



**PPP Project Annual Report 2018**  
 The PPP-projects that have been established under the direction of the top sectors must submit an annual report on their technical and financial progress. This format is to be used for reporting the technical progress. A separate format ('PPP final report') is available for PPP-projects that have been completed in 2018.  
**The annual reports will be published in full on the websites of the TKIs/top sector, excluding the blocks 'Approval coordinator/consortium' and 'Planning and progress' . Please ensure that no confidential matters are left in the remaining blocks.**  
 The PPP Project Annual Reports must be submitted by 15 February 2019 to Hans van der Kolk

<b>General information</b>	
PPP number	TKI-AF-17102c (TKI toeslag project onderdeel SIP Bioref.)
Title	<i>Manufacturing of water-resistant starch containers</i>
Theme	Circulair
Executive knowledge institution(s)	Wageningen Food & Biobased Research
Research project leader (name + e-mail address)	<a href="mailto:Frans.kappen@wur.nl">Frans.kappen@wur.nl</a>
Coordinator (on behalf of private parties)	Wageningen Food & Biobased Research
Government contact person	Jan van Esch
Total project size (k€)	
Address project website	
Start date	1-9-2017
End date	31-12-2019

<b>Approval coordinator/consortium</b>	
The annual report should be discussed with the coordinator/the consortium. The TKIs appreciate being informed of possible feedback on the annual report.	
The coordinator has assessed the annual report on behalf of the consortium:	<input type="checkbox"/> approved <input type="checkbox"/> rejected
Possible feedback on the annual report:	

<b>Short content description/aim PPS</b>
What is going on and how is this project involved? What will be delivered by the project and what is the effect of this?
The aim of this project is to develop thermoplastic water-resistant containers from starch and a process to manufacture them. The desired final process consists of a combination of mechanical and / or chemical modification together with thermal plasticization in one step. The process will lead to thermoplastic starch that can be further or in situ processed into a tray. The resulting product should be water resistant, biodegradable or recyclable, made mainly of starch and suitable for food contact applications. These requirements make this project highly challenging but open the possibilities for innovation.

<b>Planning and progress</b> (if there are changes to the project plan, please explain)	
Is the PPP going according to plan?	yes
Have there been changes in the consortium/project partners?	no
Is there a delay and/or deferred delivery date?	no
Are there any substantive bottlenecks?	no
Are there any deviations from the projected budget?	no

<b>Results in 2018/ so far</b>
Give a short description of the high-lights and (most important) project deliverable in 2018 / so far and their target group
<p>Experiments with focus on good processing properties and simultaneous chemical modification of native starch were performed. These experiments already showed proper runnability and a reaction taking place under the used processing conditions. Further structure, property and functionality analysis (several physical and chemical analyses) are being performed.</p> <p>The process is improved further by testing several chemical modifications. The effectiveness of the reactions is analyzed and showed over 80% efficiency. The relationship between modifications and key properties of the product is evaluated. Improvement of hydrofobicity (lower solubility) was shown.</p> <p>Extrusion products are being tested in compression moulding and injection moulding processes. It is shown that no additional plasticizer is necessary to form thermoplastic products. This opens up a lot of possibilities for thermoplastic food packaging products.</p>

<b>Number of delivered products in 2018 / so far</b> (in an appendix, please provide the titles and/or description of the products or a link to the products on public websites)			
Academic articles	Reports	Articles in journals	Introductions/workshops

**Appendix: Names of the products or a link to the products on a public website**