

## Supplementary information: A Framework for Developing Green Building Rating Tools based on Pakistan's Local Context

**Table S1:** Background and Experience of Respondents

<b>Interviewee #</b>	<b>Work or research experience for sustainable development of a building (yes/no)</b>	<b>Experience/ certification in projects related to sustainable building development</b>	<b>Name of the building</b>	<b>Green building rating star</b>	<b>Role in the SEED or building sustainable development</b>
<b>1.</b>	Yes	US Department of Energy certified	Telenor headquarter	SEED	Involved in the development of SEED and the development of the Pakistan Green building guidelines.
<b>2.</b>	Yes	8 to 10 buildings/ Certified with LEED and Dialux	World Bank Islamabad Headquarter	SEED Platinum rated	involved in the construction and planning of the building
<b>3.</b>	Yes	LEED training	Canadian home buildings	LEED gold standard	focused on making sustainable dwellings and commercial buildings
<b>4.</b>	Yes	LEED certification	Mosque In Karachi	SEED	involved in the development of the rating tool and was involved in the awareness of the tool
<b>5.</b>	yes	LEED certification	CITI Bank Lahore	LEED	Involved in LEED projects and green building projects
<b>6.</b>	Yes	LEED AP	CitiBank Karachi, Citi Bank Islamabad, and Citi Bank	LEED	involved in around 20 LEED projects or green building projects

			Lahore, Sapphire, interloop socks		
7.	Yes	Project coordinator/ LEED Knowledge	NA	LEED	Research on the use of building information modelling or sustainability assessment of residential projects
8.	Yes	10 projects experience/LEED Certification	Citibank Lahore, Islamabad, Unilever office in Karachi, Interloop Sadaqat ltd in Faisalabad, Care hospital, Askari Towers corporate office in Lahore.	SEED	Development of the SEED rating system.
9.	yes	LEED Green AP	house in DHA	SEED	Involved in Development of SEED
10.	yes	6 projects/ LEED certification	Nill	LEED	involved in the projects which require the certification of sustainable solutions
11.	yes	4 projects/ LEED AP, Well AP	ENCC headquarters	Gold level LEED	Involved in three green building rating systems.
12.	yes	3 projects/ LEED certification	Sadaqat ltd	SEED	Involved in the rating of the building with the SEED green building rating tool.
13.	Yes	10 projects/ LEED AP	Houses in Bahria Town Karachi	LEED	Involved in LEED certification of the buildings
14.	Yes	Nill	Bank Alflah Lahore	LEED	involved in energy auditing of the building
15.	Yes	Nill	Nill	Nill	research on green building practices in Pakistan
16.	Yes	SEED certification	Sapphire, National Foods. SECA, interloop	SEED	involved in sustainable projects
17.	Yes	SEED certified	DCK Mall, Karachi	SEED	involved in energy auditing of a building

18.	Yes, conducted research	Research on many projects/ No certification	KFC Chiniot building	LEED and SEED	conducted research on buildings and how to plan a sustainable or energy-efficient building
19.	yes	2 projects / SEED certification	National Foods	SEED	Involved in the development of the rating tool
20.	yes	SEED certification	Askari Towers corporate	SEED	Involved in the project for the SEED certification
21.	Yes	SEED certified	Sapphire	SEED	Involved in the development of SEED
22.	Yes	SEED certification	Unilever office in Karachi	SEED	Development of the SEED rating system
23.	yes	SEED certification	Care Hospital	SEED	Involved in the sustainable development of the building
24.	yes	5 projects/LEED and SEED certified	Sapphire	SEED	involved in sustainable projects
25.	yes	SEED and LEED certification	Bahria Town Grand Mosque Lahore	SEED	Involved in SEED and LEED certification of the buildings

**Table S2:** Indicators refined after stakeholder consultation

Dimensions of sustainability	Indicators	Assessment stage of building life cycle	Indicators Added/Refined/ Omitted
<b>Environment</b>	Sustainable sites	Design	Refined to “protection of cultural heritage” and move under cultural dimension
	Land Use & ecology	Design	Refined to “Land use”
	Energy & Atmosphere	Design, Construction, Operation & Renovation	Retained
	Material & resources	Design, Construction, Operation & Renovation	Retained
	Water conservation	Design, Construction, Operation & Renovation	Refined to “water conservation”
	Emissions	Design, Construction, Operation, Renovation & Demolition	Retained
	Waste	Design, Construction, Operation, Renovation & Demolition	Refined to “waste management”
<b>Economic</b>	Life Cycle Costing	Design, Construction, Operation, Renovation & Demolition	Omitted and included in “Investment cost”
	Professional fees’	Design, Construction, Operation, Renovation & Demolition	Omitted
	Employment	Design, Construction, Operation, Renovation & Demolition	Retained
	Flexibility	Design, Construction, Operation, Renovation & Demolition	Added
	Investment cost	Construction, Operation, & Renovation	Added
<b>Social</b>	Health & Wellbeing	Construction, Operation, Renovation & Demolition	Retained

	Location & Transportation	Design, Construction, Operation, Renovation & Demolition	Retained
	Regional Priority	Design, Construction, Operation, Renovation & Demolition	Omitted
	Aesthetic Quality	Design, Construction, Operation, & Renovation	Retained
	Indoor Air Quality.	Design, Construction, Operation, & Renovation	Retained
	Education and awareness	Design, Construction, Operation, Renovation & Demolition	Retained
	Acoustics	Design, Construction, Operation, Renovation & Demolition	Added
	Safety and security	Design, Construction, Operation, Renovation & Demolition	Added
<b>Culture</b>	Artistic creation	Design, construction & Renovation	Omitted
	Protection of cultural heritage'	Design	Retained
	Cultural Identity	Design, Construction, Operation, Renovation	Added
<b>Government</b>	Management	Design, Construction, Operation, Renovation & Demolition	Retained
	Resilience (adaptation and mitigation)'	Design, Construction, Operation, Renovation & Demolition	Retained
	Policies & Regulations	Design, Construction, Operation, Renovation & Demolition	Added
	Enforcement	Design, Construction, Operation, Renovation & Demolition	Added