Smart Bins

Location: Armenia

In-Country Partner Organization/Client: "ISSD" Innovative Solutions for Sustainable Development of Communities" NGO. Our mission is to ensure sustainable development in Armenia through implementation of innovative projects in waste management, agriculture, education, business and promotion of circular economy and women empowerment. Website: http://issdngo.com/

Project Background: Armenia is a small landlocked country with 3 million inhabitants and more than 6000tones of plastic waste which ends up in landfills, rivers, forests and mountains. Additionally, it has scarce resources and with current waste attitude, the country will run out of resources in a very short period of time. USA Today (2019) has identified Armenia as the 6th country across the globe producing the most waste per capita. The main challenges are the accumulation of plastic, a lack of education and awareness of waste and nutrient management, limited financial resources, and a lack of technical expertise. With new types of materials being produced, people get confused and they don't know if a plastic bottle made out of plants and plastic, should actually go to the bin for plastic or not. Our organization works to educate many people, but still there is a huge gap. As a result, a lot of recyclable waste ends up in landfills or in wrong recycling stations. People spend a lot of money and resources for sorting the wrong waste or bringing the waste from landfills.

Project Problem Statement:
Considering the economic and environmental importance of re-using as much waste as possible, our team is proposing the development of a "smart bin" to sense and sort different type sof waste. After recognizing the specific type of material, the bin will open (the sections will be based on the country's capacity to recycle or export waste) after which the person can put the waste in the specific bin, without spending a lot of time on deciding where the waste should go and ultimately ending up putting it trash section. The recognition will be done based on one of the two factors – special bar code that can be printed on the item (this should be agreed with all the producers) or by sensing chemical components of the waste.

Project Goals and Objectives:
1. Feasibility Study
    a. Investigate existing automatic waste sorting technologies
2. Conceptual Design
    a. Conduct prior art research on waste sorting bar codes and chemical sensors
    b. Work with the client to determine design criteria
    c. Make recommendations
       for D-Lab II
3. Design; Build; Test (D-Lab II)

Recycle it!