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Developing the next generation technologies of renewable electricity and  
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**Next – generation interdigitated back-contacted silicon  
heterojunction solar cells and modules by design and  
process innovations**



**NextBase - Deliverable report**

**D9.2 Final Report on Global Cost Evaluation of NextBase  
Technologies**

<b>Deliverable No.</b>	NextBase D9.2	
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## Publishable summary

The objective of this work package is to economically and ecologically assess silicon heterojunction interdigitated back-contacted (SHJ-IBC) solar cells. This global task will include both a cost and life cycle analysis of SHJ-IBC solar cells, considering not only the solar cell, but at the end the whole system integration for such specific products (LCOE estimation).

The purpose of this deliverable (9.2) is to give the final calculations of cost of ownership (CoO) of the SHJ-IBC solar cells and modules. This is a continuation of the work done in D 9.1.

This evaluation has been achieved using a cost model developed by CEA INES within the context of the NextBase project. This model has been adapted from initial standard double side contacted SHJ one, and takes estimates on the bill of materials (BoM), capital expenditures (CapEx), staffing, operational expenditures (OpEx) as well as the scrap rate, the line throughput and the final efficiency of the solar cells and modules produced to output a cost of ownership (CoO) for SHJ-IBC solar cells.

In deliverable 9.1, the conclusion stated that at 500 MW capacity, a CoO of 0.37 €/W<sub>pk</sub> was possible for a fabrication plant of SHJ-IBC solar cells in Europe. There have been numerous contributions from the NextBase partners to more accurately predict the CoO of an SHJ-IBC fabrication plant. Furthermore, costs of materials and components have changed. The reduction in mono crystalline silicon wafers is most significant in this regard. New simulations shown in this deliverable show that the CoO of the SHJ-IBC solar module developed by the NextBase partners would have a CoO of **0.275 €/W<sub>pk</sub>** which is a significant reduction from the calculations given in D 9.1.

This figure is significantly lower than the target of 0.35 €/W<sub>pk</sub> that was outlined as a goal for the NextBase project. This target was set before the wafer prices have significantly reduced, therefore the SHJ-IBC costs are compared to a cost calculation for PERC solar modules which is 0.25 €/W<sub>pk</sub>.

Admittedly, this 0.275 €/W<sub>pk</sub> figure comes from some very optimistic assumptions on the technology. Therefore some sensitivity analyses were performed to show the relative impact of different parameters on final CoO. Variable Cell to Module efficiency, scrap rate and various aspects of the CapEx were thus modelled in that way.

Finally, we present breakdowns of different aspects of the CoO calculation. These breakdowns show which aspects of the fabrication of SHJ-IBC modules are the most significant. This demonstrates where efforts should be placed in order to most efficiently reduce the CoO of SHJ-IBC modules.

