Title: Power Generation Using Piezoelectric Based Smart Paths: A Case Study

Student: Amin ur Rehman Khan (18834)

**SUMMARY:** Piezoelectricity or piezoelectric effect is the form of energy production using certain material like quartz, PZT and others to generate an alternating current (voltage) due to stress or vibration. To produce subjected sustainable form of power, piezoelectric devices to be installed in paths to makes them green electricity generation based smart paths. This proposal study grounds that a city where green power generation is required to take minimizes pollution with on demand electricity. So, these types of smart paths can help to produce green energy with this compatible system through which we can easily enlighten our pedestrian paths and streets.

**PROBLEM STATEMENT:** For a resource deficient country like Pakistan, there is a need to tap into energy inputs where natural resources can be effectively utilized while reducing initial capital expenditure. In this concern, it is important to explore technologies where power generation options within a city are effectively utilized. Making use of increased population within country helps in moving towards green power generation technologies. In developed countries, the private companies compete in this sector but recently governments of these countries are also taking notice of the developments in turning traffic rush and pedestrians into electricity and are funding many projects. In order to produce piezoelectricity, the technology is currently unavailable in Pakistan, due to lack of efficient piezoelectric materials. Further there is a need to create a feasibilit to see the importance of renewable electric power generation.

**OBJECTIVE:** Subjected objective of this work is generation of power through smart paths where footsteps as a source of renewable energy. To propose such a compatible system through which we can easily enlighten our pedestrian paths and subways. Further to aware people about green form of energy and its merits in environment.

**METHODOLOGY:** Study is divided into two parts. First to evaluate the survey based work to ask people and create awareness about this defined efficient way of energy by smart paths. By this survey, getting responses can process this demand and could be highlight to relevant departments who can take notice on it. Data collection procedure consists of two parts:

1. For the first sample of data randomly 40 students are selected to answer questionnaire. These students or can select from the student body at IoBM. Cause students come from different areas of Karachi, best way to gather data. For required information further questionnaire will answer by walking people on streets of populated area when improper system of streets lights just because of no connection or cut-off connections.

2. Data will show its requirement and need. And on other side technical model and calculation of electricity will also carried to for proposed model, steps also define in flow chart.

**EXPECTED FINDINGS:** Energy Management is a big challenge for our country, implementation of alternative and green form of power production surely effects betterment in its management. People should aware about renewable forms of energy and responsible departments also have to work and show interest to provide electricity to citizens with eco friendly power generation technology. Pakistan is lagging to move on green power production as compare to most of countries that already implemented on energy harvesting technologies with renewable sources. Further, by this unique project extract energy using walk steps, expected to expand this idea turn into production of green energy on large scale for homes and industries as well. For this purpose, efficient and feasible technology and materials also required that are also unavailable within the country.