Voices of MECS

Pankaj Panjiyar, Doko Recyclers

Interview by Dr. Joni Cook, Loughborough University
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Photo credit: Bhuwan Chalise, Doko Recyclers

In this edition of the 'Voices of MECS' series, we talk with Pankaj Panjiyar, CEO of Doko Recyclers, a pioneering electronic waste (e-waste) management company situated in Kathmandu, Nepal, regarding the report 'A Study on Repair and End of Life (EoL) for Electric Cooking and Domestic Appliances in Nepal'.

Good afternoon, could you introduce yourself please?

Good afternoon, I'm Pankaj Panjiyar, the CEO of Doko Recyclers and one of the company's founding members. Academically, I'm an electronics engineer and an MBA graduate. I worked in various sectors such IT, e-commerce, Telecom and defence, finally in the sustainability sector where I have been working in management for Doko Recyclers since 2017.

Great to meet you, Pankaj. Please provide an overview of Doko Recyclers, when was the company founded, what is the company's mission, and what type(s) of work is undertaken?

Doko Recyclers was founded back in 2017. At the time, the founding members including myself were working abroad, but we were planning to do something back in our home country of Nepal. We wanted this work to be at the grassroots level, and to create a clear positive impact on society and the environment. We found that electronic waste (e-waste) management is one of the country's problems which has yet to be solved – e-waste is handled quite well in some other Asian countries but why not so in Nepal? So we used the problem of e-waste and the solution to this in the context of Kathmandu Valley to create the business case for Doko Recyclers. We started by undertaking some research exploring e-waste in Nepal, who were the involved parties, how is e-waste being handled, etc. From this, we started a scientific way of managing e-waste, and we were the pioneers of e-waste management in Nepal.

Pankaj Panjiyar, CEO of Doko Recyclers (photo credit: Santosh Mahato, Doko Recyclers).

When Doko started eight years ago, we specialised solely in e-waste management, broadening out later to include solid municipal waste. After starting e-waste management, we established multiple verticals looking at the demand of the market side, setting up a data destruction service, confidential document service, and organic composting systems. We also set up consultancy services through which we provide frameworks for municipal solid waste management to support municipalities which haven't set up models for this. We work extensively on urban and rural education to promote waste segregation and management, working with different communities, students – anyone who is interested to learn about waste management.

How did you first become involved in the e-waste area, and electric cooking?

When completing our background research back in 2017, we came across an inventory of e-waste which stated that 17,000 tonnes of e-waste is discarded each year in Kathmandu Valley – this staggering large number triggered us. When we conducted a deep dive into this, we found that e-waste contents are harmful as well as the precious metals. This evidence base was the turning point for us to choose to become an e-waste management company.

When we travelled around Kathmandu Valley, we saw the informal sectors dismantling e-waste in very random, hazardous ways – health and safety not being considered, toxic chemicals being released into the soil and water, acid from the lead acid batteries being poured down the drain, and wires being burned to extract the coppers. All of this triggered us – there must be a better way. We started with small infrastructure and focused on 'learning whilst doing' – every step was a new learning. Many eCooking devices came to our warehouse which were discarded by their owners. At the same time, we found the opportunity to collaborate with MECS to start exploring the life cycle of these eCooking devices and addressing the problem in the value chain for the devices.

Cable burning by informal sector (photo credit: Pankaj Panjiyar, Doko Recyclers).

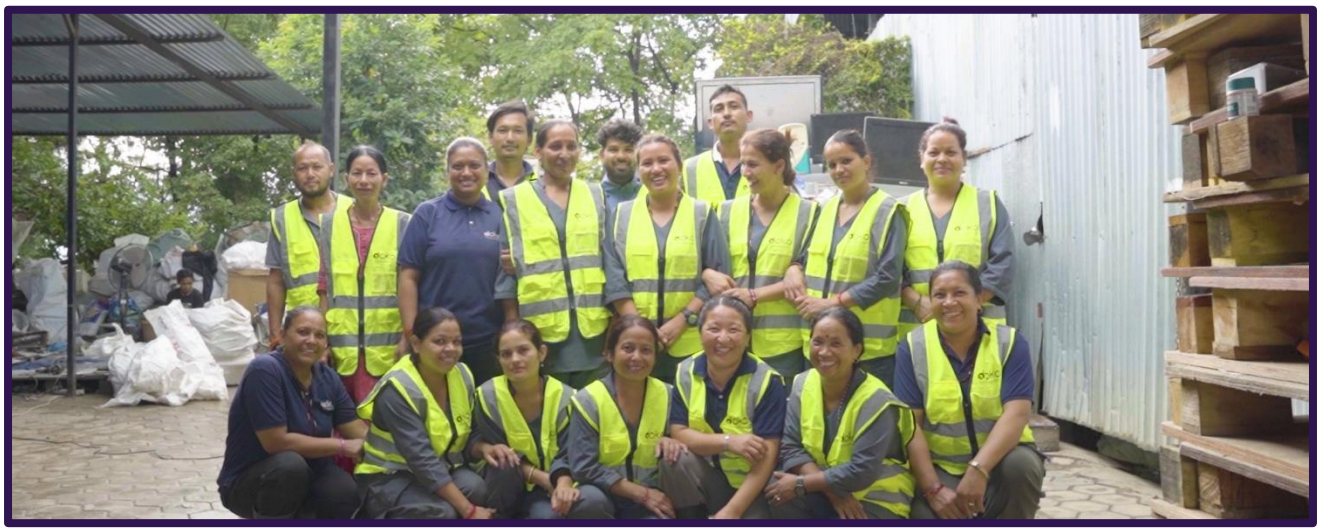
What is the current situation for e-waste and its management in the context of Nepal?

There is hardly any scientific approach being taken to address e-waste in Nepal. We did the maths - 42,000 tonnes of e-waste were generated this year in Nepal. We now process 300-400 tonnes of e-waste per year which arrives at our warehouse in Kathmandu. Obviously there's a big gap in the numbers there. The problem is that the informal sectors in Nepal are very active in e-waste which they take as scrap and process by 'cherry picking'. For valuable items, they extract maximum value without consideration of their own health, the well-being of local communities, or the environment, for example burning tonnes of cable wire to extract metal from it, which releases toxic fumes. Non-valuable items are dumped in any open space outside the landfill sites. As there is no solution to extract precious metals (e.g. gold, silver) from the circuit boards in Nepal, these are transported via illegal channels to India where the informal sector extracts the metals via acid leaching. Nepal does not have regulations relating to e-waste or Extended Producer Responsibility (EPR) from the producer side set up yet.

Why is it critically important to apply a circular economy to e-waste and its management?

E-waste contains precious metals as well as harmful heavy metals and chemicals. Extracting and re-using the precious metals can help to support Nepal's economy and can generate substantial employment if the Government was to set up appropriate regulations, infrastructure, policy and guidelines. To date, these resources are either being transported to India or being discarded in the

Cable burning by informal sector (photo credit: Pankaj Panjiyar, Doko Recyclers).



The Doko Recyclers team (photo credit: Pankaj Panjiyar, Doko Recyclers).

environment. Nepal imports nearly 95% of all consumables, so we are just throwing out our resources when we could benefit from a circular economy being set up in Nepal.

Doko Recyclers conducted a MECS-funded research study which culminated in the publication of the report 'A Study on Repair and End of Life (EoL) for Electric Cooking and Domestic Appliances in Nepal'. Why did you feel it was important to look at this area more closely?

Once we got through the electric cooking devices and the influx going through different organisations, we found that there is a gap of end-of-life management in the last mile. The MECS study was designed to find out where the gap is situated in the value chain for four geographic contexts in Nepal - the plains, mountains, urban and rural contexts. We also explored what people do with their appliances at end-of-life if they have them in their homes. In southern Nepal where rural communities currently rely heavily on biomass for cooking, we wanted to find out if there is any reluctance to transition to electric cooking.

The study findings gave us a clear insight that every household has basic needs, and has electronic and electric devices, but they don't know what to do when these devices reach end of life. If someone says "I will give you 50 rupees to take your induction stove if it is not working" then fine – the 50 rupees matters for the individual, but they don't understand and/or are not interested in where the device is going or what happens to it. In southern Nepal, all electric devices are taken to the (open) border with India, all household appliances go through this channel. We tried to understand the repair culture for electric devices, and we found that repair costs are now higher, especially for devices which are relatively inexpensive. If you have a device which is relatively high value, such as a television or a refrigerator, people tend to invest in repairing it. The rural areas don't have repair markets for eCooking devices, maybe just one or two shops which also sell new devices - the owner might try to repair but if not possible then people tend to buy a new device. Most rural communities would have to take their broken appliance to a city to be repaired, and so the repair culture is slowly dying out for relatively low-cost products such as eCooking devices.

For consideration for development sectors upon costing these eCooking devices, most people in rural areas commented that the device is incomplete because you also need the cookware which is compatible with the devices (e.g. induction-compatible cookware). We have seen people keeping devices such as induction stoves in their storerooms and not using them, as they say that they cannot afford to buy the compatible cookware. So through this study we analysed the value chain and found that there are lots of gaps – a strong presence has to be there for the collection value chain.

What was your personal highlight from your experiences in undertaking the research study?

Of the study findings, it was surprising to us that communities living in rural areas, especially in mountain contexts, had high levels of acceptance (compared with those living in urban areas) for

transitioning from cooking with biomass to cooking with induction stove if some supportive measures are put in place. Also, when we explained the end-of-life management system for eCooking devices, they were very open to dropping off damaged appliances to a collection point to be recycled, in exchange for some money or other incentive. These communities had never been informed that e-waste is a problem, until now. If we can increase awareness about the dangers of e-waste and the importance of e-waste recycling through our education system, and 'close the loop' through establishing e-waste collection systems in all locations, then we can minimise the likelihood of e-waste being dumped in the environment in the future.

What were the top unexpected findings from the study and how have these influenced your views on how the twin issue of e-cooking and e-waste could be addressed?

In one of the rural areas, the informal sector waste workers work on a seasonal basis, and they left all the low value e-waste behind in the villages. For televisions, for example, they extracted the copper and then discarded the rest of the devices on the riverbank. The local community waits for the monsoon season, then when the river is flooded all the e-waste is thrown into the water so that it goes downstream. In the rural context of southern Nepal, the communities burn e-waste and plastic waste together. In the winter season it is very cold with almost no hours of daylight, so people burn e-waste along with other discarded waste materials outside as a source of heat to keep warm. In the urban contexts, people wait for the informal sector workers who come by and purchase the e-waste, they don't mind what happens to the e-waste beyond that – it's not outside their front doors so they are happy.

To address these issues, a multi stakeholder approach is urgently needed – even the producers should be made accountable for the end-of-life of the devices that they are putting into the markets. We have a federal system now, local governments - the municipalities and wards, have the power to make, enact and enforce their own laws at the province or ward level which prohibit the disposal of e-waste by harmful ways, such as disposal into rivers and by burning. These legislative actions would be taken by the ward office itself, then the producers and the waste management companies such as Doko Recyclers need to be set up in different parts of the country. Private companies would need to bring on the business case for the setting up of collection points for each ward which waste management service companies like Doko Recyclers would collect from. The policies should be supportive to waste management companies - we should be incentivised - if we collect 100 tonnes of e-waste from different rural locations, someone should pay us a collection fee.

We are pushing hard with policy dialogues which we started with local governments back in 2018, and as a result government bodies are now aware of the problem of e-waste but it is not coming into their priority areas for action. Their priorities are more focused towards reforestation and afforestation in order to preserve the environment. After that, if they talk about waste then they refer to municipal waste – e-waste is not a priority issue that they are addressing immediately.

Doko e-waste repair and dismantling section (photo credit: Pankaj Panjiyar, Doko Recyclers).

Given what you have learned from the study in Nepal, what guidance would you give other countries who are grappling with the same issues?

For countries which do not have e-waste legislation in place, we would advise to check if there is infrastructure available for e-waste management. If someone is willing to take that initiative (of setting up e-waste management services), then this requires infrastructure as well.

In the context of Nepal, through our next MECS study (developing EPR policy) we are pushing for governments and development sectors to take accountability and responsibility for the devices which they are putting into society. We have drafted a framework whereby governments or the development sector who procures the devices from a supplier or producer can put a clause on the supplier/producer that they have to manage the end-of-life of the eCooking devices. For example, if one million eCooking devices are put into the market and the life span of the eCooking devices is 3 years, then we would need 30% of recycling certificates achieved in year 3, 40% of certificates in year 4, and 50% of certificates in year 5.

Where funds from governments, development sectors and international agencies such as the Green Climate Fund are directly available for eCooking projects, the costs associated with the collection, recycling and safe disposal of the eCooking devices at end-of-life should be incorporated in the project design phase, so that the loop is closed. I would recommend this approach for other countries who have these kinds of projects happening – include these costs in the project design phase and do a pilot study, then gradually expand this to include other types of eCooking devices or household appliances. For devices that are imported directly into a country to be sold on the domestic market, the device importer would be accountable.

What has been the wider impact of the study in Nepal?

We have the data now – the numbers, the actors involved, the value chain details, stakeholder views, and stakeholders identified whose level of responsibility can be increased. These data will act as a baseline survey to support building up a policy framework for e-waste management in Nepal. So the data is very valuable, but the impact is yet to come.

Through the current EPR policy dialogue work, consultation with all stakeholders, one-to-one dialogues, research and the survey, we have drafted a framework which we are planning to disseminate. In the meantime, we have raised substantial attention of the issue with the Alternative Energy Promotion Centre (AEPC), the government sector body which is responsible for approving all projects relating to eCooking and solar, and the board of directors is now very interested in addressing the issue of e-waste management. If the policy framework that we are about to propose to the AEPC is accepted, then they would be willing to commission a pilot study evaluating the implementation of the policy framework for their forthcoming projects. For one of these projects, the AEPC is planning to distribute 500,000 eCooking devices in 17 districts in Nepal.

Doko Recyclers is currently finalising another MECS-funded study on developing an e-waste Extended Producer Responsibility (EPR) Policy for Nepal. Could you tell us a little about the need for/importance of this study, and how does this study build on the findings of the repair and end of life study?

From the previous study, we identified the gaps in knowledge and the loopholes – where is the e-waste going and why? Based on these data and the study outcomes, the EPR study proposes the policy framework, and defines the role and responsibilities of each actor from importing or producing the device until the device's end-of-life. We have developed a cost formula which calculates the percentage of the total cost (for device end-of-life management) that each actor should be responsible for. After finalising the study with MECS, we will be handing over the framework to the Nepali Government to ask for their formal acceptance and to implement a dissemination programme to roll the framework out nationally. This is ultimately the end goal of our work.

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Thanks for taking the time for this interview, it has been fantastic to talk with you and look forward to talking again about the EPR study in due course.

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