

CIMPLE
Circular Medical
Plastics
Engineering

Our Network

Technical University of Munich
Prof. Petra Mela and Fabian Jodeit
Cooperation partners in Germany:
Cooperation partners in Africa:

University of Applied Science Amberg-Weiden
Kwame Nkrumah University of Science and Technology, Ghana
Adama Science and Technology University, Ethiopia

Circular economy

Challenges

Medical plastic products are made from clearly documented materials, that are often highly pure and expensive. This value is burned or ends on landfills in 99,9 % of all cases as studies showed. The 0,1 % recycled medical plastics are currently downcycled into non-medical applications like street construction work.

Project Objectives

In CIMPLE we want to close the loop from medical plastic waste to medical products. Based on recycling and reuse an implemented solution will show how the high inherent value of such materials can be preserved. Beside economic reasons also ecologic aspects are analyzed as medical products are currently being shipped to patients around the globe.



Good practices

Research wise:

- Thermoplastic extrusion is auto-sterile under normal pressure and temperature profile
- Polyolefin (PP, PE) medical plastic products combine high volumes, good recyclability and are often not combined with other materials (e.g. multilayer materials), which promotes them for medical to medical recycling

Management wise:

- It is important to organize week-long workshops in Germany and Africa, including trainings for intercultural collaboration
- Long term stays in partnering countries enable a profound understanding and build trust

Activities

To reach medical to medical recycling we:

- Analyze the polymer recycling potential in clinics in Ghana, Ethiopia and Germany
- Develop an auto-sterile extrusion line
- Establish a point of care collection system in one partnering clinic
- Aim for medical grade recyclates on our recycling line
- Manufacture an exemplary medical product made from recyclates and compare it with one made from virgin material

To overcome concerns about clinical wastes we:

- Organize conferences and schools for students
- Open an Integrated Training Center in Ghana