

## Technology Readiness Levels “TRL” – Investment Readiness Levels “IRL”

For objective driven natural and environmental science & technology/product evolutions

<b>TRL &amp; IRL EVOLUTION schedules and capabilities</b>		TRL / IRL Implementation		Scientific evidence level	
		factor %	risk %		
<b>EU Community S&amp;T - RTD maturity progress</b>	<b>TRL 1-3 = IDEA</b> = basic principles, technology concept formulated	0-1%	100%	THESIS: theoretical assumptions	
	<b>TRL 4 = technology validated in laboratory</b>	<3%	>97 %		
	<b>TRL 5-6 = PILOT</b> technology validated and demonstrated in relevant environment <b>IRL5-6 = validate revenue model &amp; market fit</b> high technical risk/full commercial risk	<25%	>90%		
	<b>Low RMI operational area</b>		<b>RTD risk break-even point</b>		
	<b>TRL 7= PROTOTYPE</b> demo in operational environment <b>IRL 7 = prototype viable product</b>	60-75%	40-70%	Prototype demonstrated	
	<b>TRL8 = FIELD DEMO</b> system complete and qualified <b>IRL 8 = validate value delivery</b>	75-90%	15-25%	Industrial validated	
	<b>TRL 9 = actual system proven</b> in operational environment, full scale industrial replication model ready for market competitive commercial deployment. <b>IRL 9 = identify and validate metrics</b> The TRL9/IRL9 is the first full industrial/market/commercial replication model. Demonstrate conversion of science into practice: competitive manufacturing, industrial training, user/market uptake and exploitation in practice.	95-99%	1-5%	Market validated commercial replication	
<b>Industrialized and market competitive commercialized innovation</b>		97-99%	1-5%	Commercial replicated	

- ✓ **The TRL** (also known as Technology Readiness Assessment “TRA”) is based on the EU Commission Decision C(2014)4995 and US official methods since 1980’s (NASA, DoD, ESA, European Commission since 2014 in the H2020, ISO 16290:2013 standard).
- ✓ **The IRL** is based on the OECD (The Organisation for Economic Co-operation and Development) and other large financial institutions methods. IRL is an evidence based demonstration to investors, that there’s a repeatable and scalable business model.