

# Deliverable D6.5

## Final business plan with respective risk assessment and sensitivity analysis

### WP6

**Grant Agreement number** 723916

**Project acronym** InnoWEE

**Project full title** INNOvative pre-fabricated components including different Waste construction materials reducing building Energy and minimising Environmental impacts

**Due date of deliverable** 31/07/2020

**Lead beneficiary** 7 - IZNAB

**Other authors** All partners

#### ***Dissemination Level***

<b>PU</b>	Public	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	X
<b>CI</b>	Classified, as referred to in Commission Decision 2001/844/EC	

## Document History

Version	Date	Authors	Description
0.0	01/06/2020	Jakub Pluta, Emil Lezak – IZNAB	Creation of the document
0.1	30/09/2020	Jakub Pluta, Emil Lezak – IZNAB	Draft for reviewers
0.2	30/09/2020	ZAG ISAC	Reviewed draft
0.3	30/09/2020	Jakub Pluta, Emil Lezak – IZNAB	Final version for Coordinator
0.4	30/09/2020	Coordinator Adriana Bernardi	Final check and upload in ECAS

## Disclaimer

This document is the property of the InnoWEE Consortium.

This document may not be copied, reproduced, or modified in the whole or in the part for any purpose without written permission from the InnoWEE Coordinator with acceptance of the Project Consortium.

This publication was completed with the support of the European Commission under the *Horizon 2020 research and innovation programme*. The contents of this publication do not necessarily reflect the Commission's own position. The documents reflects only the author's views and the Community is not liable for any use that may be made of the information contained therein.

# Contents

<b>Abbreviations .....</b>	<b>5</b>
<b>Publishable summary .....</b>	<b>7</b>
<b>1    Introduction.....</b>	<b>8</b>
1.1     Relation to other activities .....	8
1.2     Partners' contribution .....	8
<b>2    InnoWEE Key Exploitable Results.....</b>	<b>9</b>
<b>3    Main markets.....</b>	<b>10</b>
3.1     Market interests .....	10
<b>4    Key Exploitable Results' analysis and exploitation plans .....</b>	<b>11</b>
4.1     Methodology .....	11
4.1.1     Description of innovativeness and partners' interest in the results	11
4.1.2     Intellectual Property Rights Protection	12
4.2     KER analysis .....	15
4.2.1     KER 1 – Pilot plant for CDW transformation into Secondary Raw Material of fine fractions	15
4.2.2     KER 2 – Optimization of geopolymer binders	17
4.2.3     KER 3 – Panels' prototypes	22
4.2.4     KER 4 – Prototype procedure (IR thermography assisted) for the assessment of dynamic thermal performance of ETICS-like walls	28
4.2.5     KER 5 – Geopolymer panel production unit	29
4.2.6     KER 6 – LCA of geopolymer products	31
4.2.7     KER 7 – New engineering design for geopolymer prefabricated panels	32
<b>5    Risk analysis .....</b>	<b>34</b>
5.1     Methodology .....	34
5.2     KER analysis .....	36
<b>6    Financial analysis .....</b>	<b>47</b>
6.1     ETICS-like panels.....	48
6.2     Ventilated façade cladding panels .....	58
6.3     Radiant panels.....	68
<b>7    Conclusion.....</b>	<b>79</b>

## List of tables

Table 1. Final list of InnoWEE Key Exploitable Results (KERs)	9
Table 2. Possible partners' interest in the results	11
Table 3. Explanation of the action used in the Action Plan	15
Table 4. Main properties of the reviewed products, as derived from leaflets and datasheets	25
Table 5. Example of ceiling radiant system (RDZ b!klimax)	26
Table 6. Specifications for insulation layer and plasterboard base of a ceiling radiant system (RDZ b!klimax)	26
Table 7. Risk definition for KER 1.	36
Table 8. Risk definition of KER 2A.	37
Table 9. Risk definition for KER 2B.	38
Table 10. Risk definition for KER 3A.	39
Table 11. Risk definition for KER 3B.	40
Table 12. Risk definition for KER 3C.	41
Table 13. Risk definition for KER 4.	42
Table 14. Risk definition for KER 5.	43
Table 15. Risk definition for KER 6.	44
Table 16. Risk definition for KER 7.	45
Table 17. Foreseen profit and lost for the ETICS-like panels	49
Table 18. Foreseen profit and lost for the ETICS-like panels (5-years)	55
Table 19. Foreseen balance sheet for the first three (3) years for the ETICS-like panels	56
Table 20. Foreseen Cash Flow for the first three (3) years for the ETICS-like panels	57
Table 21. Foreseen profit and lost for the ventilated cladding panels	59
Table 22. Foreseen profit and lost for the ventilated cladding panels (5-years)	65
Table 23. Foreseen balance sheet for the first three (3) years for the ventilated cladding panels	66
Table 24. Foreseen Cash Flow for the first three (3) years for the ventilated cladding panels	67
Table 25. Foreseen profit and lost for the radiant panels	69
Table 26. Foreseen profit and lost for the radiant panels (5-years)	75
Table 27. Foreseen balance sheet for the first three (3) years for the radiant panels	76
Table 28. Foreseen Cash Flow for the first three (3) years for the radiant panels	77

## List of figures

Figure 1. KER 1 exploitation plans by partners	16
Figure 2. KER 2A & 2B – Exploitation plans	21
Figure 3. KER 3A – Exploitation plans	27
Figure 4. KER 3B – Exploitation plans	28
Figure 5. KER 3C – Exploitation plans	28
Figure 6. KER 4 – Exploitation plans	29
Figure 7. KER 5 – Exploitation plans	31
Figure 8. KER 6 – Exploitation plans	31
Figure 9. KER 7 – Exploitation plans	32
Figure 10. Template for risk definition and the Priority Level calculation.	35
Figure 11. Priority map	35
Figure 12. Priority map for KER 1.	37
Figure 13. Priority map for KER 2A.	38
Figure 14. Priority map for KER 2B.	39
Figure 15. Priority map for KER 3A.	40
Figure 16. Priority map for KER 3B.	41
Figure 17. Priority map for KER 3C.	42
Figure 18. Priority map for KER 4.	43
Figure 19. Priority map for KER 5.	44
Figure 20. Priority map for KER 6.	45
Figure 21. Priority map for KER 7.	46
Figure 22. Revenues, costs and pro-forma EBIT for the ETICS-like panels.	55
Figure 23. Operating cash Flow for the ETICS-like panels	57
Figure 24. Revenues, costs and pro-forma EBIT for the ventilated cladding panels.	65
Figure 25. Operating cash Flow for the ventilated cladding panels	67
Figure 26. Revenues, costs and pro-forma EBIT for the radiant panels.	75
Figure 27. Operating Cash Flow for the radiant panels	77

## Abbreviations

<b>BP</b>	<b>Business Plan</b>
<b>CAGR</b>	<b>Compound Annual Growth Rate</b>
<b>CDW</b>	<b>Construction and Demolition Waste</b>
<b>EAD</b>	<b>European Assessment Document</b>
<b>EP</b>	<b>Exploitation Plan</b>
<b>EPS</b>	<b>Expanded PolyStyrene</b>
<b>ETA</b>	<b>European Technical Assessment</b>
<b>ETICS</b>	<b>External Thermal Insulation Composite System</b>
<b>HDG</b>	<b>High Density Geopolymer</b>

---

InnoWEE	<b>Innovative pre-fabricated components including different Waste construction materials reducing building Energy and minimising Environmental impacts</b>
KER	<b>Key Exploitable Result</b>
LCA	<b>Life Cycle Assessment</b>
PSD	<b>Particle Size Distribution</b>
SRM	<b>Secondary Raw Materials</b>
SWOT	<b>Strength – Weakness – Opportunity – Threats</b>
TAB	<b>Technical Assessment Body</b>
WG	<b>Wood Geopolymer</b>
WGP	<b>Wood Geopolymer Panel</b>

## Publishable summary

This report aims at providing the business plan for the InnoWEE project's results. The final list of the Key Exploitable Results is presented and each of them is analysed considering its innovative-ness creating the value proposition. The KERs are also analysed regarding their IPR. The actions to ensure final IPR agreements between owners and contributors of the results are proposed to the consortium.

For each KER a risk analysis was performed. It shows the importance of the defined risk and what actions has to be implemented to ensure proper market introduction. Some risk require immediate action and some need to be monitored by the results' owners to minimise their impact or to completely prevent them from occurring. In the chapter the potential barriers for the market implementation are described.

As the last part the financial projections are presented for the main InnoWEE products – 3 types of geopolymeric panels (ETICS-like panels, ventilated façade cladding panels and radiant panels).