Name	Ishtiaq Ahmad
Current workplace	Ministry of Science & Technology, Islamabad.
Current position	Assistant Technological Adviser

A. Introduction

1. Could you mention about your responsibilities at current work place?

As Assistant Technological Adviser in Ministry of Science & Technology, I am responsible for dealing with the technical matters of Pakistan Standards & Quality Control Authority (PSQCA), Pakistan National Accreditation Council (PNAC) and Pakistan Halal Authority (PHA). Besides technical matters of mentioned organizations, I am dealing with Pakistan Regulatory Modernization Initiatives (PRMI), Economic Outreach Initiatives (EOI).

2. Could you describe the implementation situation of acquired knowledge from Japan at your work place?

I acquired knowledge about energy efficiency of residential houses in Japan. Energy efficiency in residential sector have many facets. These include design parameters, construction materials and energy efficiency of appliances, used in houses. Recently, electric fans are included in mandatory list of PSQCA which will prohibit the manufacture, import and sale of less energy efficient fans in Pakistan. The inclusion of energy efficient electric motors in mandatory list of PSQCA is in process. Next appliance will be geysers.

Besides improving energy efficiency of appliances, my target is to start development of building code for residential sector of Pakistan with help of Pakistan Engineering Council.

3. Could you explain how your study field in Japan fits with the current development issues in Pakistan?

Prime Minister of Pakistan has announced construction of five million houses during his tenure (2018-23). This will be achieved through Naya Pakistan Housing Authority. This is a golden opportunity to introduce energy efficiency in terms of building material and house design. My study in Japan is a step in the same direction. Though we only concentrated on orientation of the house, shading devices for windows and Insulation material keeping in view of the limited time period of MS degree, still this study can have a noticeable impact on energy performance of residential houses.

B. Summary of Master Thesis

Field of Study in Japan : Energy & Environmental Engineering

University Name in Japan : Kyushu University

Title of thesis : Study of Effectiveness of Passive Design Methods for Residential Buildings in Pakistan

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Please summarize your Thesis within 20 lines in maximum.

A house model for small family of husband, wife and two children was developed. Different appliances commonly used in a typical Pakistani house were assumed to be present in the house. The schedule of operations of these appliances were kept as close to the normal practices, as possible. These appliances (Lights, refrigerator, microwave, television, iron, water pump, exhaust fan and gas stove) were assigned to different zones of the model. Based upon the operation schedule, the model's annual energy consumptions were calculated to be 7.16 MWh. 70% of the energy requirements are met from natural gas while 30% from electricity. Different models in WV, NV, HVAC and orientation categories were simulated and cumulative probability (CP) of their Predictive Mean Vote (PMV) were calculated.

The energy consumption of WV, NV and orientation categories remained the same as the schedule of operation of equipment is same in all categories, including HVAC. However, in HVAC category, additional energy is used for space conditioning. This energy consumption is different for three cases of HVAC category.

Based upon the results, it was evident that shading devices do not prove to be effective for improving the indoor comfort. The reason behind ineffectiveness of shadings is that due to positioning of windows, no direct sunlight was incident upon these windows. Addition of insulation materials appeared to be the most effective technique to improve the indoor comfort and energy efficiency. In winter, with addition of insulation materials, heating load becomes nearly zero while in summer, a significant decrease in cooling load has been noticed. The orientation of house also has an impact on the indoor thermal comfort of the house. House, whose long axis is oriented in west direction showed improved indoor comfort conditions.

C. Future Plan

How are you planning to utilize your acquired knowledge from Japan at your current job?

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Please summarize your plan within 10 lines in maximum.

As in MS study, I only explored three parameters i.e orientation, shading devices and insulation, I am planning to apply for Ph.D through JDS and complete my study. After completion of my Ph.D and an elevated position in Ministry, I shall be in better position to apply my knowledge. Throughout my career, I shall be trying to modernize the residential sector in Pakistan.

D. Photo

Please send your best two pictures on your academic and daily life in Japan (JPG format)