IMPLEMENTATION OF A CIRCULAR ECONOMY BASED ON RECYCLED, REUSED AND RECOVERED INDIUM, SILICON AND SILVER MATERIALS FOR PHOTOVOLTAIC AND OTHER APPLICATIONS
CABRISS – EU COLLABORATIVE PROJECT

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Total quantities of end-of-life photovoltaic panels in 2050 are anticipated to amount to 9.57 million tons\(^1\). We are not there yet, but discussions on recycling have already started. The main vision of CABRISS is to implement recycling processes and relevant sustainable PV technology with a very low environmental impact, based on the recovery and preparation for reuse of key PV raw materials such as indium, silver and silicon recovered from the waste.

The CABRISS approach to a circular economy for PV targets several pathways for recovery and reuse of valuable materials that are rare or have a high embedded energy value. To achieve a true high-value recycling, it is crucial that the primary treatment of PV wastes is based on recovery processes which are economic on an industrial scale, while at the same time ensuring the highest possible quality of reusable materials. In this context, one material is often neglected in spite of having the highest mass percentage: glass. With a novel, industrialized approach to high-value preservation of glass and a wide range of other materials, the CABRISS partner LOSER Chemie GmbH is currently revolutionizing the way PV wastes are recycled.

While LOSER have worked in CABRISS on testing the opening technology for thin film modules on an industrial level (see pilot line above), a new solution is currently being developed and will be upscaled to achieve the same results for silicon PV modules. The recovered materials (indium, silver, silicon) are applied and tested in the CABRISS value chain for reuse in PV production. First results show that in some cases, recovered compounds (instead of fully refined materials) can be used in adapted production technologies which further increases the overall efficiency. In this way, the CABRISS approach strives to implement a circular economy in photovoltaics which is optimized to the last detail.

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