carbon emission	Identify equipment accessibility, standardization, modularization, ease of maintenance for the equipment and machines selected in the project	Seek inputs from maintenance personnel	Integrate equipment maintenance and operation considerations in the design	Simulate annual loads and peak demands to determine the carbon emission profile
Construction Phase Commitment Indicators and Degrees for Waste Reduction				
	Extent of commitment			
Commitments' Indicators for Waste Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Materials ordering and delivery	Check issued for construction (IFC) drawings	Check material specifications	Ordering materials	Specify expected materials delivery times
Materials storage and installation	Store materials and classify them	Identify the quantity of work and labor productivity to specify materials efficiency	Handling the exact amount of materials	Correctly install raw materials to reduce wastage
Waste auditing	Identify the amount of the waste materials produced during construction	Coordinate with the construction team members to dispose of waste materials	Segregate waste materials	Reuse the recycle and reuse materials on-site
The minimization level of rework in the construction phase	Communicate intensively with designers and client	Identify several potential rework items and categorize them	Prepare a contingency plan	Track responsibility for each rework occurrence
On-site waste management facility	Identify project site layout	Select the best location to set waste management facility	Assign personnel to manage the facility	Hire a waste contractor to deal with construction wastes

Construction Phase Commitment Indicators and Degrees for Energy Consumption Reduction				
	Extent of commitment			
Commitments' Indicators for Energy Consumption Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Access level of the contractor to necessary information	Establish an effective communication method	Exchange essential information and data	Get from consultant complete data set	Predict the energy required based on data collected from consultant
Energy consumption during construction operation	Identify the total energy required to complete construction operations	Identify tools or equipment used to complete construction operations	Specify types of energy used	Reduce energy consumption
The embodied energy level of the project building materials	Identify construction material used in the project	Specify the embodied energy for each construction materials	Classify project construction materials based on embodied energy	Select possible alternatives for high embodied energy material
Reduce materials' transportation distance to reduce energy consumption	Identify selected suppliers and materials manufacturing locations	Identify possible routes between suppliers and manufacturing locations to the project site	Select the shortest route	Prepare a contingency route
Labor efficiency during construction activities	Identify different activities of workers during the project	Specify workers' production level	Classify construction works according to energy needed	Assign the most skilled workers to the activities that require high energy
Construction Phase Commitment Indicators and Degrees for Carbon Emission Reduction				
	Extent of commitment			
Commitments' Indicators for Carbon Emission Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Carbon energy	Identify total energy required to complete construction operations	Identify tools or equipment used to complete construction operations	Specify types of energy used to run project tools and equipment	Reduce energy consumption
Reduce materials transportation	Identify selected suppliers and materials manufacture location and its distance from project site	Identify possible routes between suppliers and materials manufacture location and project site	Select the shortest route to ensure minimum carbon emission	Prepare a contingency route

Reduce carbon emission (embodied carbon)	Identify construction material used in the project	Specify the embodied energy for each construction materials and its carbon emission level	Classify project construction materials from high, medium, and low carbon emission based on embodied energy	Select possible alternative for high embodied energy material (high carbon emission)
Carbon emission from construction waste	Identify the amount of the materials waste produced during construction	Identify direct carbon-based and indirectly carbon-based	Classify the direct and indirect carbon-based emissions	Perform waste auditing on the high direct and indirect carbon emission
Labor efficiency during construction activities	Identify different activities of workers during the project	Specify workers production level	Classify construction works according to energy needed and carbon emission	Assign the most skilled workers to the activities that require high energy and, by extension, high carbon emission
Closeout and Commissioning Phase Commitment Indicators and Degrees for Waste Reduction				
	Extent of commitment			
Commitments' Indicators for Waste Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Incorporate commissioning team with design and construction project team to reduce construction waste	Identify members of the project team with experience in waste management	Select members	Specify and document best practices and strategies	Incorporate commissioning team practices and strategies into project design and construction
Check total construction waste	Identify the amount of all project materials waste at the end of the project	Recorded waste according to the source activity	Segregate waste	Calculate total tons (or bulk m ³) of waste sent to landfill
Identify and document lessons learned for waste management	Identify best practices implemented in the project for waste management	Classify best practices	Document best waste management practices in the project	Retain the lessons-learned reports on a shared drive
Waste management checklist for project activities	Identify project systems used to reduce project waste	Specify a list of actions that must be performed	Check the fulfillment of project systems	Identify which system has low performance in waste management checklist

Salvaging reuse and recycling construction waste	Identify the amount of all project materials waste at the end of the project	Segregate waste	Specify quality and condition of materials and components	Contract with special contractor to handle's with reuse and recycle construction materials
Closeout and Commissioning Phase Commitment Indicators and Degrees for Energy Consumption Reduction				
	Extent of commitment			
Commitments' Indicators for Energy Consumption Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Incorporate commissioning team with design and construction project team to reduce energy consumption	Identify members of the project team with experience in energy reduction	Select members to be involved in the commissioning team	Specify and document best practices and strategies in terms of energy conservation	Incorporate commissioning team practices and strategies into project design and construction
Identify and document lessons learned for energy consumption	Identify best practices implemented in the project for energy conservation	Classify best practices according to project phases	Document best energy conservation practices in the project	Retain the lessons-learned reports on a shared drive
Energy conservation checklist for project systems	Identify project activities and systems used to reduce project energy consumption	Specify a list of actions that must be performed to reduce project energy consumption	Check the fulfillment of project systems	Identify which activity and systems that has low performance in energy conservation checklist
Check total of project energy consumption	Identify total amount of energy consumption from all project systems and machines	Specify energy consumption of project systems from the nonrenewable energy source	Specify renewable energy produced from the project	Calculate the net energy of the building
Check electrical systems synergy	Identify project systems that are integrated with each other	Specify the tolerance energy load for the building systems	Measure the efficiency of system recovery during power failure through simulation	Evaluate and test energy function and operation

Closeout and Commissioning Phase Commitment Indicators and Degrees for Carbon Emission Reduction				
	Extent of commitment			
Commitments' Indicators for Carbon Emission Reduction	1: Low Commitment	2: Medium Commitment	3: High Commitment	4: Excellent Commitment
Incorporate the commissioning team with design and construction project team to reduce carbon emission	Identify members of the project team with experience in carbon emission reduction	Select members to be involved in the commissioning team	Specify and document best practices and strategies in terms of carbon emission reduction included in design and construction stages	Incorporate commissioning team practices and strategies into project design and construction to ensure carbon emission reduction
Identify and document lessons learned for carbon emission reduction	Identify best practices implemented in the project for carbon emission reduction	Classify best practices according to project phases	Document best carbon emission reduction practices in the project	Retain the lessons-learned reports on a shared drive
Carbon emission checklist for project systems.	Identify project activities and systems used to reduce project carbon emission	Specify a list of actions that must be performed in each activity and system to reduce project carbon emission	Check the fulfillment of project activities and systems	Identify which activity and systems has low performance in carbon emission checklist
Calculating the total carbon footprint of the project.	Identify sources of carbon emission at project completion	Specify direct carbon emissions	Estimate the carbon emission saved through using different renewable project equipment and machines	Calculate the net carbon emission of the building
Carbon offset	Identify project carbon emission that cannot not be reduced	Specify project's offset strategy	Identify and select a reputable offset provider based on the budget	Implement the carbon offset strategy

Table S2: Expert Panel Responses

Commitments Indicators in Design Phase										
	Fulfill Waste Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator or Weight
	Availability of resources.	2	3	3	0	0	3.875	5	42	0.00509
	The usage level of reuse and recycle construction and demolition materials in the project design	4	3	1	0	0	4.375	1	8	0.02671
	The usage level of BIM computer modeling in the project design to reduce waste.	3	2	3	0	0	4	4	35	0.00611
	Incorporate design flexibility and durability (buildings that are designed with the flexibility to adapt to changing functions over long useful lives)	4	3	0	0	1	4.125	3	25	0.00855
	Involving green experts with waste management experience in the design team	3	4	1	0	0	4.25	2	18	0.01187
	Fulfill Energy Consumption Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator or Weight
	Incorporation level of renewable energy sources into the project design	4	4	0	0	0	4.5	1	4	0.05342
	Involving green experts with energy reduction experience in the design team	4	4	0	0	0	4.5	2	5	0.04274
	The usage level of BIM computer modeling in the project design to reduce energy consumption.	2	4	2	0	0	4	5	36	0.00594
	The consideration level of operating and maintenance factors during the design.	4	3	0	0	1	4.125	4	26	0.00822
	Design for net-zero energy	3	4	1	0	0	4.25	3	19	0.01125
Commitments										
	Fulfill Carbon Emissions Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator or Weight
	Involving green experts with carbon emission reduction experience in the design team	3	5	0	0	0	4.375	1	9	0.02374

	The usage level of BIM computer modeling in the project design to reduce carbon emissions.	1	3	4	0	0	3.625	5	52	0.00411
	Incorporation level of renewable energy sources into the project to reduce carbon emissions.	2	5	1	0	0	4.125	4	27	0.00791
	Minimizing designs carbon footprint for the project (Net Zero Carbon)	4	3	1	0	0	4.375	2	10	0.02137
	The consideration level of operating and maintenance factors during the design to minimize carbon emission.	5	2	0	0	1	4.25	3	20	0.01068
Commitments Indicators in Construction Phase	Fulfill Waste Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator Weight
	Organizing materials ordering and delivery	3	2	3	0	0	4	3	37	0.00578
	Organizing Materials storage and installation	3	1	4	0	0	3.875	5	43	0.00497
	Conducting waste auditing	2	5	0	1	0	4	4	38	0.00562
	The minimization level of rework in the construction phase.	4	2	2	0	0	4.25	2	21	0.01018
	Developing on-site waste management facility	5	1	2	0	0	4.375	1	11	0.01943
	Fulfill Energy Consumption Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator Weight
	Access level of the contractor to necessary information regarding energy consumption from pre-construction planning data	0	5	2	1	0	3.5	2	54	0.00396
	Identifying energy consumption during construction operation.	1	5	2	0	0	3.875	1	44	0.00486
The embodied energy level of the project building materials.	0	5	1	1	1	3.25	5	58	0.00368	
Commitments Indicators in	Reduce materials transportation distance to reduce energy consumption.	1	3	3	0	1	3.375	4	57	0.00375
	Specify labor efficiency during construction activities to reduce energy consumption	1	3	3	1	0	3.5	3	55	0.00389

	Fulfill Carbon Emissions Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator Weight
	Reduce Energy consumption during construction operation to minimize carbon emission	3	4	1	0	0	4.25	1	22	0.00971
	Reduce materials transportation distance to reduce carbon emission	1	2	2	1	2	2.875	4	59	0.00362
	Reduce carbon emission (embodied carbon) through minimizing embodied energy of the project building materials	1	5	1	1	0	3.75	3	50	0.00427
	Minimize carbon emission from construction waste	3	4	1	0	0	4.25	2	23	0.00929
	Specify labor efficiency during construction activities to reduce carbon emission	0	3	3	0	2	2.875	5	60	0.00356
Commitments Indicators in Closeout/Commissioning Phase	Fulfill Waste Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator Weight
	Incorporate commissioning team with design and construction project team to reduce construction waste.	2	2	4	0	0	3.75	4	51	0.00419
	Specify the total amount of project waste produced at the project end	1	4	2	0	1	3.5	5	56	0.00382
	Identify and document lessons learned for waste management practices applied in the project	2	5	1	0	0	4.125	2	28	0.00763
	Check the waste management checklist for project activities	3	2	3	0	0	4	3	39	0.00548
	Salvaging reuse and recycling construction waste	4	4	0	0	0	4.5	1	6	0.03561
	Fulfill Energy Consumption Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator Weight
	Incorporate commissioning team with design and construction project team to reduce energy consumption.	3	3	2	0	0	4.125	2	29	0.00737

Identify and document lessons learned for energy consumption reduction practices applied in the project	3	5	0	0	0	4.375	1	12	0.01781
Check energy conservation checklist for project systems.	2	4	2	0	0	4	4	40	0.00534
Check total of project energy consumption.	2	4	1	1	0	3.875	5	45	0.00475
Check electrical systems synergy to ensure energy consumption reduction	1	7	0	0	0	4.125	3	30	0.00712
Fulfill Carbon Emissions Reduction	Frequency of "5"	Frequency of "4"	Frequency of "3"	Frequency of "2"	Frequency of "1"	Average Rate	Rank	Overall Rank	Indicator or Weight
Incorporate commissioning team with design and construction project team to reduce carbon emission.	2	4	2	0	0	4	4	41	0.00521
Identify and document lessons learned for carbon emission reduction practices applied in the project	3	5	0	0	0	4.375	1	13	0.01644
Check carbon emission checklist for project systems	2	3	3	0	0	3.875	5	46	0.00465
Estimating the total carbon footprint of the project	4	2	1	1	0	4.125	3	31	0.00689
Develop carbon offset strategy	3	5	0	0	0	4.375	2	14	0.01526

Table S3: Case Study Tool Inputs of Project Participant in Definition and Planning Phase

Are you Committed to the following Decision		If Select No Justify Your Selection	Commitment Indicator For Carbon Emissions Reduction	Perform a screening to estimate the magnitude of carbon emissions	Specify potential for emissions reductions	Design strategies and processes to control the emissions	Implement and document selected strategies and processes	Commitment Outcome for Carbon Emissions Reduction
Carbon Emissions Reduction	Yes		Assessing the carbon emissions control level of the project	YesY	Y	Y	N	Medium Carbon Emission Reduction Commitment 50%
			Supplier choice in terms of carbon emission reduction	NA				
				Identify the most influential actors (different authorities and NGO representatives)	Select carbon emission actors	Develop policies and strategies for promoting carbon emission reduction	Implement and document carbon emission actors policies and strategies	
			The involvement of sustainability-promoting actors in carbon emission reduction planning	YesY	Y	Y	Y	
			The availability of sustainable Incentive/penalty clauses in the contract to pursue carbon emission reduction	NA				
			Capacity study of carbon emission (provide a description of the related process flows and interactions allowing the planning team to ensure adequate facility capacity for carbon emission)	NA				

At The End of The Definition/Planning Phase									
Participant 1		PM-Owner							
		Did Your Commitment level Same as Beginning of The Phase							
What is Your Commitment at The End of The Definition/Planning Phase		Waste Reduction		Yes		If Yes Do not Complete Waste Reduction Table Otherwise Complete the Waste Reduction Tables According to What Has Been Done			
		Carbon Emissions Reduction		No		If Yes Do not Complete Carbon Emissions Reduction Table Otherwise Complete the Carbon Emissions Reduction Tables According to What Has Been Done			
Are you Committed to the following Decision		If Select No Justify Your Selection	Commitment Indicator For Carbon Emissions Reduction		Perform a screening to estimate the magnitude of carbon emissions	Specify potential for emissions reductions	Design strategies and processes to control the emissions	Implement and document selected strategies and processes	Commitment Outcome for Carbon Emissions Reduction
Carbon Emissions Reduction	Yes		Assessing the carbon emissions control level of the project	Yes	Y	N	N	N	High Carbon Emission Reduction Commitment 75%
					Identify suppliers available in the market	Prequalify suppliers	Award supplier (s)	Involving the chosen supplier in the project at early stages	
			Supplier choice in terms of carbon emission reduction	Yes	Y	Y	Y	Y	
					Identify the most influential actors (different authorities and NGO representatives)	Select carbon emission actors	Develop policies and strategies	Implement and document carbon emission actors policies and strategies	
			The involvement of sustainability-promoting actors	Yes	Y	Y	Y	N	
			The availability of sustainable Incentive/penalty clauses in the contract	NA					
					Identify and map key opportunity areas	Specify major mechanical and equipments design requirements	Develop a carbon emission capacity reduction plan	Implement the developed emission capacity plan	
			Capacity study of carbon emission	Yes	Y	Y	Y	Y	

Participant 2	PM-Consultant	At The Beginning of The Definition/Planning Phase							
What is Your Commitment at The Beginning of The Definition/Planning Phase				First Parameter (25% of Commitment Degree)	Second Parameter (50% of Commitment Degree)	Third Parameter (75% of Commitment Degree)	Fourth Parameter (100% of Commitment Degree)		
Are you Committed to the following Decision		If Select No Justify Your Selection	Is This Indicator Applicable to The Project	Conduct VM workshop	Brainstorming best practice ideas and group dynamics	Formulating plans and strategies	Implementation and feedback		Commitment Outcome for Waste Reduction
	Yes	The level of implementing Value Management (VM)	Yes	Y	Y	N	N	Excellent Waste Reduction Commitment	
Waste Reduction		Material alternatives consideration	NA						
				Select a recycling coordinator	Conduct a waste audit to design the collection system	Select a collection contractor	Implement the designed collection system		
		Developing recycling plan	Yes	Y	Y	Y	Y		
		Institutional arrangements for waste management	NA						
		The availability level of sustainable incentive/penalty clauses in the contract to pursue waste management	NA						

Are you Committed to the following Decision		If Select No Justify Your Selection	Commitment Indicator For Carbon Emissions Reduction	Perform a screening to estimate the magnitude of carbon emissions	Specify potential for emissions reductions	Design strategies and processes to control the emissions	Implement and document selected strategies and processes	Commitment Outcome for Carbon Emissions Reduction
Yes			Assessing the carbon emissions control level of the project	YesY	Y	N	N	Medium Carbon Emission Reduction Commitment 50%
Carbon Emissions Reduction				Identify suppliers available in the market	Prequalify suppliers	Award supplier (s)	Involving the chosen supplier in the project at early stages	
			Supplier choice in terms of carbon emission reduction	YesY	Y	Y	N	
			The involvement of sustainability-promoting actors in carbon emission reduction planning	NA				
				Identify the contract parties	Conduct a workshop to identify possible incentive/penalty clauses	Select the best combination of sustainable Incentive/penalty clauses	Agree and sign	
			The availability of sustainable Incentive/penalty clauses in the contract to pursue carbon emission reduction	YesY	Y	Y	N	
			Capacity study of carbon emission (provide a description of the related process flows and interactions allowing the planning team to ensure adequate facility capacity for carbon emission)	NA				

At The End of The Definition/Planning Phase									
Participant 2	PM-Consultant								
	Did Your Commitment level Same as Beginning of The Phase								
What is Your Commitment at The End of The Definition/Planning Phase	Waste Reduction	Yes	If Yes Do not Complete Waste Reduction Table Otherwise Complete the Waste Reduction Tables According to What Has Been Done						
	Carbon Emissions Reduction	No	If Yes Do not Complete Carbon Emissions Reduction Table Otherwise Complete the Carbon Emissions Reduction Tables According to What Has Been Done						
Are you Committed to the following Decision	If Select No Justify Your Selection	Commitment Indicator For Carbon Emissions Reduction							Commitment Outcome for Carbon Emissions Reduction
Carbon Emissions Reduction	No	Assessing the carbon emissions control level of the project	NA						Medium Carbon Emission Reduction Commitment 50%
		Supplier choice in terms of carbon emission reduction	NA						
				Identify the most influential actors (different authorities and NGO representatives)	Select carbon emission actors	Develop policies and strategies for promoting carbon emission reduction	Implement and document carbon emission actors policies and strategies		
		The involvement of sustainability-promoting actors in carbon emission reduction planning	Yes	Y	Y	Y	N		
				Identify the contract parties	Conduct a workshop to	Select the best combination of	Agree and sign		

					identify possible incentive/penalty clauses	sustainable Incentive/penalty clauses		
		The availability of sustainable Incentive/penalty clauses in the contract to pursue carbon emission reduction	Yes	Y	Y	Y	N	
		Capacity study of carbon emission (provide a description of the related process flows and interactions allowing the planning team to ensure adequate facility capacity for carbon emission)	NA					