



Deliverable 5.2

Report on investigation of market potentials of GVL and 2-MTHF

Demonstration of solvent and resin production from lignocellulosic biomass via the platform chemical levulinic acid

The project leading to this application has received funding from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme under grant agreement No 720695



About GreenSolRes

The need to establish economic and sustainable large-scale operations for the conversion of renewable resources to chemical building blocks is becoming increasingly urgent in the context of climate change and depleting fossil fuel reservoirs. Pathways for manufacturing of bio-based fuels and chemicals have been developed but most of them rely on sugar and starch crops for feedstock. GreenSolRes aims at a sustainable and competitive industrial production of the platform chemical levulinic acid (LVA) from non-food lignocellulosic biomass. Further, the conversion of LVA and LVA esters into industry relevant building blocks γ -valerolactone (GVL), 1-methyl-1,4-butanediol (MeBDO) and 2-methyltetrahydrofuran (2-MTHF) will take place by new catalytic methods developed during the course of this project. Finally, these chemicals will be upgraded to solvents and resin monomers for the production of high added value adhesives and consumer products. This project was started in September 2016 and has a duration of five years.

Project Coordinator



Project Office



Consortium



About this document

Deliverable N°:	5.2	
Title	Report on investigation of market potentials of GVL and 2-MTHF	
Workpackage:	5	
Responsible beneficiary:	RWTH Aachen	
Author:	Celine Jung, Ole Osterthun, Jürgen Klankermayer	
Reviewers:	HENKEL	
Version:	1	
Due date of deliverable:	31.10.2020	
Version date:	29.10.2020	
Contact:	Jürgen Klankermayer	
Nature:	Report	
Review status	WP leader accepted	23/10/2020
	Reviewer accepted	23/10/2020
	SC accepted	28/10/2020
	Coordinator submitted	29/10/2020

Dissemination Level		
PU	Public	
CO	Confidential, only for members of the consortium (including the Commission Services)	X

Publishable Summary

The market potentials of GVL and 2-MTHF were investigated based on reported potential commercial applications of the two platform molecules. For GVL, in addition to its application as solvent and potential as fuel additive, its role in further downstream chemistry, such as starting material for other solvents and monomers, were considered. For 2-MTHF, its application as a substituent for hexane in extractions and as substituent for THF and other solvents was taken into account.

In summary, several markets for GVL and 2-MTHF have been described. To be applicable in industry, the sales prices of these platform chemicals can't be significantly higher than the established fossil based alternatives as the benefits have to outweigh additional costs. The bio-based compounds then have to provide significant advantages over the fossil-based chemicals to be considered as applicable alternatives. The estimated prices for GVL and 2-MTHF are higher than the fossil based alternatives, which is expected to hinder entrance to the bulk markets. Consequently, the two chemicals rather qualify for niche markets at the current point of estimations. Future taxation of carbon dioxide production based on a fossil based chemical product and the translation to a circular economy could have a strong influence and may strongly alter the market potential of these bio-based alternatives.